Dawei Power Generating Company Limited

DAWEI POWER GENERATING COMPANY LIMITED

FINAL REPORT

VOLUME I

Environmental and Social Impact Assessment (ESIA)

on

15 MW Temporary Power Plant Project in Dawei District, The Republic of the Union of Myanmar

Prepared by

TEAM Consulting Engineering and Management Public Company Limited

TOTAL Business Solution Co., Ltd.

April 2018

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော) ၃(၂)/၁၆(ဃ)(၃၄၃၈/၂၀၁၇)
ရက်စွဲ ၂၀၁၇ ခုနှစ်၊ အောက်တိုဘာလ ၂၃ ရက်

သို့

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ **တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် (၁၅)မဂ္ဂါဝပ် ယာယီလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာအပေါ် အတည်ပြုနိုင်ပါကြောင်း စိစစ်တင်ပြခြင်းကိစ္စ**

ရည်ညွှန်းချက် ။ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၃၁-၁၂-၂၀၁၅ ရက်စွဲပါစာအမှတ်၊ ဥညမ-ထဝ-၁/DSEZ/၂၀၁၅

ထားဝယ်လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ရေး (DPG) ကုမ္ပဏီလီမိတက်မှ တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် ဆောင်ရွက်မည့်(၁၅)မဂ္ဂါဝပ် ယာယီလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment-EIA) အစီရင်ခံစာတင်ပြလာသည့် ကိစ္စနှင့်ပတ်သက်၍ အဆိုပါအစီရင်ခံစာသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ်(၆၃) ပါအချက်များနှင့် ကိုက်ညီမှုရှိကြောင်း စိစစ်တွေ့ရှိရသဖြင့် တင်ပြလာသည့် အစီရင်ခံစာကို အတည်ပြုပါကြောင်းနှင့် လုပ်ငန်းများဆောင်ရွက်ရာတွင် အလေးထားလိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း အကြောင်းပြန်ကြားအပ်ပါသည်-

(က) စီမံကိန်းအဆိုပြုသည့် ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်နိုင်မှုများကို လျော့ချမည့် နည်းလမ်းများ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များ၊ ၎င်းနှင့်ဆက်စပ်သည့် အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် နည်းလမ်းများ အပါအဝင် ဆောင်ရွက်ရမည့် ကိစ္စရပ်များအားလုံးကို အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ဖော်ပြထားသည့်အတိုင်း လိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ခ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များအတွက် လုံလောက်သည့် ရန်ပုံငွေထားရှိသုံးစွဲရန်နှင့် ၎င်းအစီအစဉ်များကို အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်းများ ဖွဲ့စည်းဆောင်ရွက်ရန်၊

၃၀.၁၀.၂၀၁၇

(ဂ) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄)၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) အရ လိုက်နာဆောင်ရွက်ရမည့် အချက်များအားလုံးကို လိုက်နာဆောင်ရွက်ရန်၊

(ဃ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်းကတိကဝတ်အားလုံးနှင့် စည်းကမ်းချက်များကို အပြည့်အဝအကောင်အထည်ဖော်ရမည့်အပြင် ယင်း၏ကိုယ်စား စီမံကိန်းကို ဆောင်ရွက်ပေးသူကန်ထရိုက်တာနှင့် လက်ခွဲဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာများအားလုံးက စီမံကိန်းအတွက် လုပ်ငန်းများ ဆောင်ရွက်ရာတွင် သက်ဆိုင်ရာဥပဒေ၊နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စည်းကမ်းချက်များအားလုံးကို အပြည့်အဝ လိုက်နာဆောင်ရွက်စေရန်၊

(င) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ၏ စီမံကိန်းအဆိုပြုသူမှ လိုက်နာဆောင်ရွက်မည့် ကတိကဝတ်များဇယား၊ Section 3.1 ၊ Section 3.2.1 ၊ Section 3.2.2၊ Section 3.2.2 (Topic A)၊ Section 3.2.2 (Topic B)၊ Section 3.2.4 ၊ Section 3.4.1 ၊ Section 3.4.2 ၊ Table 3.4-1 ၊ Section 3.5.1၊ Table(3.6-1)ပါ ဥပဒေများ၊ ကတိကဝတ်များကို လိုက်နာ ဆောင်ရွက်ရန်၊

(စ) IFC ၏ Environmental, Health and Safety General Guideline (2007) ၊ Environmental, Health and Safety Guidelines for Thermal Power Plants (2008) နှင့် Performance Standard on Environmental and Social Sustainability (2012)ပါ ပြဋ္ဌာန်းချက်များအတိုင်း လိုက်နာဆောင်ရွက်ရန်၊

(ဆ) Section 4.1.1 တွင် ဖော်ပြထားချက်များနှင့်အညီ Boil-off Power Plant တည်ဆောက်ပြီးစတင်လည်ပတ်သည့် အချိန်မှစတင်၍ ယခု ၁၅ မဂ္ဂါဝပ်စက်ရုံအား ဖယ်ရှားရန်၊

(ဇ) Fugitive Dust နှင့်ပတ်သက်၍ World Band Ambient Air Quality Standard ပါ 230 $\mu g/m^3$ ကျော်လွန်မှုမရှိစေရေး လိုက်နာဆောင်ရွက်ရန်၊

(ဈ) Gas Emission နှင့်ပတ်သက်၍ IFC 2008 EHS Guideline for thermanl power plant ပါပြဋ္ဌာန်းချက်များအတိုင်းလိုက်နာဆောင်ရွက်ရန်၊

(ည) Noise Emission နှင့်ပတ်သက်၍ 3 m အမြင့်ရှိသည့် Metal Steel Fence များ ထားရှိရန်နှင့် IFC 2007 General EHS Guideline ပါ ပြဋ္ဌာန်းချက်များ အတိုင်း လိုက်နာဆောင်ရွက်ရန်၊

(ဋ) Hazardous Waste များစွန့်ပစ်ရန်အတွက် လိုင်စင်ရ Hazardous Waste Contractor ကို ငှားရမ်းဆောင်ရွက်ရန်၊

(ဌ) Liquid Waste များစွန့်ပစ်ရာတွင် ကတိကဝတ်ဇယားတွင် ဖော်ပြထားသည့် အတိုင်း အမျိုးအစားခွဲခြား၍ သိုလှောင်ပြီး ထိုင်းနိုင်ငံသို့ ပြန်လည်သန့်စင်ခြင်း ဆောင်ရွက်ရန်နှင့် Liquid Waste များတွင် ပါဝင်သော Hazardous Disposal များကို စက်ရုံဝင်း အတွင်းနှင့်အပြင်တို့တွင် စွန့်ပစ်ခြင်းများကို တားမြစ်ရန်၊

(ဍ) မြေနေရာပြုပြင်ခြင်းနှင့် စီမံကိန်းတည်ဆောက်ခြင်းလုပ်ငန်းမှ လေအရည်အသွေး ထိခိုက်နိုင်မှုများနှင့် ဖုန်မှုန့်ထွက်ရှိမှုကို လျှော့ချနိုင်ရေးအတွက် ရေဖြန်းခြင်းနှင့် မော်တော်ယဉ်များ၏ ကန့်သတ်၍ တစ်နာရီလျှင် ၄၀ ကီလိုမီတာထက် မပိုစေရေး စီစဉ်ဆောင်ရွက်ရန်၊

(ဎ) စီမံကိန်းပိုင်ရှင်သည် မိမိ၏ စီမံကိန်းဧရိယာအတွင်း ရှေးဟောင်းဝတ္ထုပစ္စည်း တွေ့ရှိက အနီးဆုံးရပ်ကွက် သို့မဟုတ် ကျေးရွာအုပ်ချုပ်ရေးမှူးထံ အကြောင်း ကြားရန်၊

(ဏ) လူမှုရေးဆိုင်ရာ ပူးပေါင်းတာဝန်ယူမှုအစီအစဉ် (Corporate Social Responsib -ility - CSR) ကို ရေးဆွဲ၍ အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(တ) ဒေသခံပြည်သူများ (stakeholders) နှင့်စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်း တို့၏ အကြံပြုချက်နှင့်လိုလားချက်များအား အလေးထားပေါင်းစပ် ဆောင်ရွက် ရန်နှင့်Livelihood Restoration Plan ကို အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ထ) စီမံကိန်းအဆိုပြုသူသည် အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာကို အများပြည်သူသိရှိနိုင်စေရေး ထုတ်ဖော်ကြေငြာရန်၊

(ဒ) ဘာသာပြန်ထားသော EIA အစီရင်ခံစာ အကျဉ်းချုပ်အား စီမံကိန်းတည်ရှိရာ နေရာနှင့် နီးစပ်သည့် မြို့နှင့်ကျေးရွာများရှိ အုပ်ချုပ်ရေးမှူးရုံးများ၊ မြို့နယ် အထွေထွေအုပ်ချုပ်ရေးရုံးများသို့ ဖြန့်ဝေဆောင်ရွက်သွားရန်၊

(ဓ) အငြင်းပွားမှုများ၊ မကျေနပ်မှုများဖြေရှင်းရေးအတွက် Grievance Mechanism ကို တည်ထောင်၍ အဆိုပါ Grievance Mechanism ဆိုင်ရာ အချက်အလက် များ၊ တာဝန်ယူဖြေရှင်းမည့် ပုဂ္ဂိုလ်၏ အမည်နှင့်ဖုန်းနံပတ်၊ ဆက်သွယ်ပေးပို့ရမည့်

လိပ်စာစသည်တို့ကို စီမံကိန်းတည်ရှိရာ နေရာနှင့်နီးစပ်သည့် မြို့နှင့်ကျေးရွာများရှိ အုပ်ချုပ်ရေးမှူးရုံးများ၊ မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးရုံးများသို့ ဖြန့်ဝေဆောင်ရွက်သွားရန်၊

(ဒ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ဖော်ပြထားသော စီမံကိန်းပိုင်ရှင်နှင့် ကျွမ်းကျင်ပညာရှင်တတိယအဖွဲ့အစည်းမှ ကတိပြုဝန်ခံချက် လက်မှတ်ရေးထိုးရန် လိုအပ်သည့် ကွက်လပ်များနေရာများကို ကတိဝန်ခံချက်လက်မှတ်ရေးထိုး၍ ၎င်းလက်မှတ်များပါဝင်သော အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအပြည့်အစုံကို တနင်္သာရီတိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနနှင့် နေပြည်တော်၊ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ဦးစီးချုပ်ရုံးသို့ ပေးပို့ရန်၊

(ဓ) စီမံကိန်းအဆိုပြုသူသည် Monitoring Report ကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ (၆) လ လျှင်တစ်ကြိမ်တင်ပြရန်၊

၂၃/၁၀/၂၀၁၇

ပြည်ထောင်စုဝန်ကြီး(ကိုယ်စား)
(ဝင်းဇော်၊ဒုတိယအမြဲတမ်းအတွင်းဝန်)

မိတ္တူကို

ညွှန်ကြားရေးမှူးချုပ်
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ရုံးအမှတ် (၅၃)၊နေပြည်တော်

စာအမှတ်၊ အီးအိုင်အေ-၂/၂/(၁၃၅ /၂၀၁၇)
ရက်စွဲ ၊ ၂၀၁၇ ခုနှစ် ဇန်နဝါရီလ ၃၀ ရက်

သို့

ဥက္ကဋ္ဌ
ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ Dawei Power Generating Co., Ltd. မှ ထားဝယ်အထူးစီးပွားရေးဇုန် ကနဦးအဆင့်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Temporary Power Plant စီမံကိန်းနှင့်ပတ်သက်၍ ပြန်လည်တင်ပြလာသော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအစီရင်ခံစာ (Scoping Report) အပေါ် အတည်ပြုပြန်ကြားခြင်း

ရည်ညွှန်းချက်။
(၁) ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ၏ ၃၀-၁၁-၂၀၁၅ ရက်စွဲပါစာအမှတ်၊ ထဝ-၁/DSEZ/၂၀၁၅ (၂၂၃)
(၂) သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပြည်ထောင်စုဝန်ကြီးရုံး၏ ၁၄-၁၂-၂၀၁၅ ရက်စွဲပါစာအမှတ်၊ ၃(၂)/၁၆(ဃ)(၆)/(၃၅၇၆/၂၀၁၅)
(၃) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁-၂-၂၀၁၆ ရက်စွဲပါစာအမှတ်၊ ထဝ-၁/DSEZ-၄/၂၀၁၆ (၀၃၃)
(၄) သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပြည်ထောင်စုဝန်ကြီးရုံး၏ ၂၇-၁-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ (သစ်တော) ၃/၁၆(ဃ) (၂၉၂/၂၀၁၇)

၁။ အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ Dawei Power Generating Co., Ltd. မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Temporary Power Plant စီမံကိန်း၏ Scoping အစီရင်ခံစာအား ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်း (၁) ပါစာဖြင့် တင်ပြခဲ့ပြီး အဆိုပါတင်ပြမှုအပေါ် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနမှ ရည်ညွှန်း (၂) ပါစာဖြင့် သဘောထားမှတ်ချက် ပြန်ကြားခဲ့ရာ ပြန်လည်ပြုစုရေးဆွဲထားသည့် Scoping အစီရင်ခံစာအား ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်း (၃) ပါစာဖြင့် ပြန်လည်ပေးပို့လာပါသည်။

၂။ ပြန်လည်တင်ပြလာသည့် Temporary Power Plant စီမံကိန်း၏ Scoping အစီရင်ခံစာသည် သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနမှ ပြန်ကြားခဲ့သည့် သဘောထားမှတ်ချက်နှင့်အညီ ပြင်ဆင်ဖြည့်စွက်ဖော်ပြထားသည်ကို စိစစ်တွေ့ရှိရသဖြင့် အတည်ပြုပြန်ကြားခွင့်ပြုပါရန် ပြည်ထောင်စုဝန်ကြီးရုံးသို့တင်ပြခဲ့ရာ အတည်ပြုပြန်ကြားရန် ရည်ညွှန်း (၄) ပါစာဖြင့် ညွှန်ကြားလာပါသည်။

သို့ဖြစ်ပါ၍ Dawei Power Generating Co., Ltd. မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Temporary Power Plant စီမံကိန်းနှင့်ပတ်သက်၍ ပြန်လည်တင်ပြလာသော Scoping အစီရင်ခံစာသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်ကိုက်ညီမှုရှိသဖြင့် အတည်ပြုပါကြောင်းနှင့် အောက်ဖော်ပြပါအချက်များကို အလေးထားလိုက်နာဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း ပြန်ကြားအပ်ပါသည်-

(က) Scoping အစီရင်ခံစာနှင့် အဆိုပြု Terms of Reference (TOR) နှင့်အညီ အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ခ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ သတ်မှတ်ချက်များအရ Scoping အစီရင်ခံစာနှင့် အဆိုပြု TOR နှင့်အညီ EIA အစီရင်ခံစာအား ရေးဆွဲပြုစု၍ သယံဇာတ နှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြရန်။

၃၀.၇.၂၀၁၇

(လှမောင်သိန်း)
ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကို

ပြည်ထောင်စုဝန်ကြီးရုံး၊ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

ရုံးလက်ခံ၊ မျှောစာတွဲ၊ အမှုတွဲချုပ်

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော) ၃/၁၆(ဃ)(၂၉၂ /၂၀၁၇)

ရက်စွဲ ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလ ၂၇ ရက်

အကြောင်းအရာ။ Dawei Power Generating Co., Ltd.မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Temporary Power Plant နှင့်ပတ်သက်၍ ပြန်လည်ပြင်ဆင်တင်ပြလာသော နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာ(Scoping Report)အပေါ် အတည်ပြုပြန်ကြားခွင့်ပြုရန် တင်ပြလာခြင်းကိစ္စ

ရည်ညွှန်းချက်။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ၂၀-၁-၂၀၁၇ ရက်စွဲပါ စာအမှတ်၊ အီးအိုင်အေ-၂/၂/ (၀၇၂/၂၀၁၇)

၁။ ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်း Dawei Power Generating Co., Ltd. မှ အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Temporary Power Plant နှင့်ပတ်သက်၍ ဤဝန်ကြီးဌာန၏ သဘောထားမှတ်ချက်နှင့်အညီ ပြန်လည်ပြင်ဆင်တင်ပြလာသော Scoping Report သည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် ကိုက်ညီမှုရှိသဖြင့် အတည်ပြုနိုင်ပါကြောင်းနှင့် အတည်ပြုပြန်ကြားရာတွင် လိုက်နာဆောင်ရွက်ရမည့်အချက်များ ထည့်သွင်းဖော်ပြ၍ သက်ဆိုင်ရာသို့ ဆက်လက်ပြန်ကြားနိုင်ရေးအတွက် ရည်ညွှန်းပါစာဖြင့် တင်ပြလာခြင်းအပေါ် ပြည်ထောင်စုဝန်ကြီးက **“ ECD ပြန်ကြားရန် ”** ဟု မိန့်မှတ်ချက်ပြုထားပါသည်။

၂။ သို့ဖြစ်ပါ၍ အထက်ပါပြည်ထောင်စုဝန်ကြီး၏ မိန့်မှတ်ချက်နှင့်အညီ သက်ဆိုင်ရာသို့ ပြန်ကြားနိုင်ရေးအတွက် လိုအပ်သလိုဆက်လက်ဆောင်ရွက်နိုင်ပါရန် အကြောင်းကြားအပ်ပါသည်။

27/1/2017

ပြည်ထောင်စုဝန်ကြီး(ကိုယ်စား)

(ဝင်းဇော်၊ ဒုတိယအမြဲတမ်းအတွင်းဝန်)

ညွှန်ကြားရေးမှူးချုပ်

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

The Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

No: (Forest) 3 (2)/16(D) (3438/2017)

Date: 25th October, 2017

To

Dawei Special Economic Zone Committee

Subject: Matter about submitting to reply the confirmation for Environmental Impact Assessment Report of 15 MW temporary Power Plant Project which plan to implement at DSEZ Initial Phase

Reference: Letter No. U Nya Ma-Hta Wa-1/ DSEZ/ 2015, dated on 31-12- 2015 by DSEZ Management Committee

1. There was resubmitting the Final Revised Environmental Impact Assessment Report with complete response of review team members comments of DPG Co., Ltd for Temporary 15 MW Power Plant Project, which plan to implement at DSEZ Initial Phase. In accordance with the resubmitting final revised Environmental Impact Assessment Report which is match with Environmental Impact Assessment Procedure (Paragraph 63). Therefore, Ministry of Natural Resources and Environment Conservation is approved and project developer needs to support the following during the project develop:

   (a) Project developer needs to implement the mitigation measure of Environmental, Social and Health impact, EMP and sub-plan of EMP, Monitoring plan which are described in EIA report.

   (b) Project developer needs to establish the committees which need to control the implementation of EMP and sub-EMP, control budget for monitoring plan.

   (c) Need to follow Environmental Conservation Law (2012), Environmental Conservation Rules (2014), Environmental Impact Assessment Procedure (2015), and National Environmental Quality (Emission) Guidelines (2015)

   (d) Project developer must completely implement EMP and commitments. Moreover, project developer has responsibility to control both contractor and sub-contractor has to follow every related laws, rules, procedures, EMP and etc during project implementation.

   (e) In EIA report, commitments for project developer, Section 3.1, Section 3.2.1, Section 3.2.2, Section 3.2.2 (Topic A), Section 3.2.2 (Topic B), Section 3.2.4, Section 3.4.1, Section 3.4.2, Table 3.4-1, Section 3.5.1, Table 3.6-1 must follow.

   (f) Need to follow Environmental, Health and Safety General Guidelines (2007), Environmental, Health and Safety General Guidelines for Thermal

Power Plants (2008) and Performance Standard on Environmental and Social Sustainability (2012) of IFC.

(g) Base on Section 4.1.1, 15 MW Power Plant must be removed when Boil-off Power Plant starts run.

(h) Fugitive Dust emission should not be exceed 230 $\mu g/m^3$ of World Bank Ambient Air Quality Standard.

(i) Gas Emission standard needs to follow IFC 2008 EHS Guideline for thermal power plant.

(j) For noise emission, need to follow IFCA 2007 General EHS Guideline and need to cover with 3 meters Metal Steel Fence.

(k) For Hazardous Waste, Hazardous Waste Contractor with License should collect to dispose.

(l) Base on commitment, liquid waste must separate and carry back to Thailand for treatment. Hazardous waste disposal from liquid waste should not deposit in project compound.

(m) Air quality from pre-construction and construction activities should mitigate by water spraying and should limit not to exceed 40 kilometers for transportation vehicles.

(n) If any ancient object found in project area, project developer must inform administration office of nearest ward.

(o) Corporate Social Responsibility need to implement.

(p) Need to connect continuously with stakeholders. Need to emphasis their comments and suggestion and need to develop the Livelihood Restoration Plan.

(q) Project developer needs to announce the EIA report which already received approval from government to stakeholders.

(r) Translated summary EIA report should distribute to administration office of nearest villages and general administration office of nearest townships.

(r) To solve the conflict, detail information of Grievance Mechanism such as contact person name, phone number and address must be distributed to administration office of nearest villages and townships around project area.

(s) Project developer and third party must sign completely in commitment which described in EIA report. Then, project developer must submit approved EIA report with complete signature report to ECD of Tanintharyi Region and head office of ECD Naypyitaw.

(t) Project developer must submit Monitoring Report to ECD in every (6) months.

Signature

Behalf of Union Minister
Win Zaw, Vice Permanent
Secretary

Cc to;

- Director
- Environmental Conservation Department

The Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation
Environmental Conservation Department
Office No (53), Nay Pyi Taw

Letter No – EIA- 2/2/ (135/ 2017)

Date – January 30th, 2017

Chairman
DSEZ Management Committee

Subject: **Matter about the replying of confirmation for Scoping Report of re-submission in accordance with Temporary Power Plant Project which plan to implement at DSEZ Initial Phase, by Dawei Power Generating Co. Ltd**

Reference:

1. Letter No. Hta Wa – 1/ DSEZ/ 2015 (223), dated on 30-11-2015 by DSEZ Management Committee

2. Letter No. 3(2)/ 16 (D) (6)/ (3576/2015), dated on 14-12-2015 by this Ministry

3. Letter No. Hta Wa – 1/ DSEZ- 4/ 2016 (033), dated on 1-2-2016 by DSEZ Management Committee

4. Letter No. (Forest) 3/ 16 (D) (292/ 2017), dated on 27-1-2017 by Union Minister Office, Ministry of Natural Resources and Environmental Conservation

1. As per aforesaid subject, there was submitting the Scoping Report of resubmission of Dawei Power Generating Co. Ltd for Temporary Power Plant Project, which plan to implement at DSEZ Initial Phase, together with reference letter (1) by DSEZ Management Committee, and Ministry of Natural Resources and Environmental Conservation replied the comment for that submission with reference letter (2). DSEZ Management Committee, therefore, resubmitted the Scoping Report, after complying, with reference letter (3), again.

2. In accordance with the proposed Project, resubmitted Scoping Report of Temporary Power Plant Project was conformed to the comment of Ministry of Natural Resources and Environmental Conservation after analyzing the amendment, and continuously submitted to Union Minister Office for confirmation, and it was instructed to reply the confirmation with reference letter (4).

3. Therefore, we would like to inform as confirm the Scoping Report of resubmission according to the Temporary Power Plant Project which plan to implement at DSEZ Initial Phase by Dawei Power Generating Co. Ltd, because of in line with the EIA Procedure and inform to emphasize the following:

   a. To implement the Scoping Report in line with the Terms of Reference (TOR)

   b. To submit the EIA report, after preparing with proposed TOR and specifications of EIA Procedure, to Ministry of Natural Resources and Environmental Conservation

Signature

Hla Maung Thein
Director General

Cc to;

- Union Minister Office, Ministry of Natural Resources and Environmental Conservation
- Office record/ Delivered to/ Cases Master File

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

Letter No – (Forest) 3/ 16 (D) (292/ 2017)

Date – January 27th, 2017

Subject: **Matter about submitting to reply the confirmation for Scoping Report of resubmission for Temporary Power Plant Project which plan to implement at DSEZ Initial Phase, by Dawei Power Generating Co. Ltd**

Reference: **1. Letter No. EIA- 2/2/ (072/ 2017), dated on 20-1-2017 by Environmental Conservation Department**

1. There is able to reply as confirm for Scoping Report of resubmission of Temporary Power Plant Project, which plan to implement at DSEZ Initial Phase, by Dawei Power Generating Co. Ltd according to the comment of Ministry, because of in line with EIA Procedures, and Union Minister noted as **"to reply ECD"** for the submission with reference letter to reply continuously after inserting the some points to comply, when reply the confirmation.

2. Therefore, we would like to inform implementing as per requirements to reply to relevant in accordance with the note of Union Minister.

Signature

Behalf of Union Minister
Win Zaw, Vice Permanent Secretary

Cc to;

- Director General, Environmental Conservation Department

Dawei Power Generating Company Limited

စာအမှတ် - DPG ၀၂/၂၀၁၈

၂၀၁၈ခုနှစ် ဧပြီလ ၃၀ရက်

သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ရုံးအမှတ် (၁၉)
နေပြည်တော်၊ မြန်မာ

ရည်ညွှန်းချက်။ ဦးလှမောင်သိန်း
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

အကြောင်းအရာ။ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) တွင် အကောင်အထည်ဖော်တည်ဆောက်မည့် ၁၅မဂ္ဂါဝပ် ယာယီ ဓါတ်အားပေးစက်ရုံ စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် ပါဝင်သော) တင်ပြခြင်း

သို့
ဦးအုန်းဝင်း

Dawei Power Generating Company Limited (DPG)၏ ညွှန်ပြချက်များနှင့် TEAM Consulting Engineering and Management Co., Ltd. မှ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅ခုနှစ်၊ ဒီဇင်ဘာလ ၂၉ ရက်နေ့)နှင့်အညီ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း (ESIA) ကိုပြင်ဆင်ပြီး Dawei Power Generating Company Limited မှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန (ECD) သို့ ၂၀၁၇ခုနှစ် မေလ ၃၁ ရက်နေ့တွင် တရားဝင် တင်သွင်းခဲ့ပါသည်။.

ဤနေရာတွင် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေဝန်ကြီးဌာန (MONREC) ၏ တရားဥပဒေအရ ဘောင်ဝင်စေရန်နှင့် ဘဏ္ဍာရေးအရ ယုံကြည်စိတ်ချရန်အလို့ငှာ အောက်ပါအတိုင်း ဖော်ပြထား ပါသည်။

က။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း (ESIA) အားပြီးမြောက် မှန်ကန်ကြောင်း ထောက်ခံအတည်ပြုပါသည်။

ခ။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) သည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနံပါတ် အပါအဝင် မြန်မာနိုင်ငံ၏ ဥပဒေများနှင့်အညီ အတိအကျလိုက်နာ ပြင်ဆင်ထားကြောင်း တာဝန်ယူ အတည်ပြုခြင်းနှင့် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၆ခုနှစ် ဇန်နဝါရီလ ၂၇ရက်တွင်အသိအမှတ်ပြုခဲ့ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန(ECD) မှ အသိအမှတ်ပြုသက်သေလက်မှတ် စာအမှတ် EIA - ၂/၂ (၁၃၅/၂၀၁၇) ကို ၂၀၁၇ခုနှစ် ဖန်နဝါရီလ ၃၀ရက်တွင် ရရှိခဲ့ပါသည်။

ဂ။ ယခုစီမံကိန်းသည် Dawei Power Generating Company Limited မှ အကောင်အထည် ဖော်သော ၁၅ မဂ္ဂါဝပ် ယာယီ ဓါတ်အားပေးစက်ရုံ စီမံကိန်းဖြစ်ပြီး (က) EIA တွင် ပါဝင်ရမည့် ကတိကဝတ်များနှင့် တာဝန်ဝတ္တရားများ (ခ) အစီအစဉ်အားလုံးနှင့် အမျိုးမျိုးသော အစိတ် အပိုင်းများအတွက် အကန့်အသတ်မဲ့ခြင်း၊ ထိခိုက်မှုရှောင်ရှားခြင်း၊ လျှော့ချခြင်းနှင့် ပြန်လည် ကုစားမှုနည်းလမ်းများပါဝင်ကြောင်းကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC)မှ တာဝန်ယူ အတည်ပြုပြီး စီမံကိန်းဖွံ့ဖြိုးတိုးတက်ရေး၊ တည်ဆောက်ရေး၊ လုပ်ငန်းအပ်နှံရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် စီမံကိန်း ထိန်းသိမ်းမှုများအတွက် ကတိကဝတ်များ၊ တာဝန်ယူမှုများ၊ အစီအစဉ်များနှင့် နည်းလမ်းများအား ဆောင်ရွက်ရန် ကန်ထရိုက်တာ၊ ဆပ်ကန်ထရိုက်တာ သို့မဟုတ် အခြားသော အဖွဲ့အစည်းအား ဆောင်ရွက်စေပါမည်။

ဃ။ ကျရှုံးမှားယွင်းမှုများ ဖြစ်ပေါ်ခဲ့ပါက သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) သို့ ငွေကြေးပေးလျော်ခြင်းနှင့် ဥပဒေ သို့မဟုတ် စီမံကိန်း၏ လိုက်လျော သဘော တူညီမှု နှင့် ၎င်း၏ နောက်ဆက်တွဲများအတွက် ပြစ်ဒဏ်ပေးလျော်ခြင်း တို့ကို သဘောတူ လက်ခံပြီး သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC)မှ သတ်မှတ်သော ကုန်ကျစရိတ်များနှင့် သင့်တော်သော ပြုပြင်မှုများအတွက် Dawei Power Generating Company Limited မှ တာဝန်ယူ ဆောင်ရွက်သွားပါမည်။

င။ ကျရှုံးမှားယွင်းမှုများကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC)မှ ပြန်လည်ပြုပြင်ရန် ခွင့်ပြုချက်အား ကုမ္ပဏီမှ ဆောင်ရွက်ရမည်။ ခွင့်ပြုချက်၊ သဘော တူညီချက် စည်းကမ်း သတ်မှတ်ချက်များနှင့် မကိုက်ညီပါက မြန်မာနိုင်ငံအစိုးရ၏ အခြားသော သတ်မှတ်ချက်အတိုင်း ကုစားရမည် ဖြစ်ပါသည်။

ယခုအတည်ပြုချက် နှင့် လိုအပ်သော တာဝန်ယူမှုအားလုံးကို ပူပေါင်းတာဝန်ယူလုပ်ဆောင်ခဲ့ကာ Dawei Power Generating Company Limited မှ တာဝန်ယူလုပ်ပိုင်ခွင့်ရထားပြီး လက်မှတ်ရေးထိုးခွင့် ခွင့်ပြုချက်ပေးအပ်သော ရေ့နေ၏ အာဏာနှင့် အောက်ဖော်ပြရာနေရာတွင် တာဝန်ရှိသူတစ်ဦးမှ အတိအလင်း လက်မှတ်ရေးထိုးလိုက်ပါသည်။

....

မှ Dawei Power Generating Company Limited

အမည် Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

Dawei Power Generating Company Limited

Reference No. DPG 02 / 2018

30th April 2018

Ministry of Natural Resource and Environmental Conservation
Office No. (19)
Nay Pyi Taw, Myanmar

Attn: U Hla Maung Thein

Environmental Conservation Department

Re: Environmental and Social Impact Assessment Report in respect of the 15 MW Temporary Power Plant Project (the "ESIA including EMP")

Dear U Ohn Win,

We refer to the captioned ESIA, which was prepared and finalized by TEAM Consulting Engineering and Management Co., Ltd. in accordance with the Environmental Impact Assessment Procedure (29th December 2015) under the instructions of Dawei Power Generating Company Limited (DPG) and formally submitted by Dawei Power Generating Company Limited to Environmental Conservation Department (ECD) under letter dated 31th May 2017.

Intending to be legally bound hereby and financially liable to Ministry of Natural Resources and Environmental Conservation/MONREC hereunder, we:

a. Endorse and confirm to Ministry of Natural Resources and Environmental Conservation/MONREC the accuracy and completeness of the ESIA,

b. Confirm and undertake to Ministry of Natural Resource and Environmental Conservation/ MONREC that the ESIA has been prepared in strict compliance with applicable Myanmar law, including EIA Procedures (2015) and with the Scoping Report / Terms of Reference dated 27th January 2016 as approved by Ministry of Natural Resources and Environmental Conservation/MONREC on 30th January 2017 as evidenced by EIA-2/2 (135/2017), and

c. Confirm and undertake to Ministry of Natural Resources and Environmental Conservation / MONREC that the project company established by Dawei Power Generating Company Limited in respect of the 15 MW Temporary Power Plant project shall at all times comply fully with: (i) any and all commitments and obligations as set forth in the EIA, and (ii) any and all plans and the various components thereof, including without limitation, impact avoidance, mitigation, and remediation measures, and with respect to both (i) and (ii), including but not limited to such commitments, obligations, plans and measures as relate to the development, construction, commissioning, operation and maintenance of the project, and any circumstance in which work done or to be done, or services performed or to be performed, in connection with the project's

development, construction, commissioning, operation and maintenance is carried out or intended or required to be carried out by any contractor, subcontractor or other party.

d. We acknowledge and agree that any failure to so comply shall subject us to liability for breach of this undertaking and that, in addition to making financial compensation to Ministry of Natural Resources and Environmental Conservation/ MONREC and payment of any applicable penalties under the law or under the project's concession agreement and its appendixes, Dawei Power Generating Company Limited shall be responsible to Ministry of Natural Resources and Environmental Conservation /MONREC to carry out and bear all costs of the immediate and proper rectification of the event of non-compliance and any effects thereof.

e. We acknowledge and agree, further, that any failure to so comply may be treated by Ministry of Natural Resources and Environmental Conservation/MONREC as a breach by the project company under the concession agreement which, if not rectified in accordance with the terms and conditions of the concession agreement, may lead to termination or other due exercise by the GOVERNMENT OF MYANMAR of remedies available to it thereunder.

The issuance of this confirmation and undertaking has been duly authorized by all necessary corporate actions and a copy of the resolution of the Dawei Power Generating Company Limited authorizing it and the power of attorney explicitly granting signing authorization to the individual who has signed below are attached as schedules hereto.

....

By: Dawei Power Generating Company Limited

Name: Poawpadet Vorabutr

Title: Director

၁၅ မဂ္ဂါဝပ် ယာယီ ဓါတ်အားပေးစက်ရုံ စီမံကိန်း

စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှု ဆန်းစစ်ခြင်း (ESIA) အတွက် အဓိက ကတိကဝတ်များ

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
<u>ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ</u>	
အခန်း (၃) မူဝါဒ၊ ဥပဒေဆိုင်ရာနှင့် ဖွဲ့စည်းဆောင်ရွက်ပုံဆိုင်ရာ လေ့လာသုံးသပ်ချက်	
အပိုင်း ၃.၁ - ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ မူဝါဒများ ပေါင်းစပ်ခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် တည်ဆောက်ဆဲကာလနှင့် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ များ တွင်ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုများအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ မူဝါဒများကို လမ်းညွှန်သွားရမည် ဖြစ်ပါသည်။ ပေါ်လစီများတွင် ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) ဖွံ့ဖြိုးတိုးတက်မှုလုပ်ဆောင်ချက်များအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုများ အနေဖြင့် Myandawei Industrial Estate (MIE) Company Limited မှ မွေးစားထားသော ပေါ်လစီများပါဝင်သည်။
အပိုင်း ၃.၂.၁ - ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အခြေခံများအတွက် ပေါ်လစီနှင့် ဥပဒေဆိုင်ရာ မူဘောင်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ပေါ်လစီ (၁၉၉၄)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)နှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄) တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၂ - ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့် စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊ နှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၃ (ခေါင်းစဉ် က) - လူမှုရေး ထိခိုက်မှု စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • ပြည်သူ့ကျန်းမာရေး ဥပဒေ (၁၉၇၂) • အလုပ်ရုံအက်ဥပဒေ (၁၉၅၁) • လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂) - အပိုဒ် ၁၅၊ ၁၆၊ ၁၈ (က) (ခ)၊ ၄၈ (က)၊ ၅၁၊ ၅၃၊ ၅၄၊ ၇၅ • အလုပ်သမားအဖွဲ့အစည်းဥပဒေ (၂၀၁၁) • အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေး ဥပဒေ (၂၀၁၂) • အခကြေးငွေ ပေးချေရေး ဥပဒေ (၂၀၁၆) - အပိုဒ် ၄၊ ၇၊ ၈၊ ၉၊ ၁၀၊ ၁၁ • အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ (၂၀၁၃) - အပိုဒ် ၅၊ ၁၄ နှင့် ၃၀ • ခွင့်နှင့်အလုပ်ပိတ်ရက်များ အက်ဥပဒေ (၁၉၅၁) • အလုပ်သမားလျော်ကြေးအက်ဥပဒေ (၁၉၂၃) • အနည်းဆုံးအခကြေးငွေ ဥပဒေ (၂၀၁၃) - အပိုဒ် ၁၂၊ ၁၃ နှင့် ၁၈ • မြန်မာ့အာမခံလုပ်ငန်း ဥပဒေ (၁၉၉၃) အပိုဒ် ၁၆ • ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈) • ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂, • ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂၊ ၁၅ နှင့် ၂၀ (စ) • တိုင်းရင်းသားလူမျိုးများ အကျိုးစီးပွား ကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၅ • ကူးစက်ရောဂါများ ကာကွယ်နှိမ်နင်းရေးဥပဒေ (၁၉၉၅) - အပိုဒ် ၅၊ ၈၊ ၉

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	• ဆေးလိပ်နှင့် ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှု ထိန်းချုပ်ရေးဥပဒေ (၂၀၀၆) - အပိုဒ် ၉ • လျှပ်စစ်ဥပဒေ (၂၀၁၄) - အပိုဒ် ၁၈၊ ၂၀၊ ၂၄၊ ၂၆၊ ၄၀၊ ၆၈ • မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆) - အပိုဒ် ၅၀ (က) (ဃ)၊ ၅၁ (ခ) (ဂ) (ဃ)၊ ၆၅ (ဆ) (ဈ) (ည) (ဋ) (ဌ) (ဍ) (ဏ) (တ) (ထ) • ရေနံအက်ဥပဒေ (၁၉၃၄) • ရေနံနည်းဥပဒေ (၁၉၃၇) - အခန်း ၃ နှင့် ၄ • မော်တော်ကား ဥပဒေ (၂၀၁၅) • မော်တော်ကား နည်းဥပဒေ (၁၉၈၇) • ပို့ကုန်သွင်းကုန် ဥပဒေ (၂၀၁၂) - အပိုဒ် ၆၊ ၇ • မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃) နှင့် • မြန်မာနိုင်ငံ မီးသတ်တပ်ဖွဲ့ဥပဒေ (၂၀၁၅) - အပိုဒ် ၂၅ တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၃ (ခေါင်းစဉ် ခ) - ပတ်ဝန်းကျင်ကာကွယ်ရေး ထိနိုက်မှု စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ပေါ်လစီ (၁၉၉၄), • ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) • ပတ်ဝန်းကျင် ထိန်းသိမ်း ရေး နည်းဥပဒေ (၂၀၁၄) • သစ်တော ဥပဒေ (၁၉၉၂) အပိုဒ် ၁၂ • တောရိုင်းတိရစ္ဆာန်ကာကွယ်ရေးနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၄) • ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများ ထိန်းသိမ်းရေး ဥပဒေ (၂၀၀၆) - အပိုဒ် ၈၊ ၁၁ (က)၊ ၁၉ တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၄ - စီမံကိန်းနေရာ အတွက်သီးသန့် ဥပဒေ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ၁၅ မဂ္ဂါဝပ် ယာယီဓါတ်အားပေးစက်ရုံ စီမံကိန်းအတွက် အဓိက ဥပဒေ (၂)ခု ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • မြန်မာနိုင်ငံ အထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၄) - အပိုဒ် ၁၁ (စ) (တ)၊ ၃၅၊ ၇၄၊ ၇၅၊ ၇၆၊ ၇၇၊ ၇၈၊ ၈၀ (က) (ခ) • ထားဝယ်အထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၁) တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၃ - အပြည်ပြည်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ စာချုပ်များနှင့် သဘောတူညီချက်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • အရှေ့တောင်အာရှနှင့် ပစိဖိတ်ဒေသများအတွက် ဓါတ်အားပေးစက်ရုံ ကာကွယ်ရေး သဘောတူညီချက်၊ ရောမ၊ ၁၉၅၆ခုနှစ် • ကုလသမဂ္ဂ ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ညီလာခံ (UNFCCC)၊ နယူးယောက်၊ ၁၉၉၂ခုနှစ် • ဇီဝမျိုးကွဲများဆိုင်ရာ ညီလာခံ၊ ရီယိုဒီ ဂျနေရိုး၊ ၁၉၉၂ခုနှစ် • ကမ္ဘာ့ယဉ်ကျေးမှုနှင့် သဘာဝ အမွေအနှစ်များ ကာကွယ်ခြင်းညီလာခံ၊ ပဲရစ်(စ်)၊ ၁၉၇၂ • သဘာဝပတ်ဝန်းကျင်နှင့် သဘာဝအရင်းအမြစ်များ ထိန်းသိမ်းရေး အာဆီယံ (ASEAN) သဘောတူညီမှု ၊ ကွာလာလမ်ပူ၊ ၁၉၈၅ • ကာတာဂျီနာ (Catagena) ဇီဝလုံခြုံမှု သဘောတူညီမှုစာချုပ် ကာတာဂျီနာ၊ ၂၀၀၀ ခုနှစ် နှင့် • ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ကျိုတိုသဘောတူညီမှု ၊ ကျိုတို၊ ၁၉၉၇ ခုနှစ်တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၄.၁ - အမျိုးသားဆိုင်ရာ နှင့် ကဏ္ဍအဆင့်အလိုက် အစီအစဉ်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်း ရေးဦးစီးဌာန (ECD) မှ ထုတ်ပြန်ထားသော ပတ်ဝန်းကျင် ထိန်းသိမ်းစောင့်ရှောက် ရေး ကော်မတီ (ENCC) ကို လိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
အပိုင်း ၃.၄.၂ - စီမံကိန်းနေရာ၏ အစီအစဉ်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် မြန်မာနိုင်ငံ၏၏ ဒေသအုပ်ချုပ်ရေး ဖွဲ့စည်းပုံ နှင့် ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှု ကော်မတီ တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
ဇယား ၃.၄-၁ - ထားဝယ်အထူးစီးပွားရေးဇုန်၏ သက်ဆိုင်ရာ ဌာနဆိုင်ရာများ၏ ကဏ္ဍများနှင့် တာဝန်ယူမှုများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • အကောက်ခွန် ဦးစီးဌာန • ဖွံ့ဖြိုးတိုးတက်မှုရေးရာ ဦးစီးဌာန • အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန • လူထုအခြေချခြင်းနှင့် အိုးအိမ် ဦးစီးဌာန • ရင်းနှီးမြှုပ်နှံခြင်းနှင့် ကုမ္ပဏီအုပ်ချုပ်ရေး ဦးစီးဌာန • လူဝင်မှုကြီးကြပ်ရေးနှင့် အမျိုးသားမှတ်ပုံတင် ဦးစီးဌာန • အလုပ်သမား ဦးစီးဌာန • ဥပဒေ၊ တရားရုံးနှင့် တရားမျှတမှု ဦးစီးဌာန • မြို့တော်စည်ပင် ဦးစီးဌာန • လမ်းပန်းဆက်သွယ်ရေး ဦးစီးဌာန • ကုန်သွယ်ရေး ညွှန်ကြားမှု ဦးစီးဌာန • မြန်မာနိုင်ငံ ရဲတပ်ဖွဲ့ • တနင်္သာရီတိုင်းဒေသကြီး၏ ကိုယ်စားပြုအဖွဲ့အစည်းတို့ဖြစ်ပါသည်။
အပိုင်း ၃.၅.၁ - IFC ၏ စံနှုန်းနှင့် လမ်းညွှန်ချက်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လမ်းညွှန်ချက်များ၊ ၂၀၀၇ခုနှစ် ဧပြီလ ၃၀ရက် • အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံများအတွက် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လမ်းညွှန်ချက်များ (၂၀၀၈ခုနှစ် ဒီဇင်ဘာလ ၁၉ရက်) • ပတ်ဝန်းကျင်နှင့် လူမှုရေးရေရှည်တည်တံ့မှုဆိုင်ရာ လုပ်ဆောင်မှု စံနှုန်းများ၊ ၂၀၁၂ခုနှစ် ဇန်နဝါရီလ ၁ရက် တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၆-၁ သက်ဆိုင်ရာ အပြည်ပြည်ဆိုင်ရာ ပတ်ဝန်းကျင် လမ်းညွှန်ချက်များနှင့် စံနှုန်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို စီမံခန့်ခွဲပြီး ထိခိုက်မှုများကို ထိန်းချုပ်သွားမည် ဖြစ်ပါသည်။ • ပတ်ဝန်းကျင်လေထု အရည်အသွေး • ပတ်ဝန်းကျင်ဆူညံသံ အဆင့်များ • မြေအောက်ရေ အရည်အသွေး • အပူစွမ်းအင်စီးဆင်းခြင်း တို့ဖြစ်ပါသည်။
အခန်း (၄) - စီမံကိန်းဖော်ပြချက်နှင့် အခြားသော ရွေးချယ်နည်းလမ်းများ	
အပိုင်း ၄.၁.၁ - စီမံကိန်း ဖော်ပြချက်	• ထားဝယ်အထူးစီးပွားရေးဇုန်၏ စက်မှုဇုန်နေရာ ITD လမ်းမကြီး၏ ကီလိုမီတာ ၁၇ နေရာတွင်ရှိသော ၆.၂၅ ဧက ကျယ်ဝန်းသော ကွင်းပြင်တွင် အဆိုပြု ၁၅ မဂ္ဂါဝပ် ယာယီ ဓါတ်အားပေးစက်ရုံကို တည်ဆောက်သွားမည် ဖြစ်ပါသည်။ • စီမံကိန်းကို ဓါတ်အားထုတ်လုပ်ရေးနှင့် ဓါတ်ငွေ့ဖြန့်ဖြူးရေး ကိရိယာများဖြင့် ဖွဲ့စည်းထားပါသည်။ ဓါတ်အားထုတ်လုပ်မှုစွမ်းအားသည် အင်ဂျင်မီးစက်တစ်ခုလျှင် တစ်မဂ္ဂါဝပ်ရှိပြီး ၁၅လုံးဖြင့် စုစုပေါင်း ၁၅ မဂ္ဂါဝပ်ထုတ်လုပ်မည် ဖြစ်ပါသည်။ ဓါတ်ငွေ့ဖြန့်ဖြူးမှုအဆောက်အဦးတွင် ၄၅ ကုဗမီတာရှိသော LNG သိုလှောင်ကန်များပါဝင်ပြီး လေထုအငွေ့ထုတ်စက်နှင့် တွန်းပြီး LNG ကို ပေးပို့ပါသည်။ • ၄င်း ဓါတ်အားပေးစက်ရုံသည် သဘာဝဓါတ်ငွေ့ဖြင့်သာလည်ပတ်ပြီး ဒီဇယ်လောင်စာဆီ အသုံးပြုခြင်းမရှိပါ။ • ဤဓါတ်အားပေးစက်ရုံသည် ထားဝယ်အထူးစီးပွားရေးဇုန်၏ တည်ဆောက်မှု

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ကာလအတွက် လျှပ်စစ်ဓါတ်အားထောက်ပံ့ပေးရန်နှင့် ၎င်းကို အပူဓါတ်ငွေ့သုံး ဓါတ်အားပေးစက်ရုံစတင်လည်ပတ်လျှင် ဖယ်ရှားသွားမည် ဖြစ်ပါသည်။
အခန်း (၆) - ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းနှင့် လျော့ချရေးနည်းလမ်းများ	
အပိုင်း ၆.၂ - အကြိုတည်ဆောက်ရေးကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဂေဟစနစ်များ၊ ကျေးရွာသူ/သားများ၏ အသက်မွေးဝမ်းကြောင်း၊ ဖုန်မှုန့်၊ ဆူညံသံနှင့် ဓါတ်ငွေ့ ထွက်ရှိမှုများအတွက် ထိခိုက်မှု လျော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>ဂေဟစနစ်များ</u> စီမံကိန်းရှင်းလင်းမှု မပြုလုပ်ခင်တွင် ပန်းမန်နှင့် သတ္တဝါမျိုးစိတ်များကို စစ်တမ်းကောက်ခံပြီး မျိုးသုဉ်းအန္တရာယ်ကျရောက်နေသော မျိုးစိတ်များပါဝင်ခဲ့ပါက ၎င်းတို့ကို ထိန်းသိမ်းဧရိယာသို့ ပို့ဆောင်သွားရမည် ဖြစ်ပါသည်။ စီမံကိန်းနေရာ ပတ်လည်တွင် စိမ်းလန်းသောကြားခံဇုန်ကို အကောင်အထည်ဖော် ဆောင်ရွက် သွားမည် ဖြစ်ပါသည်။ သစ်ပင်ခုတ်ခြင်းကို တတ်နိုင်သမျှနည်းအောင် ဆောင်ရွက် သွားမည် ဖြစ်ပြီး စီမံကိန်းမန်နေဂျာ၏ ခွင့်ပြုချက်မပါပဲ ခုတ်ထွင်ရှင်းလင်းခြင်း မပြု လုပ်ရပါ။ <u>ဇီဝအမှိုက် စွန့်ပစ်ခြင်း</u> ဇီဝအမှိုက်များတွင် သစ်ပင် ပင်စည်များ၊ အကိုင်း၊ အခက်၊ အလက်နှင့် သစ်ရွက်များ ပါဝင်ပါသည်။ ၎င်းတို့ကို ဆောက်လုပ်ရေးတွင်ပြန်လည်အသုံးပြုခြင်း၊ မီးသွေးဖုတ်ခြင်းနှင့် ထင်းအဖြစ်အသုံးပြုခြင်းတို့ကို ပြုလုပ်အသုံးပြုသွားပါမည်။ ပြန်လည်အသုံးပြု၍မရသော အမှိုက်များကို အရွယ်အစားသေးငယ်အောင် ဖြတ်တောက်၍ စီမံကိန်း၏ သတ်မှတ်ထားသော အမှိုက်ပုံတွင် စွန့်ပစ်ရပါမည်။ မီးရှို့ခြင်းမပြုလုပ်ရပါ။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်တွင် ဇီဝအမှိုက်ဖယ်ရှားမှု အစီစဉ်ခွဲတစ်ခု ထည့်သွင်းဖော်ပြထားပါသည်။ <u>ကျေးရွာသူ/သားများ၏ အသက်မွေးဝမ်းကြောင်း</u> စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဒေသခံများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များနှင့်ပူပေါင်းကာ ထိခိုက်ခံစားရသူများအတွက် အသက်မွေးဝမ်းကြောင်း ပြန်လည်ထူထောင်ရေး အစီအစဉ် (LRP) ကို အကောင်အထည်ဖော်သွားမည် ဖြစ်ပါသည်။ LRP တွင် ထိခိုက်ခံစားရသူများ၏ လက်ရှိစီးပွားရေးလုပ်ကိုင်မှုများ သို့မဟုတ် စိုက်ပျိုးရေးနည်းလမ်းများ၊ ထုတ်ကုန်ဖွံ့ဖြိုးရေး၊ စီးပွားရေးနှင့် တာရှည်ခံအစားအသောက်များထုတ်လုပ်ခြင်း စသော အလုပ်အကိုင်ဖန်တီးမှုအသစ်များ၊ လေ့ကျင့်ပေးမှုများကို ထောက်ပံ့ပေးပါမည်။ <u>ဖုန်မှုန့်</u> ဖုန်မှုန့်ထွက်ရှိမှုတွင် TSP သည် ၂၃၀ µg/m³ (ကမ္ဘာ့ဘဏ်၏ ပတ်ဝန်းကျင်လေထုအရည်အသွေး စံနှုန်း) ထက်မကျော်လွန်စေရန် ထိန်းချုပ်သွားမည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နှင့် လမ်းကို ရေဖြန်းခြင်းအားဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကို လျော့ချနိုင်မည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နှင့် လမ်းမပေါ်တွင် ယာဉ်သွားလာမှု အရှိန်ကို တစ်နာရီလျှင် ကီလိုမီတာ (၄၀) ထက်မပိုစေရန် ကန့်သတ်ထားရပါမည်။ <u>ဆူညံသံ</u> ဆောက်လုပ်ရေးဆူညံသံ ထွက်ပေါ်မှုသည် ပတ်ဝန်းကျင်ဆူညံသံအဆင့်တွင် တစ်နာရီတွင် ၃ dB (A) (IFC စံနှုန်း) ထက်ကျော်လွန်ခြင်းမရှိအောင် ထိန်းချုပ်ရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ဆူညံမှုကို ယာယီအသံကာများ ကာကွယ်ခြင်း စသော စီမံခန့်ခွဲမှုများ ပြုလုပ်သွားပါမည်။ ဆူညံသော လုပ်ငန်းခွင်တွင် လုပ်ကိုင်နေ

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	သောအလုပ်သမားများအတွက် နားအကာအကွယ်များ ထောက်ပံ့ပေးသွားမည် ဖြစ်ပါသည်။
အပိုင်း ၆.၃ - တည်ဆောက်ဆဲကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဓါတ်ငွေ့ထုတ်လွှတ်မှုများ၊ ဆူညံသံ၊ ရေဆိုး၊ လမ်းပန်းဆက်သွယ်ရေးနှင့် ဒေသခံများအတွက် လျော့ချရေနည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>ဓါတ်ငွေ့ထုတ်လွှတ်မှုများ</u> EPC ကန်ထရိုက်တာသည် ဓါတ်ငွေ့ထုတ်လွှတ်မှုအရင်းအမြစ်အတွက် အကောင်းမွန်ဆုံး လုပ်ဆောင်မှုများကို လုပ်ကိုင်ရန်လိုအပ်ပါသည်။ ဓါတ်ငွေ့ထုတ်လွှတ်မှုနည်းသော နည်းပညာဖြင့်ပြုလုပ်ထားသော အင်ဂျင်ကို အသုံးပြုပြီး ဆောက်လုပ်ရေး ကိရိယာများ၏ ထုတ်လုပ်သူမှညွှန်ကြားထားသော ထိန်းသိမ်းမှုပြုလုပ်ရမည့် အခြေအနေများအတိုင်းပုံမှန်ထိန်းသိမ်းခြင်းများ ပြုလုပ်သွားပါမည်။ <u>ဆူညံသံ</u> ကျယ်လောင်သော ဆူညံသံထွက်ပေါ်မည့် ဆောက်လုပ်ရေး အဓိကလုပ်ဆောင်မှုများကို နေ့အချိန်တွင်သာ ဆောင်ရွက်ရန် သတ်မှတ်ထား ရပါမည်။ အကယ်၍ ညအချိန်တွင် လုပ်ငန်းလုပ်ဆောင်မှုများ ပြုလုပ်ရန် လိုအပ်ခဲ့ပါက စီမံကိန်း အင်ဂျင်နီယာ၏ ခွင့်ပြုချက်ရမှသာ လုပ်ဆောင်ပြီး လုံလောက်သော အသံထိန်းချုပ်မှု ကိရိယာများ သို့မဟုတ် နည်းလမ်းများ ရှိရန် လိုအပ်ပါသည်။ ဆောက်လုပ်ရေး လုပ်ငန်းသုံး ကိရိယာများ၏ ဆူညံသံကို စာချုပ်တွင် ရှင်းလင်းစွာ ဖော်ပြရန် လိုအပ်ပါသည်။ EPC ကန်ထရိုက်တာသည် ထိခိုက်ခံစားရသောနေရာ (ဥပမာ - ပဂေါ်ဒွန်ကျေးရွာ) တွင်ဆူညံသံအတွက် ပုံမှန်တိုင်းတာ စစ်ဆေးခြင်းများ ပြုလုပ်ရပါမည်။ အထူးသဖြင့် ဆူညံသံထွက်ပေါ်သည့်ကာလနှင့် စီမံကိန်း ကိရိယာများတပ်ဆင်ချိန်တွင် ထိခိုက်ခံစားရသောနေရာ၏ ဆူညံသံအဆင့်သည် မြန်မာနိုင်ငံ၏ ၂၀၁၅ခုနှစ်တွင် ထုတ်ပြန်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များတွင်ပါရှိသော ဆူညံသံအဆင့် အရည်သွေးစံနှုန်း (နေ့အချိန်တွင် ၅၅ dB နှင့် ညအချိန်တွင် ၄၅ dB) နှင့် ကိုက်ညီရန်လိုအပ်ပါသည်။ အကယ်၍ ဆူညံသံအဆင့်သည် စံနှုန်း သို့မဟုတ် လက်ရှိ အခြေအနေထက်ကျော်လွန်ခြင်းကြောင့် ကျေးရွာလူထုမှ တိုင်ကြားမှုများ ဖြစ်ပေါ်လာလျှင် စီမံကိန်း အကောင်အထည်ဖော်သူမှ ဒေသခံများအား ဆူညံသံ လျော့ကျစေရန် ယာယီအသံကာတံတိုင်းများကို ကာရံပေး သွားမည် ဖြစ်ပါသည်။ <u>ရေဆိုး</u> မိလ္လာရေဆိုးနှင့် ဆေးကြောရေများကို သင့်တော်သော သန့်စင်နည်းဖြစ်သည့် on-site မိလ္လာစနစ်ဖြင့် သန့်စင်သွားမည် ဖြစ်ပါသည်။ မိလ္လာကန်မှ ရေဆိုးများကို စုဆောင်းပြီး ကန်ထရိုက်တာ၏ ခွင့်ပြုချက်ဖြင့် ဆောက်လုပ်ရေးလုပ်ငန်းပြင်ပတွင် သန့်စင်မည် ဖြစ်ပါသည်။ သန့်စင်ခန်း(၁) ခန်းလျှင် အလုပ်သမား (၁၅)ယောက်နှုန်းဖြင့်တွက်ချက်ကာ ဆောက်လုပ်သွားမည် ဖြစ်ပါသည်။ ဆေးကြောရေများမှ မျောနေသော အစိုင်အခဲများကိုဖယ်ရှားပြီး လိုအပ်ပါက ဓါတ်ပြယ်ခြင်းများပြုလုပ်မည် ဖြစ်ပါသည်။ ထို့နောက် ထွက်ရှိလာသောရေကို အပြင်သို့ စွန့်ထုတ်ခြင်းမပြုလုပ်ပဲ စီမံကိန်းအတွင်းဖုန်မှုန့်ထွက်ရှိမှုကို လျော့နည်းအောင် ရေဖြန်းခြင်းများပြုလုပ်ရာတွင် အသုံးပြုသွားမည် ဖြစ်ပါသည်။ မိုးရေရရှိမှုကို လျော့နည်းအောင်လုပ်ဆောင်၍မရသော်လည်း စီမံကိန်းပြင်ပသို့ စီးဆင်းအောင် ပြုလုပ်ရန် လိုအပ်ပါသည်။ <u>ဆောက်လုပ်ရေးစွန့်ပစ်ပစ္စည်း</u>

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	အမှိုက်အမျိုးအစားခွဲခြင်း၊ အမှိုက်သိမ်းဆည်းခြင်းနှင့် သိုလှောင်ခြင်း၊ အမှိုက်ပြန်လည်အသုံးပြုခြင်းနှင့် ပြန်လည်အသုံးချခြင်း၊ အမှိုက်စွန့်ပစ်ခြင်းနှင့် နေရာတွင်မှတ်သားသိမ်းဆည်းခြင်း စသည်တို့ကိုလုပ်ဆောင်ခြင်းအားဖြင့် အမှိုက်ထွက်ရှိမှုကိုလျော့နည်းစေမည် ဖြစ်ပါသည်။ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းအမျိုးအစားများကို လိုင်စင်ရရှိထားသောကန်ထရိုက်တာ မှသာ ကိုင်တွယ်သိမ်းဆည်းရမည် ဖြစ်ပါသည်။ အန္တရာယ်ရှိသောစွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု စနစ်တွင် အမှိုက်အမျိုးအစားသတ်မှတ်ခြင်း၊ အမျိုးအစားခွဲခြင်း၊ စုဆောင်းခြင်း၊ သိုလှောင်ခြင်း၊ လွှဲပြောင်းခြင်းနှင့် စွန့်ပစ်ခြင်းဟူ၍ ခွဲခြားကာလုပ်ဆောင်သွားပါမည်။ အမှိုက်စွန့်ပစ်မှုစနစ်သည် အစိုးရသို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ စံနှုန်းများနှင့်အညီ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>လမ်းပန်းဆက်သွယ်ရေး</u> စီမံကိန်းသည် ဒေသလမ်းပန်းဆက်သွယ်ရေးထိခိုက်မှုနှင့် ပတ်သက်၍ အောက်ဖော်ပြပါတို့ကို စီမံခန့်ခွဲ ထိန်းချုပ်သွားမည် ဖြစ်ပါသည်။ - ယာဉ်အသွားများချိန်တွင် ကုန်ပစ္စည်းသယ်ယူပို့ဆောင်ခြင်းကို ရှောင်ရှားရပါမည်။ - ဆောက်လုပ်ရေးလုပ်ငန်းသုံးယာဉ်များအားလုံး၏ အရှိန်ကို ကန့်သတ်ထားရပါမည်။ - ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နှင့် ဒေသခံနေရာများတွင် ယာဉ်အန္တရာယ်သတိပေး ဆိုင်းဘုတ်များ တပ်ဆင်ရပါမည်။ - ကိရိယာများသယ်ယူပို့ဆောင်ရေးအတွက် ယာဉ်ကြီးများကို အသုံးပြုလျှင် ယာဉ်ထိန်းရဲကားအကူအညီဖြင့် လမ်းရှင်းလင်းကာ သယ်ဆောင်ရပါမည်။ <u>လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး</u> လက်အိတ်၊ လုပ်ငန်းခွင်ဦးထုပ်၊ မျက်မှန်နှင့် အခြားသော ကိရိယာများ၊ အလုပ်သမားများအတွက် တူညီဝတ်စုံများ ထောက်ပံ့ပေးခြင်းအားဖြင့် လုပ်ငန်းခွင် အချို့သောအန္တရာယ်ဖြစ်ပွားမှုမှ ဘေးကင်းနိုင်မည် ဖြစ်ပါသည်။ <u>ဒေသခံများအပေါ် ထိခိုက်မှု</u> အကြိုတည်ဆောက်ရေးကာလတွင် လုပ်ဆောင်သော အသက်မွေးဝမ်းကြောင်းထောက်ပံ့ပေးမှုအစီအစဉ်ကို ဆက်လုပ်လုပ်ဆောင်သွားရမည် ဖြစ်ပါသည်။ စီမံကိန်းဆောက်လုပ်ရေး လုပ်ငန်းများအပေါ် ဒေသခံများ၏ အမြင်သဘောထား၊ ပြဿနာများကို စစ်တမ်းကောက်ယူရပါမည်။ *ဒေသခံစီးပွားရေး* အလုပ်သမားရှာဖွေရေး၏ ပေါ်လစီအရ၁၅ မဂ္ဂါဝပ်ဓါတ်အားပေးစက်ရုံစီမံကိန်းအတွက် ဒေသခံများအား အလုပ်သမားအဖြစ်ခန့်အပ်ရန် အခွင့်အရေးပိုမိုများပြားပါသည်။အချို့သော လုပ်ငန်းနေရာများသည် ဒေသခံအလုပ်သမားများအတွက်သာ ဖြစ်ပါသည်။ ဝန်ထမ်းခန့်အပ်ခြင်းသည် အလုပ်သမား ဥပဒေ၊ လူမှုဖူလုံရေး ဥပဒေနှင့် အခကြေးငွေပေးချေရေး ဥပဒေတို့နှင့် ကိုက်ညီရန် လိုအပ်ပါသည်။ *အခြေခံအဆောက်အဦးနှင့် ဝန်ဆောင်မှု* ဆောက်လုပ်ရေးလုပ်ငန်းများလုပ်ဆောင်မှုကြောင့် ဒေသခံ အခြေခံအဆောက်အဦးများဖြစ်သော လမ်းနှင့် ကျန်းမာရေးဝန်ဆောင်မှုများကို ပိုမိုထိခိုက်စေသောကြောင့် လမ်းပန်းဆက်သွယ်ရေး ကဏ္ဍတွင်ဖော်ပြထားသကဲ့သို့ စီမံခန့်ခွဲမှုများ ပြုလုပ်ပေးရပါမည်။ အခြားဝန်ဆောင်မှုများဖြစ်သော ရေထောက်ပံ့ပေးခြင်းနှင့် ကျန်းမာရေး

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ဝန်ဆောင်မှုများကို ဆောက်လုပ်ရေးလုပ်ငန်းခွင် သို့မဟုတ် ITD ပင်မစခန်းတွင် ထောက်ပံ့ပေးမည် ဖြစ်ပါသည်။ *ရိုးရာနှင့် ယဉ်ကျေးမှုများ* စီမံကိန်းအားလုံးရှိလူတိုင်းသည် ဒေသခံများ၏ ရိုးရာ၊ ယဉ်ကျေးမှုများနှင့် ထုံးစံများအား လိုက်နာရန်လိုအပ်ပါသည်။ ဝန်ထမ်းများတိကျစွာလိုက်နာရမည့် စည်းမျဉ်းများကို သေချာစွာဖော်ပြထားခြင်းအားဖြင့် ဒေသခံများနှင့် အပြန်အလှန် အဆင်ပြေစေမည် ဖြစ်ပါသည်။ စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဒေသခံများ နှင့် ကောင်းမွန်သော ဆက်ဆံရေးရှိပြီး ဒေသခံများ၏ ရိုးရာ ယဉ်ကျေးမှုပွဲတော်များ ကို တက်ကြွစွာ ပါဝင်ထောက်ပံ့ပေးရပါမည်။ *ကျန်းမာရေးအန္တရာယ်များ* အလုပ်သမားအားလုံးသည် အဓိကကျန်းမာရေးဆေးစစ်ချက်ဖြစ်သော ကူးစက် ရောဂါ ဆန်းစစ်ခြင်းကို စစ်ဆေးခံရပါမည်။ အဓိကကူးစက်ရောဂါများ၏ လက္ခဏာ များ တွေ့ရှိခဲ့ပါက မြို့နယ်ကျန်းမာရေးဆရာဝန်ထံသို့ ချက်ချင်း ပို့ဆောင်ကာ ကျန်းမာရေးစောင့်ရှောက်မှု ခံယူရပါမည်။ အလုပ်သမားများအား ကျန်းမာရေးနှင့် သန့်ရှင်းမှု၊ ကူးစက်ရောဂါများအကြောင်း သင်ကြားမှုများ ပြုလုပ်ပေးပါမည်။ *လုံခြုံရေး အန္တရာယ်များ* EPC ကန်ထရိုက်တာသည် စီမံကိန်းလုံခြုံမှုစနစ်နှင့် မူးယစ်ဆေးဝါးတားစီးခြင်း အပါအဝင် သင့်တော်သော နည်းလမ်းများကို အကောင်အထည်ဖော်ရန် လိုအပ် ပါသည်။
အပိုင်း ၆.၄ - လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည်ဓါတ်ငွေ့ထုတ်လုပ်မှုများ၊ ဆူညံသံ၊ ရေဆိုး၊ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း၊ လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး၊ ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံမှုများ အတွက် ထိခိုက်မှု လျော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>ဓါတ်ငွေ့ထုတ်လွှတ်မှု</u> ဓါတ်ငွေ့ထုတ်လွှတ်မှုကို IFC မှ ၂၀၀၈ခုနှစ်တွင် ထုတ်ပြန်ထားသော အပူစွမ်းအင် သုံး ဓါတ်အားပေးစက်ရုံများအတွက် EHS လမ်းညွှန်ချက်ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ <u>ဆူညံသံ</u> ဆူညံသံထိန်းချုပ်မှု စံနှုန်းအတွက် IFC မှ ၂၀၀၇ခုနှစ်တွင် ထုတ်ပြန်ထားသော EHS လမ်းညွှန်ချက်ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ <u>ရေဆိုး</u> အလုပ်သမားများ၏ မိလ္လာရေဆိုးနှင့် မိုးရေ အပါအဝင် ရေဆိုးများကို အောက်ဖော်ပြပါအတိုင်း သန့်စင်သွားမည် ဖြစ်ပါသည်။ - လူသုံးမိလ္လာအတွက် မိလ္လာကန်ထားရှိမည်ဖြစ်ပြီး ကန်ထရိုက်တာအခွဲမှ ၄င်း စွန့်ပစ်ပစ္စည်းကို လာရောက်သိမ်းဆည်းပြီး စီမံကိန်းပြင်ပတွင် စီမံ ခန့်ခွဲသွားမည် ဖြစ်ပါသည်။ - မြေပေါ်ရေနှင့် မိုးရေစီးဆင်းရန် ရေမြောင်းစနစ်ကို ပြုလုပ်ပေးသွားမည် ဖြစ်ပြီး ၄င်းကို ရေဆိုးပိုက်များထဲသို့ စွန့်ပြစ်မည် ဖြစ်ပါသည်။ မြေမျက်နှာပြင် စီးဆင်းရေများတွင် အဆီများပါဝင်ခဲ့ပါက ပင်မ မြောင်းစနစ်ထဲသို့ မစွန့်ပစ်ခင်အဆီဖယ်ခြင်းများ ပြုလုပ်ပေးရပါမည်။ <u>စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း</u>

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	စွန့်ပစ်အရည်များကို အမျိုးအစားခွဲကာ သိုလှောင်ထားပြီး ထိုင်းနိုင်ငံသို့ပို့ဆောင်ကာ ပြန်လည်သန့်စင်မှုများ ပြုလုပ်သွားမည် ဖြစ်ပါသည်။ ဓါတ်အားပေးစက်ရုံဧရိယာ အတွင်း သို့မဟုတ် အပြင်တွင် စွန့်ပစ်အရည်များ စုပုံခြင်းကို ပြင်းထန်စွာ တားဆီးရပါမည်။ စီမံကိန်းဧရိယာတွင် နိုင်မာသော အဖုံးပါဝင်သည့် အမှိုက်ပုံးများကို အလုံအလောက်ထားရှိရမည် ဖြစ်ပါသည်။ <u>လမ်းပန်းဆက်သွယ်ရေး</u> လမ်းသွားလာမှု အခြေအနေနှင့် အချိန်ကို ဒေသခံများနှင့် နယ်စပ်မှဒေသခံများအား အသိပေးထားပြီး LNG သယ်ယူပို့ဆောင်မှု နှင့် စီမံကိန်းဧရိယာတွင် အနှောက်အယှက်များ လျော့နည်းကင်းဝေးစေရန် စီမံခန့်ခွဲမှုများ ပြုလုပ်သွားရမည် ဖြစ်ပါသည်။ LNG သယ်ဆောင်မှုလမ်းကြောင်း၏ ယာဉ်သွားလာမှုကို စောင့်ကြည့်လေ့လာမှုများ ပြုလုပ်ရန် လိုအပ်ပါသည်။ <u>လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး</u> IFC မှ ၂၀၀၇ခုနှစ်တွင် ထုတ်ပြန်ထားသော ယေဘုယျ EHS လမ်းညွှန်ချက်များမှ လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး နှင့် IFC မှ ၂၀၀၈ခုနှစ်တွင် ထုတ်ပြန်ထားသော အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံများအတွက် EHS လမ်းညွှန်ချက်များကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ <u>ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေး</u> ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေးအတွက် IFC မှ ၂၀၁၂ ခုနှစ်တွင် ထုတ်ပြန်ထားသော ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ရေရှည်လုပ်ဆောင်မှုစံနှုန်းများကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ <u>ဒေသခံများဖွံ့ဖြိုးတိုးတက်ရေးအထောက်အပံ့</u> စီမံကိန်းအကောင်အထည်ဖော်သူသည် ကမ်းခြေအနီးရှိ ဒေသခံများကို CSR အစီအစဉ်များပြုလုပ်ထောက်ပံ့ပေးခြင်းအားဖြင့် ၎င်းတို့လိုအပ်ချက်များကို ဖြည့်စည်းပေးသွားမည် ဖြစ်ပါသည်။ <u>အန္တရာယ်ဆန်းစစ်ခြင်း</u> EPC ကန်ထရိုက်တာသည် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံဆောက်လုပ်ခြင်းနှင့် သက်ဆိုင်ရာ အဆောက်အဦးများ၏ အစီအစဉ်ဒီဇိုင်းကို RAMS ကို ကိုးကားရန် လိုအပ်ပါသည်။ EPC ကန်ထရိုက်တာသည် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ၏ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်မှုအဖွဲ့ကို ရုတ်တရက် ဖြစ်ပေါ်လာနိုင်သော ဘေးအန္တရာယ်များနှင့် ပတ်သက်၍ အရေးပေါ်အခြေအနေ တုန့်ပြန်မှုများအတွက် ပြင်ဆင်ထားပေးရန် လိုအပ်ပါသည်။ EHS အဖွဲ့သည် စီမံကိန်းလုပ်ငန်းလည်ပတ်မှုကာလတွင် အောက်ဖော်ပြပါတို့ကို စီမံခန့်ခွဲရပါမည်။ - အော်ပရေတာများကို ပြင်းထန်သော လေ့ကျင့်မှုများ ပြုလုပ်ခြင်း - လုပ်ငန်းလည်ပတ်မှုနှင့် ထိန်းသိမ်းမှုအားလုံးအတွက် သန့်ရှင်းပြီး လုံလောက်သော လုပ်ငန်းလည်ပတ်မှု အစီအစဉ်လုပ်ဆောင်ခြင်း - စက်ရုံလုံခြုံရေးအတွက် လုံလောက်သော စီမံခန့်ခွဲမှုများ ပြုလုပ်ခြင်းတို့ ဖြစ်ပါသည်။
အပိုင်း ၆.၅ - လုပ်ငန်းရပ်စဲခြင်းကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဖုန်မှုန့်ထွက်ရှိမှု၊ ဆူညံသံ၊ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း၊ မြေယာပြန်လည်ပြုပြင်ခြင်းနှင့် ဘေးအန္တရာယ် ဆန်းစစ်ခြင်းတို့

ကတိကဝတ်ဖော်ပြရျက်နေရာ	ကတိကဝတ်
ဆန်းစစ်ခြင်းနှင့် လျှော့ချခြင်း	အတွက် ထိခိုက်မှု လျှော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ __ဖုန်မှုန့်__ စီမံကိန်း ဖျက်သိမ်းခြင်းကာလများအတွက် သယ်ယူပို့ဆောင်ရေး ပြုလုပ်ခြင်းဖြင့် ဖုန်မှုန် ထွက်ပေါ်မှုဖြစ်ပေါ်စေပါသည်။ ဖုန်မှုန့်များသိပ်သည်စေရန် ရေဖြန်းခြင်းဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကို လျှော့နည်းစေပါသည်။ သယ်ယူပို့ဆောင်ရေးယာဉ်များ၏ အမြန်နှုန်းကို ကန့်သတ်ထားခြင်းဖြင့်တည်း လျှော့နည်းစေပါသည်။ __ဆူညံသံ__ ရွှေ့လျားကိရိယာများမှထွက်ရှိသော ဆူညံသံများသည် ထိန်းချုပ်ရခက်ပါသည်။ ကာကွယ်နည်းလမ်းအနေဖြင့် ၎င်းဆူညံသံများထွက်ပေါ်သောလုပ်ငန်းခွင်တွင် လုပ်ကိုင်နေသည့် အလုပ်သမားများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရပါမည်။ ထို့အပြင် အနီးဆုံးကျေးရွာသို့ ဆူညံသံထိခိုက်မှုများလျှော့နည်းစေရန် ဓါတ်အားပေးစက်ရုံဖျက်သိမ်းမှုနေရာတွင် ယာယီအသံကာတံတိုင်းများ ကာရံပေးရပါမည်။ __စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း__ ကန်ထရိုက်တာသည် အမှိုက်အမျိုးအစားခွဲမှု လုပ်ထုံးလုပ်နည်းအတိုင်း အမှိုက်ခွဲခြားမှုစနစ်ကို အလုပ်သမားအားလုံးကို အတိအကျ လိုက်နာစေပါမည်။ အမှိုက်အမျိုးအစားခွဲခြားမှုကို အထောက်အပံ့ဖြစ်သော သင့်တော်သော အမျိုးအစားဖြင့်ပြုလုပ်ထားသော အနေတော်အရွယ်အစားရှိသည့် အမှိုက်ပုံးများကို အလုံအလောက် ထားရှိပေးပါမည်။ ပြန်လည်အသုံးပြုခြင်း၊ ပြန်လည်အသုံးချခြင်းနှင့် စွန့်ပစ်ရမည့် အမှိုက်ဟူ၍ အမျိုးအစားများ ခွဲခြားထားရပါမည်။ __မြေယာပြန်လည်ပြုပြင်ခြင်း__ စီမံကိန်းအကောင်အထည်ဖော်သူသည် သက်ဆိုင်ရာ အာဏာပိုင်များ၊ ဒေသခံများနှင့် တိုင်ပင်၍ စီမံကိန်းဖျက်သိမ်းပြီးလျှင်၎င်းဧရိယာအား စီမံခန့်ခွဲရန် တိုင်ပင်ဆွေးနွေးရပါမည်။ ဟင်းလင်းပြင်မြေများကို ပုံမှန်အားဖြင့် စက်ရုံ သို့မဟုတ် လူနေအဆောက်အဦးများဆောက်လုပ်ခြင်းဖြင့် ဖွံ့ဖြိုးတိုးတက်မှုများ ပြုလုပ်နိုင်ပါသည်။ __ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း__ စီမံကိန်းရပ်စဲခြင်းနေရာများတွင် ဖုန်မှုန့်ထွက်ရှိမှုကို လျှော့နည်းစေရန် လုပ်ဆောင်သွားရပါမည်။ ဖုန်မှုန့်ထွက်ရှိမှု လျှော့နည်းစေရန် ရေဖြန်းခြင်းသည် ဧရိယာယူနစ်တစ်ခုအတွက် ရေဖြန်းရန် အသုံးပြုရမည့် ရေထုထည် သတ်မှတ်ထားသည့်အတိုင်း အသုံးပြုရမည် ဖြစ်ပါသည်။ ဤသို့လုပ်ဆောင်ခြင်းဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅%ကို လျှော့ချပေးနိုင်ပါသည်။
အခန်း (၈) - ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များ	
အပိုင်း ၈.၃ - တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (CEMP) အကျဉ်းချုပ်	စီမံကိန်း အကောင်အထည်ဖော်သူနှင့် ကန်ထရိုက်တာသည် တည်ဆောက်ဆဲကာလ အတွက် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ် (CEMP) ကို ပြင်ဆင်အကောင်အထည်ဖော်ရန် လိုအပ်ပါသည်။ CEMP တွင်ပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများဖြစ်သော (က) ယေဘူယျ တည်ဆောက်ရေး (ခ) လေထုအရည်အသွေး စီမံခန့်ခွဲမှု (ဂ) ဆူညံသံနှင့် တုန်ခါမှု (ဃ) ရေဆိုး စီမံခန့်ခွဲမှု (င) လမ်းပန်းဆက်သွယ်ရေး စီမံခန့်ခွဲမင (စ) လုပ်ငန်းခွင် ဘေးအန္တရာယ် ကင်းရှင်းရေးနှင့်

ကာတီကာဝတ်ဖော်ပြချက်နေရာ	ကာတီကာဝတ်
	ကျန်းမာရေးနှင့် (ဆ) လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု တို့အတွက် လျော့ချရေး နည်းလမ်းများကို စီမံခန့်ခွဲရန် လိုအပ်ပါသည်။ အကြိုတည်ဆောက်ရေးကာလနှင့် တည်ဆောက်ဆဲကာလများအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ လုပ်ဆောင်မှုများကို စောင့်ကြည့်လေ့လာ အကဲဖြတ်ရန်အတွက် ရံပုံငွေ အမေရိကန်ဒေါ်လာ ၂၅,၀၀၀ ကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ အောက်ဖော်ပြပါ ပတ်ဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်းများကို စောင့်ကြည့်လေ့လာသွားမည် ဖြစ်ပါသည်။ - လေထုအရည်အသွေး (၃ နေရာ) - ဆူညံသံနှင့် တုန်ခါမှု တိုင်းတာခြင်း (၃ နေရာ) - မြေပေါ်ရေ အရည်အသွေး (၃ နေရာ) - ယာဉ်သွားလာမှု တိုင်းတာခြင်း (၁ နေရာ) ထို့အပြင် တည်ဆောက်ဆဲကာလ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (CEMP) တွင် လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး စီမံခန့်ခွဲမှု အစီအစဉ်များ အပြင် ကျေးရွာလူထု ဆွေးနွေးပွဲများလဲ ပါဝင်ပါသည်။ ကန်ထရိုက်တာသည် အကြိုတည်ဆောက်ရေးကာလနှင့် တည်ဆောက်ဆဲကာလ များ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ လုပ်ဆောင်ချက်များကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန (ECD) သို့ လစဉ်ပေးပို့ရပါမည်။ သုံးပွင့်ဆိုင် ကော်မတီတွင် သက်ဆိုင်ရာ အစိုးရဌာနများ၊ စီမံကိန်းအကောင်အထည် ဖော်သူနှင့် ဒေသခံကျေးရွာလူထုတို့ ပါဝင်ပါသည်။
အပိုင်း ၈.၄ - လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့် ကာလ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (OEMP) အကျဉ်းချုပ်	စီမံကိန်းအကောင်အထည်ဖော်သူသည် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ အတွက် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ် (CEMP) ကို ပြင်ဆင် အကောင် အထည်ဖော်ရန် လိုအပ်ပါသည်။ OEMP တွင် ပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများ ဖြစ်သော (က) လေထုအရည်အသွေး (ခ) ဖန်လုံအိမ်ဓါတ်ငွေ့ စီမံခန့်ခွဲ ခြင်း (ဂ) လမ်းပန်းဆက်သွယ်ရေး (ဃ) လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးစီမံခန့်ခွဲမှု (င) ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့်CSR အစီအစဉ် (စ) လုပ်ငန်းလည်ပတ်မှုဝန်ထမ်းများ စီမံခန့်ခွဲမှု နှင့် (ဆ) အရေးပေါ် အခြေအနေ စီမံခန့်ခွဲမှု အစီအစဉ် တို့အတွက် လျော့ချရနည်းလမ်းများကို စီမံခန့်ခွဲရန် လိုအပ်ပါသည်။ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလများအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေး ဆိုင်ရာ လုပ်ဆောင်မှုများကို စောင့်ကြည့်လေ့လာ အကဲဖြတ်ရန်အတွက် ရံပုံငွေ အမေရိကန်ဒေါ်လာ ၃၃,၈၀၀ ကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ အောက်ဖော်ပြပါ ပတ်ဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်းများကို စောင့်ကြည့်လေ့လာသွားမည် ဖြစ်ပါသည်။ - လေထုအရည်အသွေး (၃ နေရာ) - ယာဉ်သွားလာမှု တိုင်းတာခြင်း (၁ နေရာ) ထို့အပြင် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (OEMP) တွင် လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး စီမံခန့်ခွဲမှု အစီအစဉ်များ အပြင် ထိခိုက်ခံစားရသော ဒေသခံများ ဖွံ့ဖြိုးတိုးတက်ရေး အတွက် ကျေးရွာလူထု ဆွေးနွေးပွဲများလဲ ပါဝင်ပါသည်။ ကန်ထရိုက်တာသည် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ တစ်လျောက်လုံး ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ လုပ်ဆောင်ချက်များကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီး ဌာန (ECD) သို့ ခြောက်လလျှင် တစ်ကြိမ်ပေးပို့ရပါမည်။. သုံးပွင့်ဆိုင်ကော်မတီသည် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ တစ်လျောက် လုံးတွင် ထိန်းသိမ်းစောင့်ရှောက်ရုံမက ဒေသခံထောက်ပံ့ရေး အစီအစဉ်များကို အပို တာဝန်အနေဖြင့် လုပ်ဆောင်သွားပါမည်။

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
အခန်း (၉) - အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော်ကြေညာခြင်း	
အပိုင်း ၉.၄ - ဒေသခံများထံမှ လက်ခံရရှိသော အဓိက သုံးသပ်ချက်များ	ဒေသခံများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များဖြင့် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်း (၂) ကြိမ်၏ အကြံပြုချက်များကို သုံးသပ်ပြီး လျော့နည်းသက်သာသော နည်းလမ်းများအဖြစ် ထည့်သွင်း အသုံးပြုသွားမည် ဖြစ်ပါသည်။
အပိုင်း ၉.၇ - အနာဂတ်ဆွေးနွေးမှုများအတွက် အကြံပေးချက်များ	သုံးပွင့်ဆိုင်ကော်မတီသည် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းအတွက် နေရာ စီစဉ်ရမည် ဖြစ်ပါသည်။

မှ Dawei Power Generating Company Limited

အမည် Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

15 MW TEMPORRY POWER PLANT PROJECT

PROJECT KEY ESIA COMMITMENTS

Commitment Source	Commitment
EIA Report	
Chapter 3 Overview of the Policy, Legal and Institutional Framework	
Section 3.1 : Corporate Environmental and Social Policies	The Project Proponent will formulate an environmental and social management policy to guide its environmental and social management during the construction phase and the operation phase. The policies will be in line with the policies adopted by the Myandawei Industrial Estate (MIE) Company Limited in environmental and social management of its development activities in Dawei Special Economic Zone (DSEZ).
Section 3.2.1 : Policy and legal framework which provide the foundation for environmental management	Project Proponent will follow National Environmental Policy (1994), the Environmental Conservation Law (2012), and Environmental Conservation Rules (2014).
Section 3.2.2 : Regulations Related to Environmental Impact Assessment and Management	Project Proponent will comply the Environmental Impact Assessment Procedure (2015) and National Environmental Quality (Emission) Guidelines (2015).
Section 3.2.3 (Topic A) : Laws and Regulations Related to Social Impact Management	The Project Proponent will follow: • The Public Health Law (1972), • Factories Act (1951), • Social Security Law (2012) section 15,16, 18 (a) (b), 48 (a), 51 53,54,75;, • Labour Organization Law (2012), • Settlement of Labour Dispute Law (2012), • Payment of Wages Law (2015) section 4,7,8,9,10,11;, • The Development of Employees and Expertise (Skill) Law (2013) section 5,14,30;, • Leave and Holidays Act (1951), • Workmen Compensation Act (1951), • Minimum Wage Law (2013) section 12,13, and 18, • Myanmar Insurance Law (1993) section 16, • Protection and Preservation of Cultural Heritage Regions Law (1988) Amended by Law No.1/2009, • Protection and Preservation of Antique Objective Law (2015) section 12, • Protection and Preservation of Ancient Monument Law (2015) section 12,15 (h), 20 (f);, • The Protection of National Races Law (2015) section 5 , • Prevention and Control of Communicable Disease Law (1995) section 5,8,9;, • The Control of Smoking and Consumption of Tobacco Product Law (2006) section 9, • Electricity Law (2015) section 18,20,26,24,40,68;, • Myanmar Investment Law (2016) section 50 (a) (d); 51 (b) (c) (d); section 65 (g) (i) (j) (k) (l) (m) (o) (p) (q); ,

Commitment Source	Commitment
	• Petroleum Act (1934), • Petroleum Rules (1937), Chapter 3 and 4, • Motor Vehicle Law (2015), • Motor Vehicle Rule (1987) • Import and Export Law (2012) section 6,7;, • Myanmar Engineering and, • Myanmar Fire Force Law (2015) section 25.
Section 3.2.3 (Topic B) : Laws and Regulations Related to Environmental Protection Impact Management	The Project Proponent will follow: • National Environmental Policy (1994), • The Environmental Conservation Law (2012), • Environmental Conservation Rules (2014), • The Forestry Law (1992) section 12, • The Protection of Wildlife and Conservation of Natural Areas Law (1994), • Conservation of River, Creeks, and Water Resources Law (2006), section 8, 11(a), 19.
Section 3.2.4 : Law Specific to the Project Site	Project Proponent will follow 2 key laws related to 15 MW Temporary Power Plant Project, including: • Myanmar Special Economic Zones Law (2014), section 11 (f) (p), 35, 74, 75, 76, 77, 78, 80 (a) (b);, • The Dawei Special Economic Zone Law (2011)
Section 3.3 : International Conventions, Treaties and Agreements	The Project Proponent will follow: • Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome, 1956; • United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC); • Convention on Biological Diversity, Rio de Janeiro, 1992; • The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972; • ASEAN Agreement on the Conservation of Nature and Nature Resources, Kuala Lumpur, 1985; • Catagena Protocol on Biosafety, Cartagena, 2000 and • Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997.
Section 3.4.1 : Arrangement at the National and Sector Level	Project proponent shall comply the Environmental Conservation Committee (ENCC) by MONREC through ECD.
Section 3.4.2 : Arrangements at the Project Area	Project proponent shall comply with Myanmar's Subnational Administrative Structure and Dawei Special Economic Zone Management Committee
Table 3.4-1 : Roles and Responsibilities of Relevant Departments Functioning in DSEZ	Project proponent will comply: • Department of Custom • Department of Development Affairs • Department of General Administration • Department of Human Settlement and Housing • Department of Investment and Company Administration • Department of Immigration and National Registration • Department of Labour • Department of Law, Court and Justice • Department of Municipality • Department of Road Transportation • Directorate of Trade

Commitment Source	Commitment
	• Myanmar Police Force • Representative from Tanintharyi Division
Section 3.5.1 : IFC's Standards and Guidelines	Project Proponent will follow: • Environmental, Health, and Safety-General Guidelines, April 30, 2007. • Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008). • Performance Standards on Environmental and Social Sustainability, January 1, 2012.
Table 3.6-1 : Relevant International Environmental Guidelines and Standards	Project proponent will manage and control impacts as followings: • Ambient Air Quality • Ambient Noise Levels • Groundwater Quality • Thermal Heat Flux
Chapter 4 Project Description and Alternatives	
Section 4.1.1 : Project Description	• The proposed 15 MW Temporary Power Plant will be constructed on idle land of 6.25 acre, at KM. 17 on ITD Main road, in the designated industrial estate area in DSEZ. • The Project will be comprised of power generation capacity and gas distribution facilities. The power generation capacity will consist of a number, up to 15, of containerized 1 MW gas engine generator. The gas distribution facilities include multiple unit of 45 m^3 LNG storage tank, LNG transfer pump and air vaporizers. • This Power plant will be operated only on fuel gas with no diesel fuel back up. • This power plant will be in operative for 2 years in order to support the construction phase of DSEZ and will be removed after Boil-off power plant start to operate.
Chapter 6 Impact and Risk Assessment and Mitigation Measures	
Section 6.2 : Pre-Construction Phase - Impact Identification, Assessment and Mitigation	Project Proponent will comply the impact mitigation measures on ecosystems, livelihood of villagers, fugitive dust, noise and gaseous emissions. <u>Ecosystems</u> Flora and fauna species in the Project site would be surveyed and recorded before site clearing, endangered species would be removed to protected area. Green buffer zones would be established around the boundaries of the Project site. Tree cutting would be proceeded as less as possible and could not be done without prior permission from the Project Manager. <u>Biomass Waste Disposal</u> The biomass wastes which would be trunks, stems, branches, and leaves. The components that could be used for construction, charcoal making, and firewood would be sorted out. The unusable components would be chipped to small size and disposed of in the Project site by land fill with no open burning. A biomass removal sub-plan is also proposed in the Environmental Management Plan. <u>Livelihood of Villagers</u>

Commitment Source	Commitment
	The Project Proponent, in collaboration with locals and the concerned authorities, would design and implement a livelihood restoration program (LRP) for the affected people. The LRP will provide training and initial supports to assist the affected people to enhance their income through increasing efficiency of their current economic activities or creating secondary sources of income by alternative activities included technique in agriculture, product development and marketing and food preservation. Fugitive Dust Fugitive dust control target at receptor using TSP (Total Suspended Particulate) concentration is 230 $\mu g/m^3$ (World Bank's Ambient Air Quality Standard). Water spraying which could reduce as much as 75% of the dust would be routinely proceeded at construction site and access road. Speed of vehicle and truck in construction site and access road would be limit to not exceed 40 km./h. Noise Control of construction noise level at ambient noise level would not increase more than 3 dB (A) Leq-1 hour (IFC Standard). The construction noise would be managed by installation of temporary sound barrier. Ear muff must be provided to all workers who work in the excessive noise environment.
Section 6.3 : Construction Phase - Impact Identification, Assessment and Mitigation	Project Proponent will comply the mitigation measures on gaseous emissions, noise, wastewater, road traffic and local communities. Gaseous Emissions The EPC contractor would be required to adopt best practices to minimize gaseous emissions at sources. Selection of low emission technology engine and routinely maintenance all construction equipment in proper working conditions according to the manufacturer's specifications would be proceeded. Noise Major construction activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at night time will need approval of the site engineers, and will need to have adequate noise control equipment or measures. Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. The EPC contractor will be required to regularly monitor ambient noise levels at the receptors (e.g. Pagaw Zoon Village), particularly during the noise generating period and setting project facilities to check the noise level at receptor as it should be leveled within National Noise Level Quality Standard, National Environmental Quality (emission) Guidelines 2015, Myanmar (55 dB at day time and 45 dB at night time) or within existing data that measuring before construction phase. If the noise level exceeds the standard or existing data and received complain from the local villagers, the Project Proponent must consider to assemble the temporary sound barrier to reduce impact from noise level to the local villagers.

Commitment Source	Commitment
	<u>Wastewater</u> Domestic sewage and wash water will be appropriately treated by on-site septic tank. Wastewater in the septic tank must be collected and treated outside the construction area by authorized contractor. Toilet would be sufficient for worker at rate of 1 toilet per 15 workers. Wash waters will be treated to remove suspended solids and neutralize, if necessary. The treated effluent will be reused for spraying on site to suppress dust without discharged outside. Storm water cannot be reduced and will need to be drained outside the construction site. <u>Construction Waste</u> The construction will adopt the practices to minimize waste quantities at sources: waste segregation, waste collection and storage, waste reuse and recycling, waste disposal, and on-site record keeping. Hazardous wastes will be handled by a licensed hazardous waste contractor. A Hazardous Waste Management System covering waste classification, separation, collection, storage, transfer and disposal should be set up and operated. The waste management system will comply with applicable regulation of the government or international standard. <u>Road Traffic</u> Project will manage to control impact on local traffic as followings: - Avoid haulage tasks during peak traffic period - Speed limit to all construction vehicles - Installation of additional traffic notices at construction site and community areas - Heavy truck used for equipment transporting must be directed by police car <u>Occupational Safety and Health</u> Arrangement of gloves, helmet, sunglasses and other tools, dress and uniforms for each worker, this would keep workers safe from any kind of accident. <u>Impact on Local Communities</u> Continue support livelihoods program as well as in pre-construction phase. Conduct attitude survey to collect information on local concerns, issues, and problems caused by project's construction activities. *Local Economy* The labor recruitment policy must be formulated in such a way that local laborers can easily get chances of employment in the 15 MW power plant project. Some posts should be reserved for local worker. The employment conditions will need to comply with the national labor law, the social security law and standard wage rate. *Infrastructure and service*

Commitment Source	Commitment
	All related construction activities which would cause more pressure to local infrastructure including road and medical services would be manage as described in Road Traffic. Others service such as water supply and health services should be provide in construction site or ITD main camp. *Cultures and Traditions* All project personnel should be made aware of local cultures, traditions and norms. A code of conduct should be put in place for workers to strictly observe when interacting with the locals. The Project Proponent should establish good relationship with the locals and actively support and participate in traditional and cultural events. *Health Risks* All recruited workers would pass physical examinations for screening of major communicable diseases. Symptoms of major communicable diseases, if noted, must be immediately reported to the district medical officer for treatment. Training courses on hygiene and sanitation, communicable and infectious diseases to workers would be organized. *Security Risks* The EPC contractor will be required to establish and implement a site security system and appropriate measures, including prevention of drug abuse.
Section 6.4 : Operation Phase - Impact Identification Assessment and Mitigation	Project Proponent will comply the mitigation measures on gas emission, noise, wastewater, waste management, occupational safety and health, community health, safety and security. Gas Emission Gas emission will conform to IFC 2008 EHS Guideline for thermal power plant Noise The noise control target will conform IFC 2007 General EHS Guideline Wastewater The wastewater which included domestic sewage from worker and storm water will be treated as followings; - Septic tank for domestic sewage, these waste would be collect by subcontractor to manage outside - A drainage system will be provided to collect surface runoff and storm water discharged into the sewers. Surface runoff from open areas contaminated by oil will be separately drained into an oil separator before discharging into the main drainage system. Waste Management Liquid waste would be classified and sorted out at source for stored and shipped to Thailand for regeneration. Haphazard disposal of liquid waste in or off the power plant area is strictly prohibited. Adequate number of bins or containers with tight covers would be provided in the area.

Commitment Source	Commitment
	Road Traffic Project will inform the local and broader communities about the timing and scale of changes to traffic conditions on roads and manage to minimize as far as reasonably practicable, potential traffic disruptions along LNG transportation route and power plant area. Traffic flow on LNG transportation route would be monitored. Occupational Safety and Health OSH management measure to be adopted would conform to IFC 2007 General EHS Guidelines: Occupational Health and Safety and IFC 2008 EHS Guidelines: Thermal Power Plants. Community Health, Safety and Security Community Health, Safety will conform to Document of IFC 2012 Performance Standard on Environmental and Social Sustainability. Community development support The Project Proponent would provide a supports to riparian communities via CSR program in line with their needs. Risk Assessment The EPC contractor should be required to adopt the RAMS process in the design and construction of the temporary power plant and its associated facilities. EPC contractor have to prepare an emergency response plan to enable the temporary power plant operational team to promptly cope with occurrence of risk events. The EHS unit which is in charge in management during operation phase would proceed as followings: - rigorous training of operators - clear and adequate operational procedures for all operations and maintenance - efficience in management of plant safety.
Section 6.5 : Decommission Phase - Impact Identification, Assessment and Mitigation	Project Proponent will comply the mitigation measures on fugitive dust, noise, waste management, land reclamation and risk assessment. Fugitive dust Fugitive dust will be generated most during the transportation of dismantled parts. Spraying of water is recommended to suppress dust due it could reduce as much as 75% of the dust. Speed limit of trucks used for transportation is also be deployed. Noise Noise of mobile equipment is difficult to control at source. A practical measure is to provide ear muff to workers working in the excessive noise environment. In addition, temporary sound barrier should be setting during dismantle of the power plant in order to reduction of noise impact to the closest village. Waste Management

Commitment Source	Commitment
	The Contractor is required to design and implement a waste segregation system and propagate it to all worker to strictly adhere to the segregation procedure. An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. Land Reclamation Developer should discuss with concerned authority and local villagers in order to management of the area after completion of decommissioning. Typical utilization on the open land with basic infrastructure such as factory or resident facilities is recommended to develop. Risk Assessment At all the decommissioning sites, measures should be implemented to reduce fugitive dust emission. It should be noted that the dust suppression efficiency of water spraying will depend on the volume of water use per unit area and the frequency of spraying. A 75% efficiency could be expected.
Chapter 8 Environmental Management Plans	
Section 8.3: Summary of Environment Management Plan for Construction Period (CEMP)	Project's proponent and contractor is required to prepare and implement Environment Management Plan for Construction Period (CEMP). CEMP aim to manage and mitigate all related environmental issues included (i) general construction, (ii) air quality management, (iii) noise and vibration, (iv) wastewater management, (v) waste management, (vi) traffic management, (vii) OSH management and (viii) social environmental A budget of 25,080 USD will be allocated for monitoring and evaluation of the Project's environmental and social performance over the pre-construction and construction period. Environmental components which would be monitored followings: - Air quality (3 stations) - Noise and vibration measurement (3 stations) - Surface water quality (3 station) - Traffic flows measurement (1 station) In addition, OSH Management Plan and village forum are included in the CEMP. Contractor is required to submit monthly report on environmental performance to ECD during pre-construction and construction period. Tripartite committee which included representative from government, project's proponent and nearby communities would be set up.
Section 8.4: Summary of Environment Management Plan for Operation Period (OEMP)	Project's proponent is required to prepare and implement Environment Management Plan for Operation Period (OEMP). OEMP aim to manage and mitigate all related environmental issues included (i) air quality and greenhouse gas management, (ii) hazardous waste management, (iii) traffic management, (iv) OHS management, (v) social environmental management and CSR

Commitment Source	Commitment
	program, (vi) operation staff management and (vii) emergency management plan A budget of 33,880 USD will be allocated for monitoring and evaluation of the Project's environmental and social performance over the operation period. Environmental components which would be monitored followings: - Air quality (3 stations) - Traffic flows measurement (1 station) In addition, OSH Management Plan, development fund for riparian communities and village forum are included in the OEMP. Project proponent by EHS is required to submit six-month report on environmental monitoring to ECD throughout the project's life. Tripartite committee which is set up during CEMP would be maintain with additional responsibilities on implementation of community supports plans.
Chapter 9 Public Consultations and Disclosure	
Section 9.4 : Summary of main comments received from stakeholders	Opinions and recommendations from the two periods of public consultation meetings with local and related authorities are reviewed and applied in the mitigation measures.
Section 9.7 : Recommendations for future consultations	Tripartite committee will be set up to serve as venue for public consultation.

By: Dawei Power Generating Company Limited

Name: (..)

Poawpadet Vorabutr

Title: Director

ဓာတ်ငွေ့အပူငွေ့သုံး ဓာတ်အားပေးစက်ရုံစီမံကိန်းက လိုက်နာဆောင်ရွက်ရမည့်

ဥပဒေဆိုင်ရာကတိကဝတ်များ

၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)

၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ(၂၀၁၄)

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးနည်းလုပ်နည်း(၂၀၁၅)

၄။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေးထုတ်လွှတ်မှုလမ်းညွှန်ချက်(၂၀၁၅)

၅။ မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)

၆။ လျှပ်စစ်ဥပဒေ(၂၀၁၄)

၇။ တိုင်းရင်းသားလူမျိုးများ အကျိုးစီးပွားကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ(၂၀၁၅)

၈။ ပြည်သူ့ကျန်းမာရေးဥပဒေ(၁၉၇၂)

၉။ ကူးစက်ရောဂါများကာကွယ်နှိမ်နှင်းရေးဥပဒေ(၁၉၉၅)

၁၀။ ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှုထိန်းချုပ်ရေးဥပဒေ(၂၀၁၆)

၁၁။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ(၂၀၁၅)

၁၂။ မော်တော်ယာဉ်ဥပဒေ(၂၀၁၅)နှင့်မော်တော်ယဉ်နည်းဥပဒေများ(၁၉၈၇)

၁၃။ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ(၁၉၉၃)

၁၄။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ(၂၀၁၁)

၁၅။ အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ(၂၀၁၂)

၁၆။ အလုပ်အကိုင်နှင့်ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ(၂၀၁၃)

၁၇။ ၂၀၁၃ခုနှစ်၊အနည်းဆုံးအခကြေးငွေ ဥပဒေ

၁၈။ ၂၀၁၆ခုနှစ်၊အခကြေးငွေပေးချေရေးဥပဒေ

၁၉။ အလုပ်သမားလျော်ကြေးအက်ဥပဒေ(၁၉၅၁)

၂၀။ ခွင့်နှင့်အလုပ်ပိတ်ရက်များအက်ဥပဒေ(၁၉၅၁)

၂၁။ လူမှုဖူလုံရေးဥပဒေ(၂၀၁၂)

၂၂။ ရေနံအက်ဥပဒေ(၁၉၃၄)

၂၃။ ရေနံနည်းဥပဒေများ(၁၉၃၇)

၂၄။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး ဥပဒေ(၂၀၀၆)

၂၅။ ရေချိုငါးလုပ်ငန်း ဥပဒေ (၁၉၉၁)

၂၆။ မြန်မာ့ပင်လယ်ငါးလုပ်ငန်းဥပဒေ (၁၉၉၀)

၂၇။ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈)

၂၈။ ရှေးဟောင်း ဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

၂၉။ ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

၃၀။ သစ်တောဥပဒေ (၁၉၉၂)

၃၁။ မြန်မာ့အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၄)

၃၂။ မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃)

၃၃။ အလုပ်ရုံများအက်ဥပဒေ (၁၉၅၁)

၃၄။ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)

၃၅။ ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)

၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ပတ်ဝန်းကျင်ကိုညစ်ညမ်းစေခဲ့လျှင်ဝန်ကြီးဌာနက သတ်မှတ်သည့်လျော်ကြေးငွေကို ပေးလျော်ပါမည်။ (ပုဒ်မ၇၊ ပုဒ်မခွဲ(ဏ) အရ)

(ခ) ပတ်ဝန်းကျင်ကိုညစ်ညမ်းမှုဖြစ်ပေါ်စေသည့်ထုတ်လွှတ်ခြင်းကို သတ်မှတ်ထားသည့် ပတ်ဝန်းကျင်အရည်အသွေး စံချိန်စံညွှန်းများနှင့်အညီ ထုတ်လွှတ်ပါမည်။(ပုဒ်မ၁၄အရ)

(ဂ) ပတ်ဝန်းကျင်ညစ်ညမ်းမှုများကို စောင့်ကြပ်ကြည့်ရှုရန်၊ ထိန်းချုပ်ရန်၊ စီမံခန့်ခွဲရန်၊ လျော့ချရန် သို့မဟုတ် ပပျောက်စေရန်လုပ်ငန်းခွင် အထောက်အကူပြုပစ္စည်း သို့မဟုတ် ထိန်းချုပ်ရေးပစ္စည်းကိရိယာကို တပ်ဆင်ခြင်း သို့မဟုတ် သုံးစွဲခြင်းပြုပါမည်။ ထိုသို့မဆောင်ရွက်နိုင်ပါက စွန့်ပစ်ပစ္စည်းများကို ပတ်ဝန်းကျင်ကိုမထိခိုက်စေသော နည်းလမ်းများနှင့်အညီ စွန့်ပစ်ပါမည်။(ပုဒ်မ၁၅အရ)

(ဃ) ဝန်ကြီးဌာနကထုတ်ပေးသည့် ကြိုတင်ခွင့်ပြုချက်ပါစည်းကမ်းချက်များနှင့်အညီ ဆောင်ရွက်ခြင်း ရှိ မရှိ လာရောက်စစ်ဆေးသည့် တာဝန်ရှိပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းအား စစ်ဆေးခွင့်ပြုပါမည်။ (ပုဒ်မ၂၄အရ)

(င) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေအရထုတ်ပြန်သော နည်းဥပဒေများ၊ အမိန့်ကြော်ငြာစာ၊ အမိန့်၊ ညွှန်ကြားချက်နှင့် လုပ်ထုံးလုပ်နည်းပါ တားမြစ်ချက်များကိုလိုက်နာပါမည်။(ပုဒ်မ၂၉အရ)

၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ(၂၀၁၄)

စီမံကိန်းပိုင်ရှင်သည်-

(က) နည်းဥပဒေ၆၉၊ နည်းဥပဒေခွဲ(က)အရ ပတ်ဝန်းကျင်ကိုညစ်ညမ်းစေသည့် ပစ္စည်းများကို အများပြည်သူအား တိုက်ရိုက်ဖြစ်စေ သွယ်ဝိုက်၍ဖြစ်စေ ထိခိုက်စေနိုင်မည့် နေရာတစ်ခုခုတွင် တစ်နည်းနည်းဖြင့် ထုတ်လွှတ်ခြင်း၊ ထုတ်လွှတ်စေခြင်း၊ စွန့်ပစ်ခြင်း၊ စွန့်ပစ်စေခြင်း၊ စုပုံခြင်း၊ စုပုံစေခြင်း မပြုပါ။

(ခ) နည်းဥပဒေ၆၉၊ နည်းဥပဒေခွဲ(က)အရ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ နည်းဥပဒေများ တစ်ခုခုအရ အမိန့်ကြော်ငြာစာဖြင့် သတ်မှတ်ထားသော ဘေးအန္တရာယ်ရှိပစ္စည်းများကို အများပြည်သူအား တိုက်ရိုတ်ဖြစ်စေ သွယ်ဝိုက်၍ဖြစ်စေ ထိခိုက်စေနိုင်မည့်နေရာတစ်ခုခုတွင် တစ်နည်းနည်းဖြင့်ထုတ်လွှတ်ခြင်း၊ ထုတ်လွှတ်စေခြင်း၊ စွန့်ပစ်ခြင်း၊ စွန့်ပစ်စေခြင်း၊ စုပုံခြင်း၊ စုပုံစေခြင်း မပြုပါ။

(ဂ) နည်းဥပဒေ၆၉၊နည်းဥပဒေခွဲ(ခ)အရ ဂေဟာစနစ်နှင့်ယင်းစနစ်ကြောင့် ဖြစ်ပေါ်ပြောင်းလဲနေသော သဘာဝပတ်ဝန်းကျင်ကို ထိခိုက်ပျက်စီးစေနိုင်သည့် ပြုလုပ်မှုကို ဆောင်ရွက်ခြင်းမပြုပါ။

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးနည်းလုပ်နည်း (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) မိမိကိုယ်တိုင်ကြောင့်ဖြစ်စေ၊ မိမိကိုယ်စား ဆောင်ရွက်သည့်ကန်ထရိုက်တာ၊ လက်ခွဲ ဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာ၊ အရာရှိ၊ အလုပ်သမား၊ ကိုယ်စားလှယ်

သို့မဟုတ် အတိုင်ပင်ခံ၏ပြုလုပ်မှု သို့မဟုတ် ပျက်ကွက်မှုကြောင့်ပေါ်ပေါက်သည့် ဆိုးကျိုးသက်ရောက်မှုကို တာဝန်ယူပါမည်။ (အပိုဒ်၁၀၂(က)အရ)

(ခ) စီမံကိန်းကြောင့်ထိခိုက်ခံစားရသူကို လက်ရှိ သို့မဟုတ် စီမံကိန်းမဆောင်ရွက်မီကာလထက် မနိမ့်ကျသော လူမှုစီးပွားရေး တည်ငြိမ်ခိုင်မာမှုရရှိသည်အထိ ဆောင်ရွက်ပေးရန်နှင့် သက်မွေးဝမ်းကျောင်းလုပ်ငန်းများ ပြန်လည်တည်ထောင်ရေးနှင့် ပြန်လည်နေရာချထားရေး အစီစဉ်များကို စီမံကိန်းကြောင့်ထိခိုက်ခံစားရသူများ၊ သက်ဆိုင်ရာအစိုးရဌာန၊ အဖွဲ့အစည်းများ၊ အခြားသက်ဆိုင်သူများနှင့် တိုင်ပင်ဆွေးနွေး၍ လိုအပ်သလိုပံ့ပိုးပေးပါမည်။ (အပိုဒ်၁၀၂(ခ)အရ)

(ဂ) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်းကတိကဝတ်အားလုံးနှင့် စည်းကမ်းချက်များကို အပြည့်အဝ အကောင်အထည်ဖော်ပါမည်။ မိမိကိုယ်စားဆောင်ရွက်သည့် ကန်ထရိုက်တာ၊ လက်ခွဲဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာများက စီမံကိန်းအတွက်လုပ်ငန်းများ ဆောင်ရွက်ရာတွင် သက်ဆိုင်ရာဥပဒေ၊ နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် စည်းကမ်းချက်များအားလုံးကို အပြည့်အဝ လိုက်နာဆောင်ရွက်စေပါမည်။ (အပိုဒ်၁၀၄အရ)

(ဃ) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာ လိုက်နာဆောင်ရွက်မှု သက်သေခံလက်မှတ်၊ သက်ဆိုင်ရာဥပဒေများ၊ နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်းနှင့် စံချိန်စံညွှန်းတို့တွင်ပါရှိသော လိုအပ်ချက်အားလုံးကို တာဝန်ယူသည့်အပြင် ထိရောက်စွာအကောင်အထည်ဖော် ဆောင်ရွက်ပါမည်။ (အပိုဒ်၁၀၅အရ)

(င) အကြိုတည်ဆောက်ခြင်း၊ တည်ဆောက်ခြင်း၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်း၊ လုပ်ငန်းရပ်စဲခြင်း၊ လုပ်ငန်းပိတ်သိမ်းခြင်းနှင့် လုပ်ငန်းပိတ်သိမ်းပြီးကာလတို့တွင် ဆိုးကျိုးသက်ရောက်မှု အားလုံးအတွက် စီမံကိန်းနှင့်ဆက်စပ်ဆောင်ရွက်မှုများကို စဉ်ဆက်မပြတ် ဘက်စုံစောင့်ကြပ် စစ်ဆေးပါမည်။(အပိုဒ်၁၀၆အရ)

(စ) မိမိ၏တာဝန် သို့မဟုတ် ဆောင်ရွက်ချက်ပျက်ကွက်မှုကို အမြန်ဆုံး စာဖြင့်တင်ပြပါမည်။ ပျက်ကွက်မှုကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုဖြစ်နိုင်သည့်ကိစ္စ သို့မဟုတ် ဝန်ကြီး ဌာနက အမြန်သိရန်လိုအပ်သည့်ကိစ္စကို ၂၄နာရီအတွင်းလည်းကောင်း အခြားကိစ္စဖြစ်ပါက စတင်သိရှိချိန်မှ ၇ ရက် အတွင်းလည်းကောင်း ဝန်ကြီးဌာနသို့ တင်ပြပါမည်။ (အပိုဒ်၁၀၇အရ)

(ဆ) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီစဉ်၏ဇယားပါအတိုင်းစောင့်ကြပ်ကြည့်ရှုမှု အစီရင်ခံစာကို ၆လ တစ်ကြိမ် သို့မဟုတ် ဝန်ကြီးဌာနကသတ်မှတ်သည့်အတိုင်း ဝန်ကြီးဌာနသို့ အစီရင်ခံ တင်ပြပါမည်။ (အပိုဒ်၁၀၈အရ)

(ဇ) စောင့်ကြပ်ကြည့်ရှုမှု အစီရင်ခံစာတွင် အပိုဒ်၁၀၉ပါ သတ်မှတ်ချက်များ အနည်းဆုံး ထည့်သွင်းဖော်ပြပါမည်။ (အပိုဒ်၁၀၉အရ)

(ဈ) အပိုဒ် ၁၀၈ အရ တင်ပြသည့်နေ့ရက်မှ ၁၀ရက်အတွင်း အများပြည်သူသိရှိနိုင်ရန် စီမံကိန်း၏ဝက်ဘ်ဆိုဒ်၊ စာကြည့်တိုက်၊ ပြည်သူ့ခန်းမ၊ အများပြည်သူစုဝေးရာနေရာနှင့် စီမံကိန်းရုံးဌာနတို့တွင် အများပြည်သူသိရှိစေရန် ယင်းအစီရင်ခံစာကိုတင်ပြပါမည်။ ယင်းအစီရင်ခံစာ၏ ဒီဂျီတယ်မိတ္တူ တောင်းခံချက်ကို လက်ခံရရှိသည့်နေ့မှစ ၁၀ရက်အတွင်း အီးမေလ်ဖြင့် ဖြစ်စေ၊ တောင်းခံသူနှင့် သဘောတူညီထားသည့် အခြားနည်းလမ်းဖြင့် ဖြစ်စေ တောင်းခံသူအား ပေးပါမည်။ (အပိုဒ်၁၁၀အရ)

(ည) စောင့်ကြပ်ကြည့်ရှုရန်နှင့် စစ်ဆေးရန်တာဝန်ရှိသူကို သာမန်အလုပ်ချိန်အတွင်း ဝင်ရောက်ခွင့် ပြုပါမည်။ (အပိုဒ်၁၁၃(က)အရ) စီမံကိန်း၏ရုံးများ၊ လုပ်ငန်းခွင်၊ စီမံကိန်းနှင့် သက်ဆိုင်သော လုပ်ငန်းများ ဆောင်ရွက်နေသည့်အခြားနေရာများသို့ လိုအပ်ပါက အချိန်မရွေး ဝင်ရောက်ခွင့်ပြုပါမည်။ (အပိုဒ်၁၁၃(ခ)အရ)

(ဋ) အရေးပေါ်အခြေအနေတွင်ဖြစ်စေ၊ ပတ်ဝန်းကျင်ဆိုင်ရာနှင့် လူမှုရေးဆိုင်ရာ လိုအပ်ချက်ကို ဆောင်ရွက်ပေးရန် ပျက်ကွက်လျှင်ဖြစ်စေ၊ ထိုသို့ပျက်ကွက်နိုင်သည်ဟု ယူဆလျှင်ဖြစ်စေ စစ်ဆေးရန်တာဝန်ရှိသူက ဝင်ရောက်စစ်ဆေးလိုသည့်အချိန်တွင် ချက်ချင်းခွင့်ပြုပါမည်။ (အပိုဒ်၁၁၅အရ)

(ဌ) ကိုယ်စားဆောင်ရွက်ပေးသူ ကန်ထရိုက်တာနှင့် လက်ခွဲဆောင်ရွက်သူ ဆပ်ကန်ထရိုက်တာတို့ကို တာဝန်ရှိသူက စစ်ဆေးခြင်းကိုခွင့်ပြုပါမည်။ (အပိုဒ်၁၁၇အရ)

၄။ မျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေးထုတ်လွှတ်မှု လမ်းညွှန်ချက်(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည် လမ်းညွှန်ချက်ပါ စံချိန်စံညွှန်းများနှင့်အညီ ထုတ်လွှတ်ခြင်း၊ စွန့်ပစ်ခြင်းပြုပါမည်။

၅။ မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ငှားရမ်းခွင့် ရရှိထားသည့် အစိုးရစီမံခန့်ခွဲခွင့်ရှိသော မြေကို စာချုပ်စာတမ်းများ မှတ်ပုံတင်ခြင်း အက်ဥပဒေနှင့်အညီ စာချုပ်စာတမ်း မှတ်ပုံတင်ရုံးတွင် မှတ်ပုံတင်ပါမည်။ (ပုဒ်မ ၅၀အရ)

(ခ) အဆင့်ဆင့်သော စီမံခန့်ခွဲမှု၊ နည်းပညာ၊ လုပ်ငန်းကျွမ်းကျင်သူ နေရာတို့တွင် နိုင်ငံသားများကို စွမ်းဆောင်ရေမြှင့်တင်ပေးပြီး အစားထိုးခန့်ထားပါမည်။ (ပုဒ်မ ၅၁ (ခ)အရ)

(ဂ) ကျွမ်းကျင်မှုမလိုအပ်သည့် လုပ်ငန်းများတွင် မြန်မာနိုင်ငံသားများကိုသာ ခန့်ထားပါမည်။ (ပုဒ်မ ၅၁ (ဂ)အရ)

(ဃ) မြန်မာနိုင်ငံသားနှင့် နိုင်ငံခြားသားများကို အလုပ်ခန့်ထားမှုဆိုင်ရာ သဘောတူညီချက် စာချုပ်ဖြင့် တည်ဆဲဥပဒေနှင့်အညီ ခန့်ထားပါမည်။ (ပုဒ်မ ၅၁ (ဃ)အရ)

(င) တည်ဆဲဥပဒေများ နည်းဥပဒေများ၊ လုပ်ထုံးလုပ်နည်းများနှင့် နိုင်ငံတကာတွင် ကျင့်သုံးသည့် အကောင်းဆုံး စံချိန်စံညွှန်းများနှင့်အညီ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးမှု၊ ညစ်ညမ်းမှု မဖြစ်စေရန်နှင့် ယဉ်ကျေးမှု အမွေအနှစ်များကို ထိခိုက်ပျက်စီးမှု မဖြစ်ပေါ်စေရန် လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၆၅ (ဆ)အရ)

(စ) အလုပ်ခန့်ထားမှုဆိုင်ရာ သဘောတူစာချုပ် ဖောက်ဖျက်ခြင်း၊ ရင်းနှီးမြှုပ်နှံမှု အပြီး ပိတ်သိမ်းခြင်း၊ လွှဲပြောင်းရောင်းချခြင်း၊ ရင်းနှီးမြှုပ်နှံမှု ရပ်ဆိုင်းခြင်း၊ လုပ်သားအင်အား လျှော့ချခြင်းတို့အတွက် အလုပ်သမားများကို တည်ဆဲဥပဒေ များနှင့်အညီ နစ်နာကြေးပေးပြီးမှသာ ရင်းနှီးမြှုပ်နှံမှုကို ရပ်ဆိုင်းပိတ်သိမ်း ပါမည်။ (ပုဒ်မ ၆၅ (ဈ)အရ)

(ဆ) ခိုင်လုံသောအကြောင်းပြချက်ဖြင့် ရင်းနှီးမြှုပ်နှံမှု ယာယီပိတ်သိမ်းပါက ပိတ်သိမ်းထားရသည့် ကာလအတွင်း အလုပ်သမားများကို တည်ဆဲဥပဒေ၊

နည်းဥပဒေများ၊ ညွှန်ကြားချက်များ၊ လုပ်ထုံးလုပ်နည်းများနှင့်အညီ လုပ်ခ၊ လစာ ပေးပါမည်။ (ပုဒ်မ ၆၅ (ည)အရ)

(ဈ) အလုပ်ကြောင့် ထိခိုက်ဒဏ်ရာ ထိခိုက်မှု၊ ကိုယ်အင်္ဂါအစိတ်အပိုင်း ချို့ယွင်းဆုံးရှုံးမှု၊ ရောဂါရရှိမှု၊ သေဆုံးမှုတို့ ဖြစ်ပွားသော အလုပ်သမားများအတွက် သက်ဆိုင်ရာအလုပ်သမား သို့မဟုတ် အမွေဆက်ခံခွင့်ရှိသူကို တည်ဆဲဥပဒေနှင့် အညီ ရထိုက်သည့် နစ်နာကြေးနှင့် လျော်ကြေးပေးပါမည်။ (ပုဒ်မ ၆၅ (ဋ)အရ)

(ဈ) လာရောက်အလုပ်လုပ်ကိုင်နေသည့် နိုင်ငံခြားသား ကျွမ်းကျင်ပညာရှင်များနှင့် ကြီးကြပ်သူများ၊ မိသားစုဝင်များသည် တည်ဆဲဥပဒေများ၊ နည်းဥပဒေများ၊ အမိန့်နှင့် ညွှန်ကြားချက်များ၊ ယဉ်ကျေးမှုနှင့် ဓလေ့ထုံးစံများကို လေ့လာလိုက်နာရန် ကြပ်မတ်ပါမည်။ (ပုဒ်မ ၆၅ (ဌ)အရ)

(ည) စီမံကိန်းလိုအပ်ချက်အရ ခွင့်ပြုထားခြင်း မဟုတ်သော ဆောင်ရွက်ခြင်းကြောင့် သဘာဝပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးစေခြင်းနှင့် လူမှုစီးပွားအပေါ် ဆုံးရှုံးမှုများ ဖြစ်ပေါ်စေပါက အဆိုပါ ဆုံးရှုံးနစ်နာမှုအတွက် ထိရောက်သည့် လျော်ကြေးကို နစ်နာသူထံသို့ ပေးလျော်ပါမည်။ (ပုဒ်မ ၆၅ (ဏ)အရ)

(ဋ) ကော်မရှင်က စစ်ဆေးကြည့်ရှုရန် ကြိုတင်အကြောင်းကြားလာပါက မည်သည့် နေရာကိုမဆို ဝင်ရောက်စစ်ဆေးခွင့်ပြုပါမည်။ (ပုဒ်မ ၆၅ (တ)အရ)

(ဌ) ကော်မရှင်၏ ခွင့်ပြုမိန့် သို့မဟုတ် အတည်ပြုမိန့်ကို ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းစဉ်များ မဆောင်ရွက်မီ ဦးစွာရယူပါမည်။

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းစဉ်များ ဆောင်ရွက်မှု အခြေအနေကို ကော်မရှင်သို့ တင်ပြပါမည်။ (ပုဒ်မ ၆၅ (ထ)အရ)

(ဍ) နည်းဥပဒေ၌ ဖော်ပြသတ်မှတ်ထားသော အာမခံအမျိုးအစားများကို အာမခံထားရှိပါမည်။ (ပုဒ်မ ၇၃ အရ)

၆။ လျှပ်စစ်ဥပဒေ(၂၀၁၄)

စီမံကိန်းပိုင်ရှင်သည်-

(က) စစ်ဆေးရေးမှူးချုပ်ထံမှ လျှပ်စစ်အန္တရာယ်ကင်းရှင်းကြောင်း လက်မှတ်ရရှိမှသာ လျှပ်စစ်ထုတ်လုပ်ခြင်း လုပ်ငန်းများ ခွင့်ပြုပါမည်။ (ပုဒ်မ၁၈အရ)

(ခ) ဤဥပဒေ၊ နည်းဥပဒေများ၊ အမိန့်ကြော်ငြာစာ၊ အမိန့်နှင့်ညွှန်ကြားချက်များကို လိုက်နာဆောင်ရွက်ရန် ပျက်ကွက်ခြင်းကြောင့်ဖြစ်စေ သက်မှတ်ထားသည့် အရည်အသွေး နှင့် စံချိန်စံညွှန်းများကို လိုက်နာဆောင်ရွက်ရန် ပျက်ကွက်ခြင်းကြောင့်ဖြစ်စေ၊ လူပုဂ္ဂိုလ်တစ်ဦးဦး သို့မဟုတ် လုပ်ငန်းအဖွဲ့အစည်းတစ်ခုခုကို ထိခိုက်နစ်နာဆုံးရှုံးမှု ဖြစ်ပွားပါက တာဝန်ယူပါမည်။ (ပုဒ်မ၂၁(က)အရ)

(ဂ) မိမိ၏ပေါ့ဆစွာဆောင်ရွက်မှုကြောင့် လူပုဂ္ဂိုလ်တစ်ဦးဦး သို့မဟုတ် လုပ်ငန်းအဖွဲ့အစည်းတစ်ခုခုကို ထိခိုက်နစ်နာဆုံးရှုံးမှုဖြစ်ပွားပါက တာဝန်ယူပါမည်။ (ပုဒ်မ၂၂(က)အရ)

(ဃ) လျှပ်စစ်ဓာတ်အားထုတ်လွှတ်ခြင်းကြောင့် လျှပ်စစ်အန္တရာယ် မတော်တဆဖြစ်ပွားပါက စစ်ဆေးရေးမှူးချုပ်နှင့် သက်ဆိုင်ရာဌာနတာဝန်ခံထံ အမြန်ဆုံး အကြောင်းကြားပါမည်။ (ပုဒ်မ၂၇အရ)

(င) ဝန်ကြီးဌာနကထုတ်ပြန်ထားသည့် နည်းဥပဒေများ၊ စံချိန်စံညွှန်းများနှင့် လုပ်ကိုင်ဆောင်ရွက်ပါမည်။ သက်ဆိုင်ရာအစိုးရဌာန၊ အစိုးရအဖွဲ့စည်းများ၏ လိုအပ်သော စစ်ဆေးမှုများကိုခံယူပါမည်။ (ပုဒ်မ၄၀အရ)

(စ) မိမိ ပေါ့လျော့မှုကြောင့်ဖြစ်စေ၊ မိမိကတာဝန်ပေးအပ်ထားသူ၏ ပေါ့လျော့မှုကြောင့်ဖြစ်စေ၊ တာဝန်ပျက်ကွက်မှုကြောင့်ဖြစ်စေ ဓာတ်လိုက်မှု သို့မဟုတ် မီးလောင်မှုဖြစ်ပွားပြီး ထိခိုက်ဒဏ်ရာရခြင်း၊ မသန်မစွမ်းဖြစ်ခြင်း သို့မဟုတ် သေဆုံးခြင်းဖြစ်လျှင် ထိခိုက်နစ်နာသူက တောင်းခံခွင့်ရှိသည့် လျော်ကြေးကိုပေးလျော်ပါမည်။ (ပုဒ်မ၆၈အရ)

၇။ တိုင်းရင်းသားလူမျိုးများအကျိုးစီးပွားကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) စီမံကိန်းကို အကောင်အထည်ဖော်မည့် ဒေသရှိ ဌာနေတိုင်းရင်းသား လူမျိုးများအား စီမံကိန်း၏ အကြောင်းအရာများကို ပြည့်စုံတိကျစွာ ကြိုတင်ချပြ အသိပေးပါမည်။ (ပုဒ်မ ၅ အရ)

(ခ) စီမံကိန်းကို အကောင်အထည်ဖော် ဆောင်ရွက်ရာတွင် စီမံကိန်းကို အကောင်အထည်ဖော်မည့် ဒေသရှိ ဌာနေတိုင်းရင်းသား လူမျိုးများနှင့် ညှိနှိုင်းဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၅ အရ)

၈။ ပြည်သူ့ကျန်းမာရေးဥပဒေ(၁၉၇၂)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ပြည်သူ့ကျန်းမာရေးအတွက် ပုဒ်မ ၃ ပါ ကိစ္စများနှင့် စပ်လျဉ်း၍ မည်သည့် စည်းကမ်းသတ်မှတ်ချက်များ၊ ညွှန်ကြားချက်များကိုမဆို လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၃ အရ)

(ခ) လိုအပ်ချက်အရ ဤဥပဒေအရ တာဝန်ရှိသူများက လာရောက်စစ်ဆေးခြင်းနှင့် စပ်လျဉ်း၍ မည်သည့်နေရာ၊ မည်သည့်အချိန်တွင် မည်သည့် စစ်ဆေးမှုကိုမဆို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၅ အရ)

၉။ ကူးစက်ရောဂါများကာကွယ်နှိမ်နင်းရေးဥပဒေ(၁၉၉၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) အလုပ်သမားများကို ကူးစက်ရောဂါ မဖြစ်ပွားစေရေးအတွက် လုပ်ငန်းခွင်တွင် ကျန်းမာရေးနှင့် ညီညွတ်သော နေအိမ်ဆောက်လုပ်ပေးပါမည်။ ကျန်းမာရေးနှင့် ညီညွတ်သော သောက်ရေနှင့် သုံးရေရရှိအောင် ဆောင်ရွက်ပေးပါမည်။ အညစ်အကြေးများကို စနစ်တကျ စွန့်ပစ် စေရန် ဆောင်ရွက်ပေးပါမည်။ (ပုဒ်မ ၃ (က) (၉) အရ)

(ခ) ကျန်းမာရေးဝန်ကြီးဌာနနှင့် ကျန်းမာရေးဦးစီးဌာနတို့က ညွှန်ကြားသည်နှင့် အညီ လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၄ အရ)

(ဂ) အောက်ပါကိစ္စရပ်များ ဖြစ်ပွားကြောင်း သိရှိလျှင် သိရှိခြင်း အနီးဆုံး ကျန်းမာရေး ဌာန သို့မဟုတ် ဆေးရုံသို့ ချက်ချင်း သတင်းပို့ပါမည် –

(၁) ကြက်နှင့် အပါအဝင် တရိစ္ဆာန်များ အစုအလိုက်၊ အပြုံလိုက် သေဆုံးခြင်း၊

(၂) ကြွက်ကျခြင်း၊

(၃) ကူးစက်မြန်ရောဂါဖြစ်သည်ဟု သံသယရှိခြင်း သို့မဟုတ် ယင်းရောဂါ ဖြစ်ပွားခြင်း

(၄) တိုင်ကြားရမည့် ကူးစက်ရောဂါဖြစ်ပွားခြင်း၊

(ဃ) ကျန်းမာရေးအရာရှိက လိုအပ်၍ လာရောက်စစ်ဆေးလျှင် မည်သည့်နေရာ၊ မည်သည့်အချိန်တွင်မဆို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၁၁ အရ)

၁၀။ ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်း သောက်သုံးမှုထိန်းချုပ်ရေး ဥပဒေ(၂၀၁၆)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ဆေးလိပ်သောက်သုံးခွင့်မရှိသော နေရာများတွင် ထိုသို့ခွင့်မပြုကြောင်း ဖော်ညွှန်း သည့် စာတမ်းနှင့် အမှတ်အသားများကို သတ်မှတ်ချက်နှင့်အညီ ထားရှိပါမည်။ (ပုဒ်မ ၉ (က) အရ)

(ခ) ဓာတ်အားပေး စက်ရုံ ဧရိယာအတွင်း ဆေးလိပ်သောက်သုံးရန် နေရာကို သီးသန့်သတ်မှတ်ပေးပြီး သတ်မှတ်ချက်နှင့်အညီ ယင်းသို့ခွင့်ပြုသည့် နေရာဖြစ်ကြောင်း ဖော်ညွှန်းသည့် စာတမ်းနှင့် အမှတ်အသား ထားရှိပါမည်။ (ပုဒ်မ ၉ (ခ) အရ)

(ဂ) ဆေးလိပ်သောက်ခွင့်မရှိသော နေရာ၌ မည်သူမျှ ဆေးလိပ်သောက်ခြင်းမပြုရန် ကြပ်မတ်ပါမည်။ (ပုဒ်မ ၉ (ဂ) အရ)

(ဃ) ကြီးကြပ်ရေးအဖွဲ့ လာရောက်စစ်ဆေးသည့်အခါ စစ်ဆေးခြင်းကို ခံယူပါမည်။ (ပုဒ်မ ၉ (ဃ) အရ)

၁၁။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) သီးသန့်မီးသတ်တပ်ဖွဲ့ ဖွဲ့စည်းပါမည်။ (ပုဒ်မ ၂၅ (က) အရ)

(ခ) မီးဘေးလုံခြုံရေးဆိုင်ရာ ပစ္စည်းများကို ထားရှိပါမည်။ (ပုဒ်မ ၂၅ (ခ) အရ)

၁၂။ မော်တော်ယာဉ် ဥပဒေ(၂၀၁၅) နှင့် မော်တော်ယာဉ်နည်းဥပဒေများ(၁၉၈၇)

စီမံကိန်းပိုင်ရှင်သည်-

လေထုညစ်ညမ်းစေခြင်း၊ အသံဆူညံစေခြင်းနှင့် အသက်အန္တရာယ် လုံခြုံစိတ်ချမှုတို့နှင့် သက်ဆိုင်သည့် ဤဥပဒေနှင့် နည်းဥပဒေများပါ ပြဋ္ဌာန်းချက်များကို လိုက်နာဆောင်ရွက်ပါမည်။

၁၃။ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ(၁၉၉၃)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ကိုယ်ပိုင်ယာဉ်များ သုံးစွဲမည်ဆိုပါက လူထိခိုက်မှုဆိုင်ရာ အာမခံ ထားရှိပါမည်။ (ပုဒ်မ ၁၅ အရ)

(ခ) ပတ်ဝန်းကျင်ကို ထိခိုက်စေခြင်းနှင့် ပြည်သူလူထုကို နစ်နာစေခြင်းဖြစ်ပေါ်လျှင် ယင်းအထွေထွေ ဆုံးရှုံးနစ်နာမှုကို ပေးလျော်နိုင်ရန် ထားရှိရမည့် အာမခံကို ထားရှိပါမည်။ (ပုဒ်မ ၁၆ အရ)

၁၄။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ(၂၀၁၁)

စီမံကိန်းပိုင်ရှင်သည်-

(က) အလုပ်သမား ဥပဒေနှင့် မညီဘဲ အလုပ်ထုတ်ခံရသည့် အလုပ်သမားကို ပြန်လည်အလုပ်ခန့်ထားရန် တောင်းဆိုသည်ကို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၁၈အရ)

(ခ) အလုပ်ရှင်နှင့် အလုပ်သမားအကြား အငြင်းပွားမှုကို ညှိနှိုင်းဖျန်ဖြေရေးအဖွဲ့က ဖြေရှင်းရာတွင် ယင်းအဖွဲ့သို့ အလုပ်သမားကိုယ်စားလှယ် စေလွှတ်ခြင်းကို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၁၉ အရ)

(ဂ) အလုပ်သမားဥပဒေများပါ အလုပ်သမားအခွင့်အရေး သို့မဟုတ် အကျိုးစီးပွားနှင့် စပ်လျဉ်း၍ အစိုးရ၊ အလုပ်ရှင်နှင့် တောင်းဆိုသူ အလုပ်သမားတို့ ဆွေးနွေးရာတွင်

အလုပ်သမား အဖွဲ့အစည်း၏ ကိုယ်စားလှယ်ကို ပါဝင်ဆွေးနွေးခွင့်ပြုပါမည်။ (ပုဒ်မ ၂၀ အရ)

(ဃ) အလုပ်သမား ဥပဒေများနှင့်အညီ အလုပ်သမားများ၏ စုပေါင်းအရေးဆိုမှုများကို ဖြေရှင်းရာတွင် အလုပ်သမားအဖွဲ့အစည်းကို ပါဝင်ဆောင်ရွက်ခွင့်ပြုပါမည်။ (ပုဒ်မ ၂၁ အရ)

(င) အလုပ်သမား အဖွဲ့အစည်းက သက်ဆိုင်ရာ အလုပ်သမား အဖွဲ့ချုပ်က ချမှတ်ထားသော လုပ်ထုံးလုပ်နည်းများ၊ စည်းမျဉ်းစည်းကမ်း၊ ညွှန်ကြားချက်များနှင့်အညီ အစည်းအဝေးများပြုလုပ်ခြင်း၊ သပိတ်မှောက်ခြင်းတို့ကို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၂၂ အရ)

၁၅။ အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ(၂၀၁၂)

စီမံကိန်းပိုင်ရှင်သည်-

(က) တောင်းဆို တိုင်ကြားချက်နှင့် စပ်လျဉ်း၍ သတ်မှတ်ကာလအတွင်း ဆွေးနွေး ညှိနှိုင်းဖြေရှင်းရာတွင် ပျက်ကွက်မည် မဟုတ်ပါ။ (ပုဒ်မ ၃၈ အရ)

(ခ) ခုံသမာဓိအဖွဲ့ သို့မဟုတ် ခုံအဖွဲ့က အငြင်းပွားမှု စစ်ဆေးနေစဉ် ကာလအတွင်း ထိုအငြင်းပွားမှု မစမီက ချမှတ်ထားသော အလုပ်သမားများနှင့် သက်ဆိုင်သည့် စည်းကမ်းများကို အလုပ်သမားများ၏ အကျိုးစီးပွားထိခိုက်စေရန် ရုတ်တရက် ပြောင်းလဲခြင်း မပြုပါ။ (ပုဒ်မ ၃၉ အရ)

(ဂ) အငြင်းပွားမှု တစ်ခုနှင့် စပ်လျဉ်း၍ ဤဥပဒေနှင့်အညီ ဆွေးနွေးညှိနှိုင်းခြင်း၊ ဖျန်ဖြေခြင်းနှင့် ခုံသမာဓိအဖွဲ့ဖြင့် ဆုံးဖြတ်ခြင်းတို့ကို မပြုဘဲ အလုပ်မထုတ်ပါ။ (ပုဒ်မ ၄၀ အရ)

(ဃ) ခုံသမာဓိ သို့မဟုတ် ခုံအဖွဲ့က ပုဒ်မ ၅၁ အရ ဆုံးဖြတ်သည့် လျော်ကြေးငွေကို ပေးဆောင်ပါမည်။ (ပုဒ်မ ၅၁ အရ)

၁၆။ အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ(၂၀၁၃)

စီမံကိန်းပိုင်ရှင်သည်-

(က) အလုပ်သမားခန့်ထားရာတွင် ဤဥပဒေ ပုဒ်မ ၅ ပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ စာချုပ်ချုပ်ဆို၍ ခန့်ထားပါမည်။ (ပုဒ်မ၅အရ)

(ခ) ခန့်ထားရန် လျာထားသော အလုပ်သမားနှင့် လုပ်ငန်း၌ လုပ်ကိုင်လျက်ရှိသော အလုပ်သမားများ၏ အလုပ်အကိုင်ဆိုင်ရာ ကျွမ်းကျင်မှုအဆင့် မြင့်မားစေရန် လေ့ကျင့်ရေး အစီအစဉ်များကို လုပ်ငန်းလိုအပ်ချက်အရ ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေးအဖွဲ့၏ မူဝါဒနှင့်အညီ ဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၁၄ အရ)

(ဂ) မိမိ၏ လုပ်ငန်း၌ အလုပ်သမားကြီးကြပ်သူအဆင့်နှင့် ယင်းအဆင့်အောက်ရှိ အလုပ်သမားများကို ပေးချေရသည့် စုစုပေါင်းလုပ်ခ၊ လစာ၏ ၀.၅ ရာခိုင်နှုန်း အောက် မနည်းသောငွေကို ရန်ပုံငွေသို့ ထည့်ဝင်ခြင်းအဖြစ် လစဉ်ပေးသွင်းပါမည်။ ယင်းထည့်ဝင်ကြေးအတွက် အလုပ်သမားများ၏ လုပ်ခ၊ လစာမှ ဖြတ်တောက်ခြင်းမပြုပါ။ (ပုဒ်မ၃၀အရ)

၁၇။ ၂၀၁၃ခုနှစ်၊ အနည်းဆုံးအခကြေးငွေဥပဒေ

စီမံကိန်းပိုင်ရှင်သည်-

(က) ပုဒ်မ ၁၂ ပါ သတ်မှတ်ချက်များနှင့်အညီ အခကြေးငွေ ပေးချေပါမည်။ (ပုဒ်မ၁၂အရ)

(ခ) သတ်မှတ်ထားသော အနည်းဆုံးအခကြေးငွေ နှုန်းထားများကို အလုပ်သမားများကို အသိပေးမည့်အပြင် လုပ်ငန်းခွင်တွင် မြင်နိုင်စေရန် ကြော်ငြာထားပါမည်။ (ပုဒ်မ၁၃ (က)အရ)

(ဂ) ပုဒ်မ ၁၃ ပါ ပြုစုရမည့် စာရင်းဇယားနှင့် စာတမ်းအမှတ်အသားများကို ပြုစုခြင်း၊ သက်ဆိုင်ရာ ဦးစီးဌာနသို့ သတ်မှတ်ချက်များနှင့်အညီ အစီရင်ခံခြင်း၊ ယင်းတို့ကို တောင်းခံသည့်အခါ တင်ပြခြင်းတို့ ပြုပါမည်။ (ပုဒ်မ ၁၃ (ခ)၊ (ဂ)၊ (ဃ) တို့အရ)

(ဃ) ပုဒ်မ ၁၃ (င)နှင့် ပုဒ်မ ၁၈ အရ စစ်ဆေးရေးအရာရှိများက လာရောက်စစ်ဆေးခြင်းကို ခွင့်ပြုပါမည်။ (ပုဒ်မ ၁၃ (င)နှင့် ၁၈ အရ)

(င) အလုပ်သမား ဖျားနာ၍ အလုပ်မလုပ်နိုင်သည့်အခါ ဆေးကုသရန် သတ်မှတ်ချက်များနှင့်အညီ နားခွင့်ပေးပါမည်။ (ပုဒ်မ ၁၃ (စ) အရ)

(စ) အလုပ်သမားများ၏ မိသားစုဝင် သို့မဟုတ် မိဘနာရေးဖြစ်သည့်အခါ အနည်းဆုံးအခကြေးငွေမှာ ဖြတ်တောက်ခြင်းမပြုဘဲ သတ်မှတ်ချက်များနှင့် အလုပ်နားခွင့်ပြုပါမည်။ (ပုဒ်မ ၁၃ (ဆ) အရ)

၁၈။ ၂၀၁၆ခုနှစ်၊ အခကြေးငွေပေးချေရေးဥပဒေ

စီမံကိန်းပိုင်ရှင်သည်-

(က) အခကြေးငွေ ပေးချေခြင်းနှင့် စပ်လျဉ်း၍ ပုဒ်မ ၃ နှင့် ပုဒ်မ ၄ ပါပြဋ္ဌာန်းချက်များနှင့်အညီ ပေးချေပါမည်။ (ပုဒ်မ၃ နှင့် ၄အရ)

(ခ) သဘာဝဘေးအန္တရာယ်အပါပဝင် မမျှော်လင့်သော ထူးခြားသည့်အခြေအနေ ပေါ်ပေါက်ပါက အခကြေးငွေ ပြောင်းလဲပေးချေလိုကြောင်းကို သက်ဆိုင်ရာ အလုပ်သမားများ၏ သဘောတူညီချက်ဖြင့် တင်ပြပါမည်။ (ပုဒ်မ၅အရ)

(ဂ) အလုပ်သမားထံမှ နုတ်ယူရန် လိုအပ်သည့်ငွေကြေးနှင့် စပ်လျဉ်း၍ အခန်း (၃)ပါ ပြဋ္ဌာန်းချက်နှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။ (အခန်း ၃ အရ)

(ဃ) အချိန်ပို လုပ်ကိုင်ရသည့် အလုပ်သမားကို ဥပဒေက သတ်မှတ်သည့် နှုန်းထားအတိုင်း အချိန်ပိုလုပ်ခပေးပါမည်။ (ပုဒ်မ၁၄ အရ)

၁၉။ အလုပ်သမားလျော်ကြေး အက်ဥပဒေ(၁၉၅၁)

စီမံကိန်းပိုင်ရှင်သည် ရရှိသည့် ထိခိုက်နစ်နာမှု အမျိုးအစားအလိုက် ကိစ္စရပ်တစ်ခုချင်း အပေါ်တွင် ဤဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ လျော်ကြေးငွေကို ပေးလျော်ပါမည်။

၂၀။ ခွင့်နှင့် အလုပ်ပိတ်ရက်များ အက်ဥပဒေ(၁၉၅၁)

စီမံကိန်းပိုင်ရှင်သည် ဤဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ ခွင့်နှင့် အလုပ်ပိတ်ရက်များကို ခွင့်ပြုပါမည်။

၂၁။ လူမှုဖူလုံရေးဥပဒေ(၂၀၁၂)

စီမံကိန်းပိုင်ရှင်သည်-

(က) သက်ဆိုင်ရာ လူမှုဖူလုံရေးရုံးတွင် မှတ်ပုံတင်ထားရှိပါမည်။ (ပုဒ်မ၁၁ (က)အရ)

(ခ) ပုဒ်မ ၁၅၊ ပုဒ်မခွဲ (က)ပါကျန်းမာရေးနှင့် လူမှုရေး စောင့်ရှောက်မှု ရန်ပုံငွေ၊ အလုပ်လုပ်ကိုင်နိုင်စွမ်းမရှိမှု အကျိုးခံစားခွင့်၊ သက်ပြည့်အငြိမ်းစား အကျိုးခံစားခွင့်နှင့် ကျန်ရစ်သူ အကျိုးခံစားခွင့် ရန်ပုံငွေ၊ အလုပ်လက်မဲ့ အကျိုးခံစားခွင့် ရန်ပုံငွေနှင့် သတ်မှတ်ထားသော မထည့်မနေရ ထည့်ဝင်ရမည့် ရန်ပုံငွေများကို မှတ်ပုံတင်ထည့်ဝင်ပါမည်။ (ပုဒ်မ၁၅ (ခ) အရ)

(ဂ) အလုပ်သမားက ပေးသွင်းရမည့် ထည့်ဝင်ကြေးကို ယင်း၏ လုပ်ခထဲမှ နုတ်ယူပြီး မိမိက ပေးသွင်းရမည့် ထည့်ဝင်ကြေး ငွေနှင့်အတူ သက်ဆိုင်ရာ လူမှုဖူလုံရေး ရန်ပုံငွေသို့ ပေးသွင်းပါမည်။ ထိုသို့ပေးသွင်းရသည့် ကုန်ကျစားရိတ်ကို မိမိက ကျခံပါမည်။ (ပုဒ်မ၁၈ (ခ) အရ)

(ဃ) အလုပ်တွင် ထိခိုက်မှု အကျိုးခံစားခွင့် ရန်ပုံငွေသို့ သတ်မှတ်ထားသော ထည့်ဝင်ကြေးပေးပြီး အာမခံထားရှိပါမည်။ (ယင်းရန်ပုံငွေသည် အလုပ်သမား လျော်ကြေး အက်ဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့် သက်ဆိုင်ခြင်းမရှိကြောင်း သိရှိပါသည်။) (ပုဒ်မ၄၈ (ခ)နှင့် ၄၉ (က) တို့အရ)

(င) ပုဒ်မ ၁၇ တွင် ဖော်ပြထားသည့် မှတ်တမ်းနှင့် စာရင်းများကို မှန်ကန်စွာပြုစုပြီး သက်ဆိုင်ရာ လူမှုဖူလုံရေးရုံးသို့ သတ်မှတ်ချက်များနှင့်အညီ တင်ပြပါမည်။ (ပုဒ်မ၇၅အရ)

၂၂။ ရေနံအက်ဥပဒေ(၁၉၃၄)

စီမံကိန်းပိုင်ရှင်သည် စီမံကိန်းအတွက် လိုအပ်သည့် လောင်စာဆီများကို တင်သွင်းခြင်း၊ သယ်ယူပို့ဆောင်ခြင်းနှင့်သိုလှောင်ခြင်းတို့အတွက် ပုဒ်မ ၃ အရ လိုအပ်သည့် လိုင်စင်ကို ရယူပါမည်။ ထို့ပြင် ယင်းလိုင်စင်ပါ စည်းကမ်းချက်များကိုလည်း လိုက်နာပါမည်။

၂၃။ ရေနံနည်းဥပဒေများ(၁၉၃၇)

စီမံကိန်းပိုင်ရှင်သည် စီမံကိန်းအတွက် လိုအပ်သည့် လောင်စာဆီများကို တင်သွင်းခြင်း၊ သယ်ယူပို့ဆောင်ခြင်းနှင့်သိုလှောင်ခြင်းတို့အတွက် နည်းဥပဒေများ အခန်း (၃) နှင့် (၄) ပါ သတ်မှတ်ပြဋ္ဌာန်းချက်များနှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။ (အခန်း (၃)နှင့် (၄)အရ)

၂၄။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး ဥပဒေ(၂၀၀၆)

စီမံကိန်းပိုင်ရှင်သည်-

(က) ရေအရင်းအမြစ်နှင့်မြစ်၊ ချောင်းများထိခိုက်ပျက်စီးစေရန် ရည်ရွယ်၍ တစ်စုံတစ်ရာပြုလုပ်ခြင်း မပြုပ။ (ပုဒ်မ၈ (က) အရ)

(ခ) ဦးစီးဌာနက မြစ်၊ ချောင်းအတွင်း ရေထုညစ်ညမ်းမှု မဖြစ်ပေါ်စေရေးနှင့် ရေလမ်းကြောင်းမပြောင်းလဲစေရေးအတွက် သတ်မှတ်ထားသော စည်းကမ်းချက် များကို ဖောက်ဖျက်ခြင်းမပြုပါ။ (ပုဒ်မ ၂၄ (က)အရ)

၂၅။ ရေချိုငါးလုပ်ငန်း ဥပဒေ (၁၉၉၁)

စီမံကိန်းပိုင်ရှင်သည်ရေချိုငါးလုပ်ငန်း ရေပြင်အတွင်း ရေထုညစ်ညမ်းစေခြင်းနှင့် ငါးနှင့် အခြားရေးနေသတ္တဝါများကို နှောက်ယှက်ခြင်း မပြုပါ။ (ပုဒ်မ ၄၀ အရ)

၂၆။ မြန်မာ့ပင်လယ်ငါး လုပ်ငန်းဥပဒေ (၁၉၉၀)

စီမံကိန်းပိုင်ရှင်သည် ငါး၊ အခြားရေနေသတ္တဝါတို့ကို အနှောင့်အယှက်ဖြစ်စေရန် သို့မဟုတ် ရေထုကို ညစ်ငြမ်းစေရန် သက်ရှိရေသတ္တဝါကို ဖြစ်စေ၊ အဆိပ်အတောက်ဖြစ်စေ၊ အရာဝတ္ထုပစ္စည်းတစ်ခုခုကို ဖြစ်စေ၊ မြန်မာ့ ပင်လယ်ငါးလုပ်ငန်း ရေပြင်တွင် စွန့်ပစ်ခြင်းမပြုပါ။ (ပုဒ်မ ၃၉ အရ)

၂၇။ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈)

စီမံကိန်းဧရိယာသည် ရှေးဟောင်းအမွေအနှစ် ဒေသအတွင်း ကျရောက်ပါက စီမံကိန်းပိုင်ရှင်သည် ပုဒ်မ ၁၃ နှင့် ၁၅ တို့ပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။

၂၈။ ရှေးဟောင်း ဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည် မိမိ၏ စီမံကိန်း ဧရိယာအတွင်း ရှေးဟောင်းဝတ္ထုပစ္စည်းကို တွေ့ရှိပါက အနီးဆုံးရပ်ကွက် သို့မဟုတ် ကျေးရွာအုပ်စု အုပ်ချုပ်ရေးမှူးထံ အကြောင်းကြားပါမည်။ (ပုဒ်မ၁၂ အရ)

၂၉။ ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) စီမံကိန်း နယ်နမိတ်အတွင်း မြေအောက် သို့မဟုတ် မြေပေါ်တွင် ရှေးဟောင်းအဆောက်အအုံကို တွေ့ရှိပါက အနီးဆုံးရပ်ကွက် သို့မဟုတ် ကျေးရွာအုပ်စု အုပ်ချုပ်ရေးမှူးထံ အကြောင်းကြားပါမည်။ (ပုဒ်မ၁၂အရ)

(ခ) စီမံကိန်း ဧရိယာသည် ရှေးဟောင်းအဆောက်အအုံ ဧရိယာအဖြစ် သတ်မှတ်သည့် ဧရိယာအတွင်း ကျရောက်ပါက ရှေးဟောင်းသုတေသန ဦးစီးဌာန၏ ကြိုတင်ခွင့် ပြုချက်ကို ရယူပါမည်။ (ပုဒ်မ ၁၅ အရ)

(ဂ) ရှေးဟောင်းအဆောက်အအုံ နယ်နမိတ်အတွင်း အစိုင်အခဲများ စွန့်ပစ်ခြင်းနှင့် ဓာတုပစ္စည်းများ စွန့်ပစ်မည်ဆိုပါက ရှေးဟောင်းသုတေသန ဦးစီးဌာန၏ ကြိုတင်ခွင့် ပြုချက်ကို ရယူပါမည်။ (ပုဒ်မ ၂၀ (စ) အရ)

၃၀။ သစ်တောဥပဒေ (၁၉၉၂)

စီမံကိန်းပိုင်ရှင်သည် သစ်တောနယ်မြေ သို့မဟုတ် သစ်တောဖုံးလွှမ်းသော နယ်မြေတွင် စီမံကိန်းကို ဆောင်ရွက်ရမည်ဖြစ်ပါက သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန၏ ခွင့်ပြုချက်ရယူပြီးမှ ဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၁၂ (က) အရ)

၃၁။ မြန်မာ့အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၄)

စီမံကိန်းပိုင်ရှင်သည် -

(က) စီမံခန့်ခွဲမှုကော်မတီက အမိန့်ကြော်ငြာစာ၊ အမိန့်၊ ညွှန်ကြားချက်နှင့် လုပ်ထုံးလုပ်နည်း များဖြင့် သတ်မှတ်ပေးသည့် လိုက်နာရမည့် သတ်မှတ်ချက်များကို လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၁၁(စ) အရ)

(ခ) သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကာကွယ်ရေးအတွက် စီမံခန့်ခွဲမှုကော်မတီ၏ တည်ဆဲ ဥပဒေများနှင့်အညီ ကြီးကြပ်ကွပ်ကဲခြင်းကို လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၁၁(တ) အရ)

(ဂ) မြန်မာနိုင်ငံ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေပါစံချိန်စံညွှန်းများနှင့် နိုင်ငံတကာ စံချိန် စံညွှန်းများကို လိုက်နာပါမည်။ ထို့ပြင် လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်မှုများ မရှိစေရန် တည်ဆဲဥပဒေများနှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၃၅ အရ)

(ဃ) အဆင့်မြင့်နည်းပညာနှင့် ကျွမ်းကျင်မှုဆိုင်ရာ မလိုအပ်သော လုပ်ငန်းများတွင် နိုင်ငံသား များကိုသာ ခန့်ထားပါမည်။ (ပုဒ်မ ၇၄ အရ)

(င) အဆင့်မြင့်နည်းပညာနှင့် ကျွမ်းကျင်မှုဆိုင်ရာ လိုအပ်သော လုပ်ငန်းများတွင် နိုင်ငံသား ကျွမ်းကျင်သူ အလုပ်သမားများ၊ အတတ်ပညာရှင်များနှင့် ဝန်ထမ်းများကို -

(၁) လုပ်ငန်းစတင်သည့်နှစ်မှ ပထမ ၂ နှစ်အတွင်း၌ အနည်းဆုံး ၂၅ ရာခိုင်နှုန်း၊

(၂) လုပ်ငန်းစတင်သည့်နှစ်မှ ဒုတိယ ၂ နှစ်အတွင်း၌ အနည်းဆုံး ၅၀ ရာခိုင်နှုန်း၊

(၃) လုပ်ငန်းစတင်သည့်နှစ်မှ တတိယ ၂ နှစ်အတွင်း၌ အနည်းဆုံး ၇၅ ရာခိုင်နှုန်း၊

ခန့်ထားပါမည်။ (ပုဒ်မ ၇၅ အရ)

(စ) မိမိနှင့် အလုပ်သမား၊ အတတ်ပညာရှင် သို့မဟုတ် ဝန်ထမ်းတို့အကြား အငြင်းပွားမှု ပေါ်ပေါက်ပါက စီမံခန့်ခွဲမှုကော်မတီ၏ စေ့စပ်ညှိနှိုင်းခြင်းနှင့် ဖြန်ဖြေခြင်းကို ခံယူပါမည်။ (ပုဒ်မ ၇၆(က) အရ)

(ဆ) မိမိခန့်ထားမည့် နိုင်ငံခြားသားဝန်ထမ်းများအတွက် ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်း ဖွင့်လှစ်ထားသည့် အလုပ်သမားကိုယ်စားလှယ်ရုံးက ထုတ်ပေးသည့် အလုပ်လုပ်ခွင့် ပါမစ်ကို ရယူပါမည်။ (ပုဒ်မ ၇၇ အရ)

(ဇ) နိုင်ငံခြားသားဝန်ထမ်းကို သတ်မှတ်ထားသည့် အရေအတွက်ထက် ပိုမို ခန့်ထားလိုပါက စီမံခန့်ခွဲမှုကော်မတီ၏ ခွင့်ပြုချက်ရရှိမှသာ ခန့်ထားပါမည်။ (ပုဒ်မ ၇၈ အရ)

(ဈ) အသုံးပြုခွင့်ရရှိထားသည့် စီမံကိန်းမြေပေါ်တွင် လူနေအိမ်ခြေများ၊ အဆောက်အအုံများ၊ လယ်ယာဥယျာဉ်ခြံမြေများ၊ သီးပင်စားပင်များ၊ စိုက်ခင်းများ၊ ပြောင်းရွှေ့ရှင်းလင်းပေးရန် လိုအပ်ပါက

ထိုသို့ပြောင်းရွှေ့နေရာချထားခြင်းနှင့် လျော်ကြေးပေးခြင်းတို့အတွက် ကုန်ကျစရိတ်များကို ချုပ်ဆိုထားသည့် သဘောတူညီချက်နှင့်အညီ ကျခံပါမည်။ (ပုဒ်မ ၈၀(က) အရ)

(ည) ပြောင်းရွှေ့ရသူများအတွက် မူလအဆင့်အတန်းထက် မနိမ့်ကျစေရန်၊ ယင်းတို့၏အခြေခံ လိုအပ်ချက်များ ပြည့်စုံစေရန်နှင့် အဆိုပါလုပ်ငန်းများ အဆင်ပြေချောမွေ့စေရန် စီမံခန့်ခွဲမှု ကော်မတီနှင့် ညှိနှိုင်းဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၈၀(ခ) အရ)

(ဋ) အသုံးပြုခွင့်ရရှိသော စီမံကိန်းမြေကို သတ်မှတ်ထားစည်းကမ်းချက်များနှင့်အညီ အသုံးပြု ပါမည်။ (ပုဒ်မ ၈၀(ဂ) အရ)

(ဌ) အသုံးပြုခွင့်ရရှိသော စီမံကိန်းမြေ၏ သဘာဝမြေမျက်နှာသွင်ပြင် သို့မဟုတ် မြေ အနိမ့် အမြင့် အနေအထားကို စီမံခန့်ခွဲမှုကော်မတီ၏ ခွင့်ပြုချက်မရှိဘဲ သိသာထင်ရှားစွာ ပြုပြင် ပြောင်းလဲခြင်းမပြုပါ။ (ပုဒ်မ ၈၀(ဃ) အရ)

(ဍ) အသုံးပြုခွင့်ရရှိသော စီမံကိန်းမြေ၏ မြေပေါ်သို့မဟုတ် မြေအောက်၌ မိမိအားခွင့်ပြုသည့် လုပ်ငန်းနှင့် မသက်ဆိုင်သည့် သဘာဝသယံဇာတ တွင်းထွက်ပစ္စည်းကိုဖြစ်စေ၊ ရှေးဟောင်းဝတ္ထုပစ္စည်းကို ဖြစ်စေ၊ ရတနာသိုက်ကိုဖြစ်စေ တွေ့ရှိလျှင် စီမံခန့်ခွဲမှုကော်မတီ သို့ ချက်ချင်းအကြောင်းကြားပါမည်။ ထို့ပြင် စီမံခန့်ခွဲမှုကော်မတီက အစားထိုးစီစဉ်ပေးသည့် နေရာသို့ ပြောင်းရွှေ့ဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၈၅ အရ)

၃၂။ မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃)

စီမံကိန်းပိုင်ရှင်သည် -

(က) အင်ဂျင်နီယာဆိုင်ရာလုပ်ငန်းနှင့် နည်းပညာဆိုင်ရာ လုပ်ငန်းများကို ကောင်စီကထုတ်ပေး သော မှတ်ပုံတင်လက်မှတ် ရရှိထားသည့် အင်ဂျင်နီယာများကိုသာ ခန့်အပ်ဆောင်ရွက်စေ ပါမည်။ (ပုဒ်မ ၃၇ အရ)

(ခ) အင်ဂျင်နီယာဝန်ထမ်းများက မှတ်ပုံတင်လက်မှတ်ပါ စည်းကမ်းချက်များကို လည်းကောင်း၊ မြန်မာနိုင်ငံအင်ဂျင်နီယာ ကောင်စီဥပဒေပါ ပြဋ္ဌာန်းချက်များကို လည်းကောင်း၊ ယင်းဥပဒေအရ ထုတ်ပြန်သည့် နည်းဥပဒေများ၊ အမိန့်နှင့် ညွှန်ကြားချက် တို့ပါ တားမြစ်ချက်များကို လည်းကောင်း လိုက်နာစေရပါမည်။ (ပုဒ်မ ၃၄ အရ)

၃၃။ အလုပ်ရုံများအက်ဥပဒေ (၁၉၅၁)

စီမံကိန်းပိုင်ရှင်သည် ဥပဒေပြဋ္ဌာန်းချက်အားလုံးကို လိုက်နာဆောင်ရွက်ပါမည်။

၃၄။ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည် ဆိပ်ကမ်းနယ်နိမိတ်အတွင်း ကမ်းပါးနယ်နှင့် ကုန်းမြေမှ ဘေးအန္တရာယ် ဖြစ်စေတတ် သော ပစ္စည်းများ၊ အဆိပ်သင့်ပစ္စည်းများ၊ အမှိုက်သရိုက်များ၊ အညစ်အကြေးများနှင့် စွန့်ပစ်ပစ္စည်းများကို ရေထုအတွင်း ပြစ်ချခြင်းမပြုရန် ဆိပ်ကမ်းအာဏာပိုင်၏ စီမံချက်နှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။ (ပုဒ်မ ၂၃(က) အရ)

၃၅။ ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)

စီမံကိန်းပိုင်ရှင်သည် ပြည်ပမှပစ္စည်းများ တင်သွင်းပါက ခွင့်ပြုချက်ပါ စည်းကမ်းချက်များအတိုင်း လိုက်နာပါမည်။ (ပုဒ်မ ၇ အရ)

P.V.

....

မှ Dawei Power Generating Company Limited

အမည် Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

The Applicable Laws and Legal Commitments for 15 MegaWatt Temporary power plant Project in Dewai Special Economic Zone

Applicable Legislations, Guidelines and the Legal Framework of Environmental Issues

Past and Present Environmental Legislation and Regulations of Myanmar

The National Commissions for Environmental Affairs (NCEA) formed in February 1990 outlined **Myanmar Agenda 21**, which contains social, economic, institutional and infrastructural strengthening programmes as well as environmental conservation programmes.

To achieve sound environmental management in Myanmar, the respective Ministries fundamentally devise 56 environmental policies and regulations that are directly related with environmental conservation and protection. The State Law and Order Restoration Council ratified the **Forest Law in November 1992,** in order to conserve the environmental factors and to maintain a sustained yield of the forest produce and **Protection of Wild Life and Wild Plants and Conservation of Natural Areas Law in 1994.**

In order to uphold further environmental protection promote sustainable development and bring into line for environmental affairs, in April 2011, National Environmental Conservation Committee (NECC) was reformed for the national environmental management in Myanmar. The Ministry of Environmental Conservation and Forestry (MoECaF) was upgraded in place of The Ministry of Forestry in September 2011 as the focal and coordinating agency for the overall environmental management. The Government entered the set-up of Environmental Conservation Department as a separate organization under the Ministry of Environmental Conservation and Forestry (MoECaF) on 11 October 2012. The Ministry of Environmental Conservation and Forestry promulgated The Environmental Conservation Law on 30th March, 2012. The Environmental Conservation Law on 30th March, 2012.The Environmental conservation and Forestry issued the Environmental Conservation Rules on th 2014 and issued the Environmental Impact Assessment Producer and Emission Quality Standards Guideline on 29th December 2015.

The project is related to the following laws, rules, procedure and guideline-

1. The Environmental Conservation Law (2012)
2. The Environmental Conservation Rules (2014)
3. Environmental Impact Assessment Procedure (2015)
4. Emission Quality Standards Guideline (2015)
5. The Myanmar Investment Law (2016)
6. The Rights of National Races Law (2015)
7. The Electricity Law (2014)
8. The Factory Acts (1995)
9. The Public Health Law (1972)
10. Prevention and Control of Communicable Disease Law (1995)
11. The Control of Smoking and Consumption of Tobacco Product Law (2006)
12. Myanmar Fire Force Law (2015)
13. The Motor Vehicle Law (2015) and Rules (1987)

14. The Myanmar Insurance Law (1993)
15. Labour Organization Law (2011)
16. Settlement of Labour Didputes law (2012)
17. The Development of Employment and Skill Law (2013)
18. The Minimum Wages Law (2013)
19. Payment of Wages Law (2016)
20. Workmen's Compensation Act (1923)
21. The Leaves and Holiday Act (1951)
22. Social Security Law (2012)
23. Petroleum Act (1934)
24. The Petroleum Rules (1937)
25. Conservation of Water Resources and Rivers Law (2006)
26. Freshwater Fisheries Law (1991)
27. Myanmar Marine Fishery Law (1990)
28. The Protection and Preservation of Cultural Heritage Regions Law (1998)
29. The Protection and Preservation of Antique Objects Law (2015)
30. The Protection and Preservation of Ancient Monument Law (2015)
31. Forest Law (1992)
32. Special Economic Zone Law (2014)
33. The Engineer Council Law (2013)
34. Myanmar Port Authority Law (2015)
35. The export and Import Law (2012)

1. The Environmental Conservation Law (2012)

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

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

- The project proponent has to comply with the terms and conditions included in prior permission, under section25 of said law.
- The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification and procedure issued by said law, under section 29.

2. **The Environmental Conservation Rules (2014)**

- The project proponent has to avoid emit, discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public, under sub- rule (a) of rule 68.
- The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem, under sub-rule (b) of rule 68.

3. **Environment Impact Assessment Procedure (2015)**

- The project proponent has to be liable for all adverse impacts caused by doing or omitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102.
- The project proponent has to support, after consultation with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102.
- The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103.
- The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104.
- The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105.

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

4. Emission Quality Standards Guideline (2015)

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

5. The Myanmar Investment Law (2016)

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

- The project proponent has to lease the land or building owned by government or private with lease agreement and register it by the registration of deeps law under sub- section (a) and (d) of section 50 of said law.
- The project proponent has to appoint the nationalities in the various levels of administrative, technical and expert work by the arrangement to develop their expertise, in line with the sub-section (b) of section51 of said law.
- The project proponent has to appoint the nationalities only in normal work without expertise, , in line with the sub-section (c) of section51of said law.
- The project proponent has to appoint either foreigner or nationality with the appointment agreement in accord with the law, in line with the sub-section (d) of section51of said law.
- The project proponent has to comply with the international best practices, existing laws, rules and procedures to not damage, pollute, and injure to environment, cultural heritage and social, in line with the sub-section (g) of section65of said law.
- The project proponent has to close the project after paying the compensation to the employees in accord with the existing laws if violates the appointment agreement or terminate, transfer or suspend the investment or reduce the number of employees , in line with the sub-section (i) of section65of said law.
- The project proponent has to pay the wages or salary to the employees in accord with the laws, rules, order and procedures in the suspension period, in line with the sub-section (j) of section65of said law.
- The project proponent has to pay the compensation or injured fees to the respected employees or their inheritors if injury in or loss of part of body or death caused by work, in line with the sub-section (k) of section65of said law.

- The project proponent has to stipulate the foreign employees to respect the culture and custom and abide by the existing laws, rules, orders, directives, in line with the sub-section (l) of section65of said law..
- The project proponent has to abide by labour laws, in line with the sub-section (m) of section65of said law.
- The project proponent has to pay the compensation, to the injured person for damages if damages to environment or socio-economy is occurred by misuse of project, in line with the sub-section (o) of section65of said law.
- The project proponent has to allow to inspect in anywhere of project if Myanmar Investment Commission inform to inspect the project, in line with the sub-section (p) of section65of said law.
- The project proponent has to obtain the permission of MIC before EIA process and report back this process to MIC, in line with the sub-section (q) of section 65of said law.

- The project proponent has to insure the prescribed insurance by rules, under section 73 of said law.

6. Protection the Rights of National Races Law (2015)

Purpose: To ensure to disclose to residents ethnic nationalities about the project fully, moreover to ensure to cooperate with them. This law focuses the following matters;

Section 5 - The project proponent has to disclose to the residents national races all about the project fully.

- The project proponent has to cooperate with the residents national races.

7. The Electricity Law (2014)

Purpose: To ensure the compliance with the conditions of permission for productions of electricity, abiding by any stipulation, implementing with the best practices and paying compensation in line with above law.

- The project proponent will implement the project with the best practices to reduce the damages on the environment, health and socio-economy, also will pay compensation for the damages and will pay the fund for environmental conservation, under sub-section (b) of section 10 of said law.
- The project proponent has to take the certificate of electric safety, issued by the chief-inspector, before the commencement of power generation under section 18 of said law.

- The project proponent has to be liable for damages to any person or enterprise by failure to abide by the quality standards or rules, regulation, by-law, order and directive issued under said law according to sub-section(a) of section 21 of said law.
- The project proponent has to be liable for damages to any person or enterprise by negligence of project owner according to sub-section (a) of section22 of said law.
- The project owner has to comply with the permission for electric searching and generation under sub-section (a) and (b) of section 26 of said law.
- The project proponent will inform promptly to chief-inspector and head officer of related office while occurring of accident in electricity generation under section 27 of said law.
- The project proponent will comply with the standards, rules and procedure. Moreover will allow the inspection by respected governmental department and organization if it is necessary under section 40 of said law.
- The project proponent will pay the compensation to anyone who is injured or caused to death in electric shock or fire caused by the negligence or omitting of the project owner or representative of project owner, under section 68 of said law.

8. Factories Act (1951)

Purpose: To ensure the safety and cleaning of working place, drinking water, creation of nursing rooms and other needs.

- ***Section 5& 7*** - The project proponent has to abide by all provisions of this law.

9. The Public Health Law (1972)

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

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

10. Prevention and Control of Communicable Diseases Law (1995)

***Purpose*:** To ensure the healthy work environment and prevention the communicable diseases by the cooperation with the relevant health department. This law focuses as follows;

- The project proponent has to built the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage & sewage, under clause (9) of sub-section (a) of section 3 of said law.
- The project proponent has to abide by any instruction or stipulation by Department of health and Ministry of Health, under section 4 of said law.
- The project proponent has to inform promptly to the nearest health department or hospital if the following are occurred: (section 9)
  (a) Mass death of animals included in birds or chicken;
  (b) Mass death of mouse;
  (c) Suspense of occurring of communicable disease or occurring of communicable disease;
  (d) Occurring of communicable disease which must be informed.
- The project proponent has to allow any inspection, anytime, anywhere if it is need to inspect by health officer, under section 11 of said law.

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

***Purpose*:** To ensure the creation of smoking area and non-smoking area in the power plant area for health and control of smoking. This law focuses as follows;

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

The project proponent has to allow the inspection of supervisory body in the power plant area, under sub-section (d) of section 9 of said law.

12. The Myanmar Fire Force Law (2015)

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

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

13. The Motor Vehicles law (2015) and Rules (1987)

Purpose: When the construction period and if it is needed in operation and production period for the all vehicles.

The project proponent has to promise to abide by the nearly all provisions of said law and rules, especially the provisions related to air pollution, noise pollution and life safety.

14. The Myanma Insurance Law

Purpose: The project can cause the damages to the environment and injuries to public so to ensure the needed insurances are insured at Myanma Insurance. This law focuses the following matters;

Section 15 - If the project proponent uses the owned vehicles the project owner has to insure the insurance for injured person.

Section 16 The project proponent has to insure the insurance to compensate for general damages because the project may cause the damages to the environment and injury to public.

15. Labour Organization Law (2011)

Purpose: To ensure protection the rights of the employees, having the good relationships between the employees and employer and enabling to form and carry out the labour organizations systematically and independently. This law focuses as follows;

Section 17 - The project owner promises to allow the labour organization to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labour laws and to summit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached.

- ***Section 18*** - The project owner has to allow the demand for the re-appointment of worker is dismissed by the employer without the conformity with the labour laws.
- ***Section 19*** - The project owner has to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker.

- ***Section 20*** - The project owner has to allow the labour organization to participate and discuss in discussing with the government, the employer and the complaining employees in respect of employee's rights or interest contained in the labour laws.
- ***Section 21*** - The project owner has to allow the labour organization to participate in solving the collective bargains of the employees in accord with the labour laws.
- ***Section 22*** - The project owner has to allow the labour organization to carry out the holding the meetings, going on strike and other collective activities in line with the labour laws.

16. The Settlement of Labour Dispute Law,2012

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

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

17. Employment and Skill Development Law (2013)

Purpose: To ensure the job security and to develop the employee's skill with the fund of project owner. This law focuses as follows;

- The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.
- The project proponent has to carry out the training programs with the policy of Skill Development Body to develop the employment skill of employees who is appointed or will be appointed, under section 14 of said law.

- The project proponent has to monthly pay to the fund, which is fund for development of skill of employees, not less below 0.5 percentage of the total payment to the level of worker supervisor and the workers below such level, under sub-section (a) of section 30 of said law.
- The project proponent has to not deduct from the payment of employees for above mentioned fund, under sub-section (b) of section 30 of said law.

18. The Minimum Wages Law (2013)

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

- The project proponent has to pay the wages in line with section 12 of said law.
- The project proponent has to notify the prescribed wages obviously in work place, under sub-section (a) of section 13 of said law.
- The project proponent has to correctly record the lists, schedules, documents and wages and report these to the relevant department and give if these are asked while inspecting, in accord with the stipulations, under sub-section (b)(c)(d) of section13 of said law.
- The project proponent has to allow to be inspected by the inspector, under sub-section (d) and (e) of section 13 and section 18 of said law.
- The project proponent has to allow holiday for medical treatment if the employee' health is not fit to work, under sub-section (f) of section 13 of said law.
- The project proponent has to allow holidays without deducting from the wages if one of parents or one of family dies, under sub-section (g) of section 13 of said law.

19. Payment of Wages Law (2016)

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

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

20. Workmen's Compensation Act (1923)

Purpose: To ensure the compensations to injured employee while implementing in line with the above law and paying the prescribed compensations in various kinds of injury. This law focuses as follow;

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

21. The Leaves and Holiday Act (1951)

Purpose: The employees can take the leaves and get the holidays legally and to ensure the right to get the holidays and leaves. This law focuses the following;

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

22. Social Security Law

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

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

23. Petroleum Act (1934)

Purpose: The project will carry the oil in any phase and may import it. So, to ensure to take the license for importation and storage, abide by the stipulations in the license. This law focuses as follow;

- The project proponent has to obtain the license for importation, transportation and storage of the fuel, under section 3 of said law and abide by the stipulations in the license.

24. The Petroleum Rules (1937)

Purpose; to ensure the project owner has to abide by the stipulations for transportation of oil.

- The project proponent will abide by the provision of chapter (3) of the Petroleum Rules for transportation and the provisions of chapter (4) of said rules for storage.

25. Conservation of Water Resources and Rivers Law (2006)

Purpose: The project proponent will avoid the disposal of stipulated materials into river-creek. This law focuses as follows;

- The project proponent has to avoid any performing to damage to the river, creek and water resource, under sub-section (a) of section 8.
- The project proponent has to avoid the violation of conditions stipulated by the directorate for prevention of water pollution, under sub-section (b) of section 24.

26. Freshwater Fisheries Law (1991)

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

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

27. Myanma Marine Fishery Law (1990)

Purpose; According to the sub-section (f) of section 2 of said law, the Myanma marine fishery water area includes the water area along the sea cost of Myanmar from the high tide mark toward the open sea and on the seaside of the straight line drawn from one extreme end of one bank to the extreme end of the other bank of the river and creek mouths so the project will be nearby said water area, river or creek which is freshwater area. This law focuses as follow;

- The project proponent has to avoid any water pollution and disturbing to fish &other aquatic lives in any Myanmar marine-water, under section 39 of said law

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

Purpose: To ensure the protection of cultural heritages and the cultural heritage area from the damage by the natural disaster or man-made. The law focuses as followings;

- Section 13 - The project proponent has to apply to get the prior permission of Directorate of Ancient-Research to build the road, bridge or dam in the cultural heritage area.
- Section 22 - The project proponent has to not build the building which is not in line with the stipulations prescribed by the Ministry of Culture in the cultural heritage area.

29. The Protection and Preservation of Antique Objects Law (2015)

Purpose: to ensure the protection of ancient monument, information if it is found in the project area. This law focuses as follow;

- The project proponent has to inform to the village-tract or ward administrator if any antique objective is found in project area under section 12 of said law.

30. The Protection and Preservation of Ancient Monument Law (2015)

Purpose: to ensure the protection of ancient monument, information about it if it is in the project area. This law focuses as follows;

- ***Section 12*** - The project proponent has to report to the village-tract or ward administrators if the project proponent will find any ancient monument under the ground or on the ground or under the water.
- ***Section 15*** - The project proponent has to obtain the prior permission of Department of Ancient Research Museum if the project area is in the prescribed area of Ancient monument.
- ***Sub-section (f) of section 20*** - The project proponent has to obtain the prior permission, by written, of Department of Ancient Research and National Museum if the project proponent dispose the chemical and solid waste in the Ancient Monument area.

31. The Forest Law (1992)

Sub-section (a) of section 12 - The project proponent has to obtain the approval of Ministry if the project area is included in the forest land or the land administrated by the government which covers the forest under section 1 of said law.

32. The Special Economic Zone Law (2014)

Purpose; the project locates in Dewai special economic zone. According to section 89 of said law the project has to abide by said law so to ensure the responsibilities of project proponent. This law focuses as follows;

- .The project proponent has to abide by the any stipulation included in the notification, order, directive and procedure issued by special economic zone administrative committee, under sub-section (f) of section 11 of said law.
- The project proponent has to comply with the stipulations of SEZ administrative committee, under sub-section (p) of section 11 of said law.
- The project proponent has to abide by the standards included in the environmental conservation law and international standards, moreover has to abide by the existing laws to not injure to social and health, under section 35 of said law.
- The project proponent has to appoint the nationalities only for normal work without expertise, under section 27 of said law.
- The project proponent has to appoint the nationalities in the high- technical work and expert work at least 25 % in first two years later the date which is commencement of project, and at least 50% in second two years later, and at least 75% in third two years later, under section 75 of said law.
- The project proponent has to abide by the negotiation by the administrative committee if the dispute, between employees and me, is occurred, under sub-section (a) of section 76 of said law.
- The project proponent has to obtain the work permit for foreign employees issued by representative office of labour department before starting to work, under section 77 of said law.
- The project proponent has to obtain the approval of administrative committee before appointment if it is needed to appoint the foreign employees in administrative and technical work over the limited numbers, under section 78 of said law.
- The project proponent has to pay the cost for compensation and resettlement for project land if housing, buildings, farm, garden, fruit trees or other plantation is in the project area, in accord with the agreement, under sub-section (a) of section 80.
- The project proponent has to coordinate with the administrative committee to facilitate in resettlement process for to not low the original living standards and fulfill their basic needs, under sub-section (b) of section 80 of said law.

- The project proponent has to use the project land in accord with the stipulations, under sub-section (c) of section 80 of said law.
- The project proponent has to not change the physical features of land without the approval of administrative committee, under sub-section (d) of section 80 of said law.
- The project proponent has to inform to the administrative committee if any antique objective or any natural resource or treasure trove is found on or under the land in project area, moreover has to move to the replaced land for project if the original land can not be allowed to continue the project, under sub-section (e) of section 80 of said law.

33. The Engineering Council Law (2013)

***Purpose*; to ensure the safety in technical and engineering work in the project. This law focuses the followings;**

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

34. Myanmar Port Authority Law (2015)

***Purpose*; to ensure the conservation of water pollution in the port area. This law focuses the following;**

- The project proponent has to avoid disposing the dangerous material, poisoned material, garbage, sewage or disposal into the water from the port area, under the sub-section (a) of section 23 of said law.

35. The Export and Import Law

***Purpose*; to ensure to abide by the conditions included in permit if it is needed to import the material for project. This law focuses as follow;**

- The project proponent has to abide by the conditions included in permit, under section 7 of said law.

By: Dawei Power Generating Company Limited

Name: (..)

Poawpadet Vorabutr

Title: Director

Environmental Mitigation Measures and Environmental Quality Monitoring Program

Environmental and Social Impact Assessment for 15 MW Temporary Power Plant in Dawei District

By:
Dawei Power Generating Company Limited
6th Floor, Salomon Business Center,
224/A U Wisara Road, Bahan Township,
Yangon, the Republic of the Union of Myanmar
Tel: (951) 535421
Fax: (951) 535421

Prepared By:

TEAM Consulting Engineering and Management Public Company Limited
151 Nuan Chan Rd., Nuan Chan, Bueng Kum, Bangkok 10230
Tel: +66 2 509 9046
Fax: +66 2 509 9047

TOTAL Business Solution Co., Ltd.
No. 54, Room No. 704, Waizayantar Tower,
Waizayantar Rd., Thingangyun Township,
Yangon, the Republic of the Union of Myanmar
Tel: +959 401 604 493

Certified the Environmental Mitigation Measures and Environmental Monitoring Program

Environmental and Social Impact Assessment for 15 MW Temporary Power Plant in Dawei District

Certified Report by

S. Boonyuen
....

(Dr. Sirinimit Boonyuen)
Senior Executive Vice President - International

Date ....

**Environmental Mitigation Measures and
Environmental Quality Monitoring Program**

**Environmental and Social Impact Assessment for
15 MW Temporary Power Plant in Dawei District**

The Project's environmental mitigation and monitoring measures are as follows.

1. Mitigation Measures and Morinitoring Program during Pre-Construction and Construction Phase **(Table 1)**
2. Mitigation Measures and Morinitoring Program during Operational Phase **(Table 2)**
3. Mitigation Measures and Morinitoring Program during Decommisioning Phase **(Table 3)**

TABLE 1: MITIGATION MEASURES AND MORINITORING PROGRAM DURING PRE-CONSTRUCTION AND CONSTRUCTION PHASE

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Air Quality	Increases in air pollutants caused by fugitive dust from site excavation, site filling, compacting and emissions from operation of trucks.	• Spray water at and around the construction areas and access roads during site preparation and grading. • Enforce speed limit for vehicles and trucks at access road and construction site not to exceed 40 km/h. • Enforce speed limit for trucks not to exceed 40 km/h when passing the communities. • Cover construction materials with canvas or equivalent during transportation, materials should be dampened, if necessary, before transportation. • Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of construction or disturbance. • Establish a vehicle washing facilities to minimize the quantity of material deposited on the roads. • Prohibit the open burning of waste in the pre-construction area. • Dust masks should be provided (where applicable) to all workers. • Adopt procedures to avoid construction vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the construction sites. • Maintain all equipment and vehicles in proper working conditions according to the manufacturer's specifications. The engines of construction equipment fleet must be routinely maintained by qualified mechanics to ensure their proper conditions during operations.	**Ambient Air Quality** • Undertake routine periodic ambient air quality monitoring (AQM) by the contractor, once at each phase of pre-construction and construction phase, at locations in the construction site and in sensitive areas (Pagaw Zoon village). Additional monitoring will need to be carried out if complaints are raised by affected persons. The AQM during construction will conduct at least 24 hour continuous sampling on: - Total suspended particulates - Particulates (PM10) • Report for submission to MONREC at end of pre-construction and construction phase.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Air Quality (Cont'd)		• Establish a checkpoint at project gate to ensure the vehicles leaving the project site are following the measures prescribed to reduce dust emissions.		
Noise	Increase ambient noise level and vibration at the pre-construction site and communities near the material transport routes.	• Major activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at nighttime will need approval of the site engineers, and will need to have adequate noise control equipment or measures. • The noise reduction at the perimeter could be achieved using temporary metal sheet fence at least 3 m high with adequate length to block the noise emanating to the receptor. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Provide personal with protective equipment (earmuffs), as necessary.	**Construction Noise Monitoring** • Noise and vibration monitoring will be linked to the work schedule. The Contractor is required to prepare a noise and vibration monitoring program in accordance with construction schedule before commencing the construction. • The monitoring locations will be at the construction site and the identified sensitive receptors. • Noise and vibration monitoring will be carried out manually by sound level meter (Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant : Noise of International Finance Corporation: December 19, 2008). • Noise level will be analyzed for Leq 1 hr (day time), Leq 1 hr (nighttime), Leq 24 hr, Lmax, Ldn and L90. • A third party would be assigned to conduct noise and vibration monitoring at least once over the pre-construction and construction period. Monitoring should focus on the day on which the construction activities with maximum noise and vibration will be carried out.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Noise (Cont'd)			**Noise Monitoring of Construction Equipment and Trucks** • Before commencing the construction, the Contractor is required to conduct noise testing for trucks to be used in construction. The Contractor would ensure that those trucks which are not complied with the noise standard will be replaced or will be fixed as soon as possible. The Contractor will submit reports of the noise testing to the EHS Manager of the Project Proponent. **Monitoring in Response to Noise / Vibration Complaint** • The Contractor is required to respond to complaints about construction noise and vibration made at any time during the construction phase of the Project.. Key requirements for the system include: - Implement a complaint response procedure for tracking and responding - Identify the relevant activity at which the complaint is directed	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Noise (Cont'd)			**Monitoring in Response to Noise / Vibration Complaint (Cont'd)** - As soon as practicable, investigate and measure the level of noise and/or vibration from that activity - Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken • Report for submission to MONREC at end of pre-construction and construction phase.	
Wastewater	Contaminant of wastewater generated by activities during pre-construction and construction period to nearby water courses	**Domestic Wastewater** • Toilet wastes will be separated from grey water or sullage. • Toilet wastes will be discharged into a septic tank (4 unit of 2,000 L. septic tank must completelty installed before construction). The volume of toilet wastes is estimated at about 20% of the total volume of domestic wastewater, or about 0.65 m^3/d. The septic tank effluent (septage) will be collected by authorized sub-contractor to dispose outside. • Grey water will be discharged into temporary drainage ditch. **Construction Wastewater** • Construction wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into temporary drainage ditch.	• Monitoring of effluent to be discharged from the construction site will be weekly carried out by the contractor over the construction period. Two grab water samples, at nearby water courses will be analyzed to determine magnitudes of various quality parameters prescribed in the effluent standards. • Compliance monitoring of wastewater management will also be carried out by a third party at Project site and nearby water courses (2 Station) once during pre-construction phase and again during construction phase.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Wastewater (Cont'd)		**Storm Water** • A temporary drainage ditch will be constructed to collect solids contained water washed out from unpaved surface before drain to outside after sedimentation. To prevent contamination of storm water, potential contamination area will be covered with roof. • During construction. Water in temporary drainage ditch will be used for dust suppression on unpaved areas in the construction site, and also for watering of the green area. The remaining volume will be discharged through a sewer pipe to outside area. • Twice reporting on wastewater performance, at pre-construction and construction period, and submit to MONREC.		
Waste Management	Waste generated by activities during construction and construction phase of the Project particularly biomass and construction material would cause adverse effects to surrounded envivironmental	**Design and Planning before Commencing the Construction** • The Contractor would consult with the EHS Manager of the Project Proponent, ECD, SWB and the township governments the possibility of using existing waste disposal facilities managed by the regional or local governments. If this not possible, the Contractor will need to develop its own disposal facility preferably within the construction site, if possible. • The Contractor will ensure that the design and the proposed construction methods would generate the least amount of wastes. • The Contractor will prepare estimates of the quantity of waste category to be generated in construction period and propose methods for waste reuse and recycling and prepare estimates of the remaining that will be disposed.	**On-site Record Keeping** The Contractor will design and maintain record keeping procedures with provisions for: • Tracking collections of waste materials at the sites and deliveries to recycling, reuse, salvage, and landfill facilities. • Maintaining on-site logs that include for each load of materials removed from the site: type of material, load weight, recycling/hauling service, and date accepted by recycling service or landfill.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management (Cont'd)		• Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative; • Arrangements with suppliers to return any unused construction materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable; and **During Construction** **Waste Segregation** • The Contractor will design and implement a waste segregation system and informed all construction personnel to strictly adhere to the segregation procedure. • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling. • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil.	Accessibility to the EHS Manager of the Project Proponent for verification of construction waste recycling. Legible copies of on-site logs, manifests, weight tickets, and receipts. Manifests shall be from recycling and disposal site operators that can legally accept the materials for the purpose of recycling, reuse, salvage, or disposal. Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections. Daily site inspections will include observation of the collection and storage of waste materials in the construction sites and waste disposal areas, and reviewing the daily records. The main point will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites.	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management (Cont'd)		**Waste Reuse and Recycling** • Chipping and mulching of vegetation cleared during construction and reuse of mulched material for landscaping purposes; • Reuse of excavated material as fill at approved fill sites; • Topsoil free of weeds to be stockpiled and stored for re-use, if possible; • Collection and return of packaging materials (e.g. pallets) to suppliers wherever practicable; • Use of recycled materials to the limits of design in concrete, road base, asphalt and other construction materials; **Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • Burning of wastes is prohibited in construction area. • Non-construction wastes will be contracted to the existing municipal services. if possible. If not, they will need to be disposed of in a small sanitary land fill to be located within the designated green areas of DSEZ. • Decomposable wastes (food wastes and vegetation etc.) may be disposed of by composting. • Hazardous wastes will be handled by a licensed contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.	In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Construction Manager of the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management (Cont'd)		**Reporting** • Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Monthly reports on the waste management results as part of the monthly monitoring reports. • Twice reports for submission to MOECAF, one for pre-contruction and another for construction phase.		
Traffic	• The activities in pre-construction phase and construction phase would be congestion of local roads and increase risk of accidents.	**Truck routes and access road to construction site** • Avoid haulage tasks during peak traffic periods as far as practicable. Where haulage in peak periods is unavoidable, such activities are to be managed in accordance with specific traffic management sub-plans provided to the relevant agencies in advance. • Control heavy vehicle movements on project related road to avoid interference with major events, if any; • Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the construction worksites; • Prepare and implement a comprehensive construction traffic management plan to control truck movements to avoid. or mitigate and manage the impacts of heavy vehicle traffic on the road network. **Traffic Management at the ITD Main Road** • Provide a traffic police or relevant officer to control traffic at the intersection during the transport period	• Traffic monitoring will be carried out during transportation activities of the construction works. The monitoring will be linked to the work schedule. The Contractor will be required to prepare a traffic monitoring program based on the latest construction schedule before commencing the construction. • Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on ITD main road (km.18) and . Review the adequacy of construction traffic management plan if traffic congestion is observed. • In general, monitoring traffic flows by a third party will be carried out twice on each phase development..	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Traffic (Cont'd)		**Transportation of Hazards Materials** ◦ Transportation heavy equipment or large plant will have to be directed by a traffic police car. **Local Traffic** • Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable; • Notify the local community about proposed changes to local traffic access arising from construction activities, and provide clear signage of changed traffic conditions; • Prepare and implement an employee parking policy for the construction worksites. **Pedestrians and Cyclists** • Maintain safe pedestrian and cycle access near construction works (particularly for elderly and children): • Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during construction near construction works: • Provide traffic controls designed for the safe movement of cyclists near the worksites.	**Reporting** • Monthly report on local traffic conditions, including any accidents involving construction traffic. • Two reports on traffic performance, and submission to MONRECduring pre-construction and construction phase.	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health	Impacts on health and safety of construction worker from excessive noise and temperature inside the power plant, fire, explosion risks and accidents.	**Design and Planning before Commencing the Construction** • The Contractor will prepare an OHS management plan and implementation procedures specific to this Project and in line with its corporate OSH policy and procedures. The OSH management plan and implementation procedures will be submitted not later than one month before commencing the construction for approval of the Project Manager of the Project Proponent and relevant authorities, if so required. • The Contractor will conduct necessary orientation and training to all construction personnel to ensure that the construction personnel clearly understand the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Communication plan - Contractor responsibilities - Job-specific work requirements - Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system	• Monitoring of OSH performance of the Contractor will be made through: - Daily informal inspections (walk through of the construction sites) - Weekly formal inspections of the work place. - Audits - Corrective Action Reports • The daily inspections will observe: (i) adherence of the construction workers to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; (iii) readiness of fire and life safety systems as relevant; and (iv) potential new hazards. The daily inspections will be carried out by the Contractor's EHS Manager and Construction Manager, Site Managers, and relevant foremen. The Project EHS Manager will occasionally join the daily inspections. The Contractor's EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes.	• Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health (Cont'd)		• Develop and implement safety measures for the construction works including treatment strategies that address fire and chemical hazard, communications, access for emergency services, response coordination and management. • Develop emergency response procedures, and implement in the event of accidents and emergencies. • Provide fire and life safety measures, including ventilation, smoke extraction and firefighting systems for the duration of the construction phase. **During Construction** • The implementation of the OSH plan will be integrated with construction supervision. • The Contractor will implement the OSH plan and procedures as part of its construction supervision. The Contractor's site engineers and foremen will supervise the implementation of OSH procedures to comply with relevant requirements. • The Contractor's EHS Manager will monitor the OSH performance.	• The weekly formal inspections will be carried out by Construction Manager, EHS Manager, and Site Engineers and documented using appropriate "Weekly OSH Inspection Checklists". The Owner's EHS Manager and Subcontractors will join the inspections. The weekly inspections will include plant, substances, equipment and temporary structures used by subcontractors. • Internal audits will be carried out if the OSH performance is significantly below established targets. The internal auditor or team will be engaged by the Contractor with concurrence of the Project Proponent. • Monitoring results will be discussed in Project OSH monthly review meetings. **Reporting** • Monthly as part of the monthly monitoring reports except in case of an incident when reporting should immediately response to resolve the incident. • Submission of two reports on OSH performance during pre-construction and construction phase, and to MONREC.	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the construction such as dust, traffic inconveniences, noise, vibration, and workers' misconduct.	**Amenity and Community Life** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the construction on community facilities, schools and monastery. • As soon as its practicable after the completion of construction, the Contractor shall reinstate community facilities affected by the works, if any. **Social Infrastructure** • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers. **Complaints and Corrective Actions** • Develop an effective and responsive system for receiving, handling and responding to complaints received during the construction of project works. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the construction phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities.	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Cases of conflicts between the construction workers and local people. • Survey and report on actual impacts of the construction on community amenities and infrastructure. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods. **Reporting** • Results of the social management will be included in the monthly monitoring reports and the report for submission to MONREC during pre-construction and construction phase. • Report immediately in case of a safety incident or complaint from a neighbor.	• Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact (Cont'd)		**Early Consultation** • Initiate consultation with owners and occupants of directly affected properties and nearest neighbors to construction activities as soon as practicable before commencing the construction. • Conduct consultation and community information strategies in conjunction with the public or community consultation process. • Establish a tripartite committee to provide mechanism and channel for the committees to participate in the project environmental management. **Community Consultation Program** • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met. **Regional Communication** • Monitor traffic volumes and traffic congestion affecting the district and township population during construction and if necessary adopt travel demand and signal stage management strategies.		

TABLE 2: MITIGATION MEASURES AND MORINITORING PROGRAM DURING OPERATION PHASE

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Air Quality	Increases gaseous emission from gas combustion.	**Design and Commissioning** • The gas engine featured lean burn gas technology which meet the most demanding emission guideline; • The Contractor and his supplier will complete the testing and tuning program on the engine before operational handover to ensure efficient operation of plant. **Management Controls** • Ensure that the power plant personnel will be suitably qualified for their assigned tasks; • The Contractor with support of the equipment suppliers shall provide appropriate training to plant operation personnel to enhance their competency in operation and control of gas engine generator. The Contractor will propose a training program for plant operators not later than three months before the commissioning, and conduct the training as part of the overall training in parallel with the commissioning; • Regular periodic review of air quality monitoring data (monthly) with comparison of monitoring data with that assumed and predicted in the documents listed under Condition of the Project Approval.	• Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Pagaw Zoon and Pale Gu village throughout operation phase, and in response to complaints, based on the following parameters: - Particulates (PM 10) - Nitrogen Dioxide (NO_2) - Carbon Monooxide (CO) • Air quality management and monitoring reports will be submitted to MONREC every six months throughout the Project life.	• Dawei Power Generating Co., Ltd.

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste management	Waste generated by operation of the Project particularly harazrdous waste included oil and lubricant would cause adverse effects to surrounded environmental	**Design and Planning before Commencing the Operation** • The EHS Manager of the Project developer, ECD, SWB and the township governments the possibility of using existing waste disposal facilities managed by the regional or local governments. If this not possible, the Contractor will need to develop its own disposal facility preferably within the operation site, if possible. • Based on the operation plan, methods, and schedule, the project developer will prepare estimates of the quantity of each waste category to be generated in each quarter of the operation phase. The estimates will be monthly updated. • The project developer/contractor will propose methods for waste reuse and recycling and prepare estimates of the remaining quantity of each waste category that will be disposed off. • The project developer/contractor will propose methods of waste transport and disposal. • The project developer/contractor will then prepare an action plan for waste management for the operation phase containing all the above estimates and proposals. The action plan will be submitted to the EHS Manager of the Project developer not later than three weeks before commencing the operation.	Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections. Daily site inspections will include observation of the collection and storage of waste materials and waste disposal areas, and reviewing the daily records. The main point will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites. In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.	• Sub-contractor (Waste management agency) • Dawei Power Generating Co., Ltd.

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste management (Cont'd)		• The subsequent action plans will be prepared by updating or revising the preceding plans as appropriate to reflect cumulative results of the previous quarters. The next quarterly action plan will be submitted to the EHS Manager not later than two weeks before the end of the current quarter. • Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative; • Arrangements with suppliers to return any unused operation materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable; and **<u>During Operation phase</u>** **Waste Segregation** • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling.	**Reporting** • Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Monthly reports on the waste management results as part of the monthly monitoring reports. • Report to MONREC at every six month throughout the Project life.	

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste management (Cont'd)		• The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. **Waste Reuse and Recycling** • Remove any contamination inadvertently deposited in recyclable waste material containers. Provide cleanup of excessive contamination at recycling vendor locations when such contamination is not controlled at the project site. • Collection and recycling of used oils by a licensed contractor; • Collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities; **Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • No burning of wastes will be allowed in Project area. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. • Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.		

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Traffic	Transportation of LNG from Thailand to the Project site would increase traffic load on ITD main road connected DSEZ to Thai border. This would potentially	**LNG Carrier Truck** • LNG Carrier truck must obtain the permission from Department of Land transportation as fuel carrier truck. It must be equipped with basic safety equipment as stated in NFPA 385 (Standard for Tank Vehicles for Flammable and Combustible Liquids) included portable fire extinguisher. • LNG Carrier truck must be equipped with GPS. • LNG Carrier truck must turn on the head lamp at all time during transportation • At each transportation trip, at least two (2) LNG Carrier truck must be assigned to travel together. It would stay at a distance of 200 m to each other while on duty. • All drivers must pass the training program and obtained the license of heavy vehicle. **Transportation route** • Avoid transport of LNG during peak traffic periods as far as practicable. In case of unavoidable, LNG transportation are to be managed by local traffic police. • Strictly control transportation of LNG in only designated routed; • Investigate the capacity of intersections on transportation routes to minimize impact on intersection operations by LNG carrier truck; • Prepare a comprehensive traffic management plan to cope with accident in order to mitigate and manage the impacts of the accident on traffic condition of the transportation routes.	• Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on ITD main road (km.17). Review the adequacy of traffic management plan if traffic congestion is observed. **Reporting** • Monthly report on local traffic conditions, including any accidents involving transportation of LNG to the Project site. • Report submitted to MONREC at every six month throughout the Project life.	• Dawei Power Generating Co., Ltd.

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Traffic (Cont'd)		• Measures to manage the operation of the truck fleet for incorporation into a vehicle management sub-plan to include: - Monitoring of truck position, speed, route along transportation routes; - Management of LNG carrier truck speed not exceed 40 km./h. to reduce the dispersion of dust and avoid accident to local pedestrians and cyclist; - Management of traffic signals along the transportation routes especially in communities area; - Maintain all LNG carrier truck to meet a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety; **Local Traffic** • Notify the local community about proposed changes to in traffic access condition from LNG transportation, • Provide clear traffic signal and traffic notice board to warn locals for safe traffic movement; **Traffic Management at the Intersection of ITD main road and Highway N0.8** • Provide a traffic police or relevant officer to control traffic at the intersection during the transport period.		

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health	Impacts on health and safety of operational personnel from excessive noise and temperature inside the power plant, fire, explosion risks and accidents.	• The contractor will design the power plant and gas distribution facilities using equipment that will meet occupational safety and health (OSH) guidelines and standards prescribed in the contract. • The Contractor will prepare an OSH management plan and implementation procedures specific to the power plant of this Project and in line with the Owner's OSH policy and procedures. The plan will be submitted not later than one month before commissioning of the power plant and associated facilities. • The contractor will conduct necessary orientation and training to the Owner's power plant operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Contractor responsibilities - Safety measures for the power plant's Operation and Maintenance (O&M), including safety in turbine operations. fire, explosion, accidents and chemical hazards. - Emergency response procedures.	• The daily inspections will observe: (i) adherence of the operational personnel to the OSH procedures such as wearing of protective equipment in high risk working areas and accidental evensts; (ii) working conditions; (iii) readiness of fire and life safety systems as relevant; and (iv) potential new hazards. The daily inspections will be carried out by the Environmental, Health and Safety (EHS) Manager, the Operational Manager, and relevant unit heads. The Plant Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. • The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OSH Inspection Checklists". The EHS Manager and the Operation Manager will carry out the weekly inspections. The weekly inspections will include the same issues as the daily inspections but will be in more details and quantitative.	• Dawei Power Generating Co., Ltd.

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health (Cont'd)		- Task-specific work requirements Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system • The implementation of the OSH plan will be integrated with operational control. • The Plant Manager will implement the OSH plan and procedures as part of his operational management. • The EHS Manager will monitor the implementation of OSH procedures to comply with relevant requirements.	• The monthly formal inspections will review the OSH performance of the month based on results of the weekly inspections. Progress in addressing issues or problems identified in the precedent weekly inspections will be evaluated. • Internal audits will be carried out annually or more frequent if the OSH performance is significantly below established targets. The internal auditor or team will be engaged by the power plant company's Board of Directors. • Monitoring results will be discussed in monthly review meeting on power plant performance. • Monthly monitoring reports except in case of incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Twice a year reports will be submitted to MONREC throughout the Project life.	

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the operation such as noise, air quality, and increased traffic load by LNG transportation.	• Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the Proejct operation on community facilities, schools and monastery. • Establish the CSR Program to implement and support public relations and mitigation measures. • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers. • Develop an effective and responsive system for receiving, handling and responding to complaints received during the Project operation. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the operation phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities. • Conduct consultation and community information strategies in conjunction with the public or community consultation process.	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Survey and report on actual impacts of the operation on community amenities. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods. • Report immediately in case of compliant from a neighbor. • CSR Program will be reported: - Twice a year reports will be submitted to MONREC throughout the Project life.	• Dawei Power Generating Co., Ltd.

TABLE 2: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the operation such as noise, air quality, and increased traffic load by LNG not satisfaction with marine resources utilization.	• Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the Proejct operation on community facilities, schools and monastery. • Establish the CSR Program to implement and support public relations and mitigation measures. • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers. • Develop an effective and responsive system for receiving, handling and responding to complaints received during the Project operation. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the operation phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities. • Conduct consultation and community information strategies in conjunction with the public or community consultation process.	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Survey and report on actual impacts of the operation on community amenities. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods. • Report immediately in case of compliant from a neighbor. • CSR Program will be reported: - Twice a year reports will be submitted to MONREC throughout the Project life.	• Dawei Power Generating Co., Ltd.

TABLE 3: MITIGATION MEASURES AND MORINITORING PROGRAM DURING DECOMMISSIONING PHASE

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Air Quality	Increases in air pollutants caused by fugitive dust from decommissioning of temporary power plant.	• Spray water at and around the construction areas and access roads during site preparation and grading. • Enforce speed limit for vehicles and trucks at access road and the Poject site not to exceed 40 km/h. • Enforce speed limit for trucks not to exceed 40 km/h when passing the communities. • Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of dis or disturbance. • Establish a vehicle washing facilities to minimize the quantity of material deposited on the roads. • Dust masks should be provided (where applicable) to all workers. • Adopt procedures to avoid vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the construction sites. • Maintain all equipment and vehicles in proper working conditions according to the manufacturer's specifications. The engines of equipment fleet must be routinely maintained by qualified mechanics to ensure their proper conditions during operations. • Establish a checkpoint at project gate to ensure the vehicles leaving the project site are following the measures prescribed to reduce dust emissions.	**Ambient Air Quality** • Undertake ambient air quality monitoring (AQM) by the contractor, once at each decommissioning phase, at locations in the construction site and in sensitive areas (Pagaw Zoon village). Additional monitoring will need to be carried out if complaints are raised by affected persons. The AQM during construction will conduct at least 24 hour continuous sampling on: - Total suspended particulates - Particulates (PM10) **Reporting** • Report for submission to MONREC at end of decommissioning phase.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Noise	Increase ambient noise level and vibration at the project site and communities near the transportation routes.	• Major activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at nighttime will need approval of the site engineers, and will need to have adequate noise control equipment or measures. • The noise reduction at the perimeter could be achieved using temporary metal sheet fence at least 3 m high with adequate length to block the noise emanating to the receptor. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Provide personal with protective equipment (earmuffs), as necessary.	**Construction Noise Monitoring** • Noise and vibration monitoring will be linked to the work schedule. The Contractor is required to prepare a noise and vibration monitoring program in accordance with work schedule before dismantle the Project. • The monitoring locations will be at the Project site and the identified sensitive receptors. • Noise and vibration monitoring will be carried out manually by sound level meter (Noise Standard stated on Environmental, Health, and Safety Guidelines for Thermal Power Plant : Noise of International Finance Corporation; December 19, 2008). • Noise level will be analyzed for Leq 1 hr (day time), Leq 1 hr (nighttime), Leq 24 hr, Lmax, Ldn and L90. • A third party would be assigned to conduct noise and vibration monitoring at least once over the decommissioning period. Monitoring should focus on the day on which the construction activities with maximum noise and vibration will be carried out.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Noise (Cont'd)			**Monitoring in Response to Noise / Vibration Complaint** • The Contractor is required to respond to complaints about noise generated by dismantle activities and vibration made at any time during the decommissioning phase of the Project. Key requirements for the system include: - Implement a complaint response procedure for tracking and responding - Identify the relevant activity at which the complaint is directed - As soon as practicable, investigate and measure the level of noise and/or vibration from that activity - Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken **Reporting** - Report for submission to MONREC at end of decommissioning phase.	

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management	Increase of waste particularly waste from basement material which would not decomposed by natural process and harzardous waste including oil and lubricant from generator	**Design and Planning before Decommissioing the Project** • The Contractor would consult with the EHS Manager of the Project Proponent, ECD, SWB and the township governments the possibility of using existing waste disposal facilities managed by the regional or local governments. If this not possible, the Contractor will need to develop its own disposal facility preferably within the construction site, if possible. • The Contractor will ensure that the Project and the proposed decommissioning methods would generate the least amount of wastes. • The Contractor will prepare estimates of the quantity of waste category to be generated in decommissioning period and propose methods for waste reuse and recycling and prepare estimates of the remaining that will be disposed. • Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative; • Arrangements with suppliers to return any unused construction materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable; and	**On-site Record Keeping** The Contractor will design and maintain record keeping procedures with provisions for: • Tracking collections of waste materials at the sites and deliveries to recycling, reuse, salvage, and landfill facilities. Accessibility to the EHS Manager of the Project Proponent for verification of waste recycling. Legible copies of on-site logs, manifests, weight tickets, and receipts. Manifests shall be from recycling and disposal site operators that can legally accept the materials for the purpose of recycling, reuse, salvage, or disposal. Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed weekly site inspections.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management (Cont'd)		**During Decommissioning** **Waste Segregation** • The Contractor will design and implement a waste segregation system and informed all staffs to strictly adhere to the segregation procedure. • An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes. • A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling. • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil. **Waste Disposal** • Disposal of the remaining wastes that are unable to be reused or recycled in the approved land fill site(s). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • Burning of wastes is prohibited in construction area.	Daily site inspections will include observation of the collection and storage of waste materials in the construction sites and waste disposal areas, and reviewing the daily records. The focuses will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project Proponent and the Contractor will jointly inspect the sites. In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project Proponent and the Construction Manager of the Contractor. The inspection will cover verification of the records, disposal activities, discussion on the performance of the past week, and identification of problems, if any, that affect the waste management performance.	

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Waste Management (Cont'd)		**Waste Disposal (Cont'd)** • Non-construction wastes will be contracted to the existing municipal services, if possible. If not, they will need to be disposed of in a small sanitary land fill to be located within the designated green areas of DSEZ. • Decomposable wastes (food wastes and vegetation etc.) may be disposed of by composting. • Hazardous wastes will be handled by a licensed contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.	**Reporting** • Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment. • In the event of an environmental incident, take such corrective or remedial action as is required to render the area safe and avoid or minimize environmental harm. • Monthly reports on the waste management results as part of the monitoring reports. • Reports for submission to MONREC at the end of decommissioning phase.	

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Traffic	• The activities in decommissiong phase would be congestion of local roads and increase risk of accidents.	**Truck routes and access road to Project site** • Avoid haulage tasks during peak traffic periods as far as practicable. Where haulage in peak periods is unavoidable, such activities are to be managed in accordance with specific traffic management sub-plans provided to the relevant agencies in advance. • Control heavy vehicle movements on project related road to avoid interference with major events, if any; • Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the construction worksites; • Prepare and implement a comprehensive traffic management plan to control truck movements to avoid, or mitigate and manage the impacts of heavy vehicle traffic on the road network. **Traffic Management at the ITD Main Road** • Provide a traffic police or relevant officer to control traffic at the intersection during material transportation **Transportation of Hazards Materials** • Transportation heavy equipment or large plant will have to be directed by a traffic police car. **Local Traffic** • Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable; • Notify the local community about proposed changes to local traffic access arising from decommissioning activities, and provide clear signage of changed traffic conditions;	• Traffic monitoring will be carried out during transportation activities of the decommissioning period. The monitoring will be linked to the work schedule. The Contractor will be required to prepare a traffic monitoring program based before dismantle the Project. • Record and report number of traffic accidents in the identified impact areas. • Monitor number of traffic on ITD main road (km.18) and . Review the adequacy of construction traffic management plan if traffic congestion is observed. • In general, monitoring traffic flows by a third party will be carried during peaks of transportation during decommissioning period. **Reporting** • Monthly report on local traffic conditions, including any accidents involving traffic from decommissioning activities. • Reports on traffic performance, and submission to MONREC at the end of decommissioning phase.	• Contractor • Dawei Power Generating Co., Ltd.

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Traffic (Cont'd)		• Prepare and implement an employee parking policy for the decommissioning worksites. **Pedestrians and Cyclists** • Maintain safe pedestrian and cycle access near Project area (particularly for elderly and children): • Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during decommissioning near the Project site; • Provide traffic controls designed for the safe movement of cyclists near the worksites.		
Occupational Safety and Health	Impacts on health and safety of worker from accident during decommissioning phase.	**Design and Planning before Decommissioning the Project** • The Contractor will prepare an OHS management plan and implementation procedures specific to this Project and in line with its corporate OSH policy and procedures. The OSH management plan and implementation procedures will be submitted not later than one month before commencing the construction for approval of the Project Manager of the Project Proponent and relevant authorities, if so required.	• Monitoring of OSH performance of the Contractor will be made through: - Daily informal inspections (walk through of the sites) - Weekly formal inspections of the work place. - Audits - Corrective Action Reports	• Dawei Power Generating Co., Ltd.

TABLE 3: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health (Cont'd)		• The Contractor will conduct necessary orientation and training to all construction personnel to ensure that the construction personnel clearly understand the OSH plan and implementation procedures. • The OSH management plan and implementation procedures will cover but not limited to the following subjects: - Organization and responsibilities of OSH management - Training plan - Communication plan - Contractor responsibilities - Job-specific work requirements - Compliance monitoring and evaluation plan - Audit plan - Reporting system - Documentation system • Develop and implement safety measures for the construction works including treatment strategies that address fire and chemical hazard, communications, access for emergency services, response coordination and management. • Develop emergency response procedures, and implement in the event of accidents and emergencies. • Provide life safety measures, including firefighting systems for the duration of the decommissioning phase.	• The daily inspections will observe: (i) adherence of the construction workers to the OSH procedures such as wearing of protective equipment in high risk working areas; (ii) working conditions; (iii) readiness of fire and life safety systems as relevant; and (iv) potential new hazards. The daily inspections will be carried out by the Contractor's EHS Manager and Construction Manager, Site Managers, and relevant foremen. The Project EHS Manager will occasionally join the daily inspections. The Contractor's EHS Manager will prepare daily OSH inspection notes as part of the site inspection notes. • The weekly formal inspections will be carried out by Poject Manager, EHS Manager, and Site Engineers and documented using appropriate "Weekly OSH Inspection Checklists". The Owner's EHS Manager and Subcontractors will join the inspections. The weekly inspections will include plant, substances and progress of work	• Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Occupational Safety and Health (Cont'd)		**During Construction** • The implementation of the OSH plan will be integrated with decommission supervision. • The Contractor will implement the OSH plan and procedures as part of its construction supervision. The Contractor's site engineers and foremen will supervise the implementation of OSH procedures to comply with relevant requirements. • The Contractor's EHS Manager will monitor the OSH performance.	• Internal audits will be carried out if the OSH performance is significantly below established targets. The internal auditor or team will be engaged by the Contractor with concurrence of the Project Proponent. • Monitoring results will be discussed in Project OSH monthly review meetings. **Reporting** • Monthly as part of the monthly monitoring reports except in case of an incident when reporting should immediately response to resolve the incident. • Submission of report on OSH performance to MONREC at the end of decommissioning phase.	

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the activities during decommissioning phase such as dust, traffic inconveniences, noise, vibration, and workers' misconduct.	**Amenity and Community Life** • Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the construction on community facilities, schools and monastery. • As soon as its practicable after the completion of construction, the Contractor shall reinstate community facilities affected by the works, if any. **Social Infrastructure** • Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers. **Complaints and Corrective Actions** • Develop an effective and responsive system for receiving, handling and responding to complaints received during the decommissioning of project works. • Ensure complaints are received and responded to on a 24-hour per day basis for the duration of the decommissioning phase. • Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. • Raise community awareness of the complaints systems and procedures through public notifications and website facilities.	• Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Cases of conflicts between the workers and local people. • Survey and report on actual impacts of the decommissioning activities on community amenities and infrastructure. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods. **Reporting** • Results of the social management will be included in the monthly monitoring reports and the report for submission to MONREC during decommissioning phase. • Report immediately in case of a safety incident or complaint from a neighbor.	• Dawei Power Generating Co., Ltd.

TABLE 1: (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures	Monitoring Program	Responsibility
Social Impact (Cont'd)		**Community Consultation Program** • Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. Effective and accessible consultation measures are required including maintenance of a 24-hour contact line operated by a person with authority to stop works if goals and agreements with the community are not met.		

Our Ref: ENV/P03145/611006

27th April 2018

Mr. Poawpadet Vorabutr, Director:

Dawei Power Generating Company Limited ("DPG")

6th Floor, Salomon Business Center, 224/A U Wisara Road, Bahan Township, Yangon, the Republic of the Union of Myanmar

Subject: Submission of Final Report of ESIA for 15 MW Temporary Power Plant, Dawei District, the Republic of the Union of Myanmar

With reference to the Letter No 3(2)/16(Ga)(6)/(486/2016), dated – 3rd February, 2016, from The Ministry of Environmental Conservation and Forestry, Union Minister Office on "matter about submitting to reply the confirmation for Environmental and Social Impact Assessment (ESIA) of 15 MW Temporary Power Plant by Dawei Power Generating Company Limited at the initial stage of Dawei Special Economic Zone".

We are pleased to submit herewith 2 copies and 2 set of CD ROMs of Final Report of ESIA for 15 MW Temporary Power Plant in Dawei District, the Republic of the Union of Myanmar in accordance with the comments and submitted herewith for your consideration.

Sincerely yours,

S. Boonyuen

Dr. Sirinimit Boonyuen

Senior Executive Vice President - International

PCT/ENV-I/P03145/FR/LE1814

FINAL REPORT

ESIA FOR 15 MW TEMPORARY POWER PLANT PROJECT IN DAWEI DISTRICT

TABLE OF CONTENTS

PAGE

LIST OF ABBREVIATION

CHAPTER 1 : EXECUTIVE SUMMARY

1.1 INTRODUCTION 1-1
1.2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK 1-1
1.2.1 Corporate Environmental and Social Policies 1-1
1.2.2 Policy and Legal Framework 1-2
1.2.3 International Conventions, Treaties and Agreements 1-3
1.2.4 Myanmar Government Institutional Framework 1-4
1.2.5 International Policies, Guidelines, and Standard 1-4
1.2.6 Guidelines and Standard Applicable to the Project 1-5
1.3 PROJECT DESCRIPTION AND ALTERNATIVES 1-5
1.3.1 Presentation and Description of Alternatives 1-5
1.3.2 Comparison and Selection of the Project Alternatives 1-7
1.4 DESCRIPTION OF THE ENVIRONMENT AND SOCIAL CONDITION 1-8
1.4.1 Study Area and Scope of the Environment 1-8
1.4.2 Physical Components 1-8
1.4.3 Biological Components 1-9
1.4.4 Socio-Economic Components 1-9
1.4.5 Cultural and Visual Components 1-10
1.5 IMPACT AND RISK ASSESSMENT MITIGATION MEASURES 1-10
1.5.1 Impact and Risk Assessment and Mitigation Measures 1-10
1.5.2 Impact Assessment Methodology 1-10
1.5.3 Risk Assessment 1-12
1.5.4 Pre-Construction Phase Impact Identification Assessment and Mitigation 1-12

PAGE

CHAPTER 1 : EXECUTIVE SUMMARY (CONT'D)

1.5.5 Construction Phase Impact Identification Assessment and Mitigation 1-15
1.5.6 Operation Phase Impact and Risk Identification Assessment and Mitigation 1-22
1.5.7 Decommissioning Phase 1-29
1.6 CUMULATIVE IMPACT ASSESSMENT 1-31
1.6.1 Construction Phase 1-31
1.6.2 Operation Phase 1-32
1.7 ENVIRONMENTAL MANAGEMENTN PLANS 1-32
1.7.1 The Conceptual Framework 1-32
1.7.2 Project's EHS Policy and Commitments, and Legal Requirements 1-33
1.7.3 Summary of CEMP 1-34
1.7.4 Summary of OEMP 1-35
1.7.5 Summary of DEMP 1-36
1.8 PUBLIC CONSULTATION AND DISCLOSURE 1-36
1.8.1 Purpose of the Consultation and Disclosure 1-36
1.8.2 Methodology and Approach 1-37
1.8.3 Summary of Main Comments 1-38
1.8.4 Project Information Disclosure 1-39
1.8.5 Recommendation for Future Consultations 1-39

CHAPTER 2 : INTRODUCTION

2.1 BACKGROUND 2-1
2.2 PRESENTATION OF THE PROJECT PROPONENT 2-2
2.3 PRESENTATION OF THE ENVIRONMENTAL AND SOCIAL EXPERTS 2-2
2.3.1 Background Information on TEAM and TBS 2-2
2.3.2 The ESIA Team 2-3
2.4 PROJECT DEVELOPMENT ENDORSEMENT OF THE ESIA REPORT 2-5
2.5 STRUCTURE OF THE ESIA REPORT 2-5

PAGE

CHAPTER 3 : OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 OVERVIEW OF CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES 3-1

3.2 OVERVIEW OF POLICY AND LEGAL FRAMEWORK IN MYANMAR 3-2

3.2.1 The Foundation for Environmental Management 3-2

3.2.1.1 The National Environmental Policy (1994) 3-2

3.2.1.2 The Environmental Conservation Law (2012) 3-3

3.2.1.3 The Environmental Conservation Rules (2014) 3-3

3.2.2 Regulations Related to Environmental Impact Assessment and Management 3-4

3.2.2.1 Environmental Impact Assessment Procedure (2015) 3-5

3.2.2.2 National Environmental Quality (Emission) Guidelines (2015) 3-5

3.2.3 Laws and Regulations Related to Environmental Protection and Social Impact Management 3-6

3.2.3.1 The Conservation of Water Resources and Rivers Law (2006) 3-6

3.2.3.2 The Freshwater Fisheries Law (1991) 3-6

3.2.3.3 The Protection and Preservation of Cultural Heritage Regions Law (1998) 3-6

3.2.3.4 The Protection and Preservation of Antique Objects Law (2015) 3-7

3.2.3.5 The Protection and Preservation of Ancient Monuments Law (2015) 3-7

3.2.3.6 The Forest Law (1992) 3-8

3.2.3.7 The Protection of Wildlife and Conservation of Natural Areas Law (1994) 3-8

3.2.3.8 The Public Health Law (1972) 3-8

3.2.3.9 The Prevention and Control of Communicable Disease Law (1995) 3-8

3.2.3.10 The Control of Smoking and Consumption of Tobacco Product Law (2006) 3-9

3.2.3.11 The Labour Organization Law (2011) 3-9

3.2.3.12 The Settlement of Labour Dispute Law (2012) 3-10

3.2.3.13 Employment and Skill Development Law (2013) 3-10

3.2.3.14 The Minimum Wage Law (2013) 3-11

3.2.3.15 The Payment of Wages Act (2016) 3-11

PAGE

CHAPTER 3 : OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK (CONT'D)

3.2.3.16 The Workmen's Compensation Act (1923) 3-12

3.2.3.17 The Leave and Holidays Act (1951) 3-13

3.2.3.18 The Protection of National Races Law (2015) 3-13

3.2.3.19 The Social Security Law (2012) 3-13

3.2.3.20 Petroleum Act (1934) 3-14

3.2.3.21 The Petroleum Rules (1937) 3-14

3.2.3.22 The Explosives Act (1887) 3-15

3.2.3.23 The Explosive Substances Act (1908) 3-15

3.2.3.24 The Myanmar Fire Brigade Law (2015) 3-15

3.2.3.25 Motor Vehicle Law (2015) and Rules (1987) 3-15

3.2.3.26 Myanmar Investment Law (2016) 3-15

3.2.3.27 Electricity Law (2014) 3-17

3.2.3.28 The Factories Act (1951) 3-18

3.2.3.29 Myanmar Engineering Council Law (2013) 3-18

3.2.3.30 The Myanmar Insurance Law (1993) 3-18

3.2.3.31 The Export and Import Law (2012) 3-18

3.2.4 Law Specific to the Project Site 3-19

3.2.4.1 Myanmar Special Economic Zone Law (2014) 3-19

3.2.4.2 The Dawei Special Economic Zone Law (2011) 3-20

3.3 INTERNATIONAL CONVENTIONS, TREATIES AND AGREEMENTS 3-22

3.4 MYANMAR GOVERNMENT INSTITUTIONAL FRAMEWORK 3-23

3.4.1 Arrangement at the National and Sector Level 3-23

3.4.2 Arrangements at the Project Area 3-23

3.5 INTERNATIONAL POLICIES, GUIDELINES AND STANDARDS 3-27

3.5.1 IFC's Standards and Guidelines 3-27

3.5.2 World Bank's Pollution Prevention and Abatement Handbook 1998 Toward Cleaner Production 3-31

3.5.3 Safety for Gas Explosion 3-31

3.6 GUIDELINES AND STANDARDS APPLICABLE TO THIS PROJECT 3-31

PAGE

CHAPTER 4 : PROJECT DESCRIPTION AND ALTERNATIVES

4.1 INTRODUCTION 4-1
4.2 PROJECT ALTERNATIVES 4-1
4.3 PROJECT SITE 4-2
4.3.1 Location 4-2
4.3.2 Surrounding Areas 4-2
4.3.3 Site Development Works 4-2
4.4 INPUTS FOR OPERATION 4-4
4.4.1 Fuel 4-4
4.4.2 Water 4-4
4.5 PROJECT FACILITIES 4-6
4.5.1 Power Plant Design Concept 4-6
4.5.2 Project Components 4-6
4.6 PROJECT SCHEDULE 4-12
4.7 PROJECT IMPLEMENTATION 4-12
4.7.1 Construction Phase 4-12
4.7.2 Operation Phase 4-13
4.8 ENVIRONMENTAL MANAGEMENT 4-15

CHAPTER 5 : DESCRIPTION OF THE EXISTING ENVIRONMENTAL AND SOCIAL CONDITION

5.1 SETTING THE STUDY LIMITS 5-1
5.1.1 Geographical Study Limit 5-1
5.1.2 Contextual Study Limit 5-1
5.2 DESCRIPTION OF THE PHYSICAL COMPONENTS 5-4
5.2.1 Overview of the Study Area 5-4
5.2.2 Meteorology 5-6
5.2.3 Geography/Topography 5-15
5.2.4 Geology 5-17
5.2.5 Seismology 5-17
5.2.6 Soils 5-19
5.2.7 Air Quality 5-22
5.2.8 Noise 5-27
5.2.9 Surface Water Quality 5-28

PAGE

CHAPTER 5 : DESCRIPTION OF THE EXISTING ENVIRONMENTAL AND SOCIAL CONDITION (CONT'D)

5.2.10 Groundwater Quality 5-31
5.3 DESCRIPTION OF THE BIOLOGICAL COMPONENTS 5-34
5.3.1 Terrestrial Resource 5-34
5.3.2 Aquatic Ecology 5-44
5.4 THE SOCIO-ECONOMIC COMPONENTS 5-50
5.4.1 Studies Villages 5-50
5.4.1.1 Information Collection 5-50
5.4.1.2 Demography 5-51
5.4.1.3 Communities 5-52
5.4.1.4 Education 5-52
5.4.1.5 Vulnerable Groups 5-53
5.4.1.6 Ethnic and Minority Groups 5-53
5.4.1.7 Gender Situation 5-54
5.4.1.8 Religion 5-54
5.4.1.9 Political and Social Organization 5-54
5.4.2 Economic Profile 5-55
5.4.2.1 Occupation 5-55
5.4.2.2 Agricultural Production System 5-57
5.4.2.3 Household Income and Expenditure 5-59
5.4.2.4 Land Ownership 5-60
5.4.2.5 Health Care 5-61
5.4.2.6 Infrastructure 5-62
5.4.2.7 Satisfaction of the Living Condition 5-63
5.4.2.8 Forestry 5-64
5.4.2.9 Industries 5-64
5.4.2.10 Mineral Development 5-65
5.4.2.11 Tourism 5-65
5.4.3 Health Profile 5-66
5.4.3.1 Access to Health Services 5-66
5.4.3.2 Access to Water Supply 5-66
5.4.3.3 Mortality and Morbidity 5-66
5.4.3.4 Nutrition Levels 5-66

PAGE

CHAPTER 5 : DESCRIPTION OF THE EXISTING ENVIRONMENTAL AND SOCIAL CONDITION (CONT'D)

5.4.3.5 Communicable Diseases 5-67
5.4.4 Infrastructure Facilities 5-68
5.4.4.1 Water Use and Water Supply 5-68
5.4.4.2 Hospital, Medical Clinic 5-68
5.4.4.3 School and Religious Facilities 5-68
5.4.4.4 Road Transportation 5-69
5.4.4.5 Airport 5-75
5.4.4.6 Transmission Lines 5-75
5.4.4.7 Electricity 5-75
5.4.4.8 Pipelines 5-75
5.4.4.9 Energy Sources 5-75
5.4.4.10 Waste Management 5-75
5.4.5 Unexploded Ordinance (UXO) 5-75
5.4.6 Land Use 5-76
5.4.7 Perception of local community on Project development 5-79
5.5 THE CULTURAL COMPONENTS 5-81
5.6 THE VISUAL COMPONENTS 5-83
5.6.1 Aesthetic 5-83
5.6.2 Point of Interests 5-83
5.6.3 Landscape 5-83

CHAPTER 6 : IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES

6.1 INTRODUCTION 6-1
6.2 IMPACT ASSESSMENT METHODOLOGY 6-1
6.2.1 Impact Assessment 6-1
6.2.1.1 Scope of Assessment 6-1
6.2.1.2 Geographical Scope: Study Area Boundaries 6-2
6.2.1.3 Temporal Scope 6-2
6.2.1.4 The Conceptual Framework 6-3
6.2.1.5 Methodology for the Impact Assessment of each Environmental Issue 6-5
6.2.1.6 Methodology for the Determination of Significance 6-8

PAGE

CHAPTER 6 : IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES (CONT'D)

6.2.1.7 Monitoring 6-9
6.2.1.8 Mapping 6-10
6.2.1.9 Key Issues and Selection of Valued Environmental Components 6-10
6.2.2 Risk Assessment 6-11
6.2.2.1 Conceptual Framework 6-11
6.3 PRE-CONSTRUCTION PHASE - IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION 6-16
6.3.1 Pre-Construction Phase Activities 6-16
6.3.2 Impact Assessment 6-16
6.3.2.1 Impact on Ecosystem 6-16
6.3.2.2 Biomass Waste Disposal 6-17
6.3.2.3 Impact on Livelihood of Villagers 6-18
6.3.2.4 Environmental Disturbances Caused by Fugitive Dust 6-19
6.3.2.5 Environmental Disturbances Caused by Noise 6-22
6.4 CONSTRUCTION PHASE- IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION 6-25
6.4.1 Construction Phase Activities 6-25
6.4.2 Impact Identification 6-26
6.4.3 Impact Assessment 6-27
6.4.3.1 Gaseous Emissions 6-27
6.4.3.2 Noise 6-29
6.4.3.3 Wastewater 6-34
6.4.3.4 Construction Wastes 6-37
6.4.3.5 Road Traffic 6-43
6.4.3.6 Impact on Local Communities 6-48
6.4.4 Risk Assessment 6-51
6.5 OPERATION PHASE- IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION 6-56
6.5.1 Natural of Project Operation 6-56
6.5.2 Relevant Environmental Issues 6-56
6.5.3 Impact Assessment 6-57
6.5.3.1 Gaseous Emissions 6-57
6.5.3.2 Ambient Noise 6-67

PAGE

CHAPTER 6 : IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES (CONT'D)

6.5.3.3 Waste Waters ... 6-71
6.5.3.4 Waste Management ... 6-73
6.5.3.5 Road Traffic ... 6-75
6.5.3.6 Occupational Safety and Health ... 6-78
6.5.3.7 Community Health, Safety and Security ... 6-79
6.5.3.8 Groundwater Abstraction ... 6-81
6.5.3.9 Community Development Supports ... 6-81
6.5.4 Risk Assessment ... 6-82
6.6 DECOMMISSIONING PHASE IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION ... 6-90
6.6.1 Decommissioning Phase Activities ... 6-90
6.6.2 Impact Identification ... 6-90
6.6.3 Impact Assessment ... 6-91
6.6.3.1 Environmental Disturbances Caused by Dust and Noise ... 6-91
6.6.3.2 Waste Management ... 6-92
6.6.3.3 Land Reclamation ... 6-93
6.6.4 Risk Assessment ... 6-93
6.6.4.1 Mitigation Measure ... 6-94

CHAPTER 7 : CUMULATIVE IMPACT ASSESSMENT

7.1 INTRODUCTION ... 7-1
7.2 METHODOLOGY AND APPROACH ... 7-2
7.2.1 Scope of the CIA ... 7-2
7.2.2 Assumptions ... 7-2
7.2.3 Impact Assessment ... 7-2
7.3 CUMULATIVE IMPACTS ... 7-3
7.3.1 Construction Phase ... 7-3
7.3.2 Operation Phase ... 7-4

PAGE

CHAPTER 8 : ENVIRONMENTAL MANAGEMENT PLANS

8.1 THE CONCEPTUAL FRAMEWORK 8-1
8.1.1 Scope of Environmental Management Plans 8-1
8.1.2 Application of the Owner-EMPs 8-2
8.1.3 Scope of Project Environmental Management 8-2
8.2 PROJECT'S EHS POLICY AND COMMITMENTS, AND LEGAL REQUIREMENTS 8-4
8.2.1 Owner's Policy 8-4
8.2.2 Legal Requirements 8-5
8.3 SUMMARY OF CEMP 8-7
8.3.1 Arrangements for the Implementation of Mitigation Measures 8-7
8.3.2 Monitoring, Evaluation and Reporting 8-8
8.3.3 Corrective Actions 8-8
8.3.4 Organization 8-9
8.3.5 Public Consultation and Disclosure 8-9
8.3.6 Responsible Agencies for Environmental Management Plan 8-12
8.3.7 Responsible Agencies for Environmental Monitoring Program 8-14
8.3.7.1 Establishment of Environmental Monitoring Program 8-14
8.3.8 Audit 8-15
8.4 SUMMARY OF OEMP 8-17
8.4.1 Mitigation Measures and Plans 8-17
8.4.2 Environmental Management System (EMS) 8-17
8.4.3 Monitoring, Evaluating and Reporting (MER) 8-17
8.4.4 Corrective Actions 8-18
8.4.5 Organization 8-18
8.4.6 Public Consultation and Disclosure 8-19
8.4.7 Responsible Agencies for Environmental Management Plan 8-21
8.4.8 Responsible Agencies for Environmental Monitoring Program 8-22
8.5 SUMMARY OF DEMP 8-24
8.5.1 Mitigation Measures and Plans 8-24
8.5.2 MONITORING, EVALUATING AND REPORTING 8-24
8.5.3 Corrective Actions and Organization 8-24
8.5.4 Public Consultation and Disclosure 8-24
8.5.5 Responsible Agencies for Mitigation and Monitoring during Decommissioning Phase 8-24

PAGE

CHAPTER 8 : ENVIRONMENTAL MANAGEMENT PLANS (CONT'D)

8.6 EMERGENCY RESPONSE PLAN 8-25
8.6.1 Emergency Procedures 8-26
8.6.2 Fire Fighting Plan 8-27
8.6.3 Contingency Plan 8-30
8.6.4 Accidental Plan 8-30
8.6.5 Evacuation Plan 8-31
8.6.6 Recovery Plan 8-31

CHAPTER 9 : PUBLIC CONSULTATION AND DISCLOSURE

9.1 PURPOSES OF THE CONSULTATION DURING THE PREPARATION OF EIA REPORT 9-1
9.2 METHODOLOGY AND APPROACH 9-1
9.2.1 Identification of Stakeholders and Group Affected by the Project 9-2
9.2.2 Methods of Consultations 9-3
9.2.3 Approach to the Public Meetings 9-3
9.3 SUMMARY OF CONSULTATION ACTIVITIES UNDERTAKEN 9-4
9.4 SUMMARY OF MAIN COMMENTS RECEIVED FROM STAKEHOLDERS 9-10
9.4.1 The First Period of Consultation Meeting 9-10
9.4.2 The Second Period of Consultation Meeting 9-11
9.4.3 The Third Consultation Meeting 9-13
9.5 HOW THESE COMMENTS WERE TAKEN INTO ACCOUNT 9-13
9.6 PROJECT INFORMATION DISCLOSURE 9-13
9.7 RECOMMENDATIONS FOR FUTURE CONSULTATIONS 9-16

CHAPTER 10 : CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS 10-1
10.2 RECOMMENDATIONS 10-2

APPENDICES

Appendix 1A	Consultant's Documents
Appendix 2A	Information on the Dawei SEZ Initial Phase Development
Appendix 2B	Names of Members of the EIA Study Team
Appendix 2C	EIA Procedure
Appendix 4A	Gas Engine Generator
Appendix 5A	Results of Wind Speed and Direction
Appendix 5B	Results of the Air Quality Surveys
Appendix 5C	Results of the Noise Measurements
Appendix 5D	Results of Surface Water Quality
Appendix 5E	Results of Groundwater Quality
Appendix 5F	Methodology for Terrestrial Ecology
Appendix 5G	Questionnaires to Interview Village Headman and Key Informants
Appendix 5H	Questionnaires to Interview Villagers at the Household Level
Appendix 5I	Results of the Interviews
Appendix 5J	Results of Traffic Counting
Appendix 6A	Calculation of Construction Material Quantity
Appendix 6B	Results of Air Modelling and Isoplete of Average Concentration of NO_2 from AIRMOD Model
Appendix 6C	Types of Natural Gas Explosion

APPENDICES (CONT'D)

Appendix 9A-1	List of Participant in 1st Consultation Meeting with DSEZ Support Working Body and 1st Public Consultation Meeting at - Wet Chaung Village - Pale Gu Village - Pagaw Zoon Village - Yalai Village
Appendix 9A-2	List of Participant in 2nd Consultation Meeting with DSEZ Support Working Body and 2nd Public Consultation Meeting at - Wet Chaung Village - Pale Gu Village - Pagaw Zoon Village - Yalai Village
Appendix 9A-3	List of Participant in 3rd Public Consultation Meeting at DSEZ ITD meeting hall
Appendix 9B-1	Minute of Consultation Meeting with DSEZ Support Working Body and 1st Public Consultation Meeting at - Wet Chaung Village - Pale Gu Village - Pagaw Zoon Village - Yalai Village
Appendix 9B-2	Minute of Consultation Meeting with DSEZ Support Working Body and 2nd Public Consultation Meeting at - Wet Chaung Village - Pale Gu Village - Pagaw Zoon Village - Yalai Village
Appendix 9B-3	Minute of 3rd Public Consultation Meeting at DSEZ ITD meeting hall
Appendix 9C-1	Presentation for 1st Consultation Meeting with DSEZ Support Working Body and 1st Public Consultation Meeting
Appendix 9C-2	Presentation for 2nd Consultation Meeting with DSEZ Support Working Body and 2nd Public Consultation Meeting
Appendix 9C-3	Presentation for 3rd Public Consultation Meeting

LIST OF FIGURES

FIGURE **PAGE**

2.3-1 Organizational Structure of the ESIA Study Team.................................... 2-4

3.4-1 Organizational Structure of State and Region Government 3-24
3.4-2 Organizational Structure of Dawei Special Economic Zone (DSEZ)......... 3-25

4.3.1-1 Project Location 4-3
4.4.1-1 Distance between PTT LNG Terminal in Rayong, Thailand to the Project Site 4-5
4.4.1-2 Property Specifications of LNG from PTT LNG 4-5
4.5.2-1 Layout of Proposed 15 MW Temporary Power Plant 4-11
4.7.1-1 Equipment Installation for 15 MW Temporary Power Plant...................... 4-14

5.1.1-1 Project Study Area of ESIA for 15 MW Temporary Power Plants Project 5-3
5.2.1-1 Districts and Townships of Tanintharyi Region 5-5
5.2.2-1 Monsoon Wind Direction Passing Through Myanmar.............................. 5-9
5.2.2-2 Wind Speed and Wind Direction Measurement Stations for Project Study 5-11
5.2.2-3 Wind Rose from Wind Speed and Wind Direction Measurement of the Project 5-14
5.2.3-1 Topographic Condition of the Proposed Project Site................................. 5-16
5.2.4-1 Geological Map of the Proposed Project Area... 5-18
5.2.5-1 Seismic Hazard Map of Tanintharyi Region.. 5-19
5.2.6-1 Soil Map in Tanintharyi Region 5-20
5.2.7-1 Air Quality and Noise Measurement Stations for Project Study 5-23
5.2.9-1 Location of Surface Water / Aquatic Ecology Sampling Station 5-30
5.2.10-1 Location of Groundwater Sampling Station 5-33
5.4.4-1 Location of Traffic Counting Station... 5-70
5.4.6-1 Existing Land Use within Project Study Area 5-78

FIGURE **PAGE**

6.2.1-1 Impact Analysis Process 6-3

6.2.1-2 Mitigation Measure Concept 6-5

6.2.1-3 Methodology for the Impact As7sessment of Each Environmental Issue .. 6-8

6.2.2-1 Simple Risk Matrix 6-14

6.2.2-2 Environmental Risk Management Logic 6-15

6.4.4-1 Risk Matrix for the Construction Phase 6-53

6.5-1 An Example of the Net GLC Contours of 1-Hour Average Concentration of NO_2 (Operation of 15 Units of Model Jenbabacher JGS 320) 6-64

6.6-1 Risk Classification Matrix-Operation Phase 6-86

6.6.4-1 Risk Classification Matrix-Decommission Phase 6-94

8.1-1 Application of the EIA-EMP 8-3

8.1-2 PDCA Cycle for Environmental Management 8-3

8.3-1 Organization for Project Construction 8-10

8.3-2 Grievance Management Process 8-11

8.4-1 Tentative Organization for Power Plant O&M and Environmental Management 8-18

8.4-2 Grievance Redress Process 8-20

LIST OF TABLES

TABLE		PAGE
1.6-1	Predicted Impact from Construction of the 15 MW Power Plant and the New Township on Fugitive Dust	1-31
1.6-2	Predicted Impacts of the Operation of 30 Units of 1 MW Gas Generator on NO_2 Concentration in Ambient Air in the Study Area	1-32
1.7-1	Content of the EIA Procedure Relevant to the EMPs	1-33
1.7-2	Anticipated Impacts at Various Months of the Construction	1-34
1.8-1	Summary of Main Comments	1-38
3.3-1	Relevant International Treaties Signed by Myanmar	3-22
3.4-1	Roles and Responsibilities of Relevant Departments Functioning in DSEZ	3-26
3.6-1	Relevant International Environmental Guidelines and Standards	3-32
3.6-2	National Emission Standards	3-33
3.6-3	Emission Standards for the Project	3-33
4.5.2-1	Technical Data of Cummins QSK60 Gas Generator	4-7
4.5.2-2	Technical Data of Jenbacher JGS320 Gas Generator	4-7
4.6-1	Tentative Project Schedule	4-12
5.2.1-1	Villages in the Study Area	5-6
5.2.2-1	Average Rainfall at Dawei Station	5-7
5.2.2-2	Climatic Data for the Period 2013-2014 in DSEZ	5-8
5.2.2-3	Results of Wind Speed and Direction Measurements for Dry Season (January 29-February 1, 2015)	5-12
5.2.2-4	Results of Wind Speed and Direction Measurements for Wet Season (October 7-10, 2015)	5-12
5.2.7-1A	Results of the Air Quality Measurements (Dry Season)	5-24
5.2.7-1B	Results of the Air Quality Measurements (Wet Season)	5-25
5.2.8-1	Noise Level Measurement at 2 Sampling Stations during January 29 – February 1, 2015	5-28
5.2.9-1	Results of Surface Water Quality Sampling, February 1, 2015	5-29
5.2.10-1	Results of Groundwater Quality Analysis at each Station (January 29 and February 1, 2015)	5-32

TABLE **PAGE**

5.3.1-1 List of Plant Species found in Project Site and Radius Zone (January 27 - 29, 2015) 5-37

5.3.1-2 List of Fauna Species found in Project Site and Radium Zone (January 27 - 29, 2015) 5-41

5.3.2-1 Results of Plankton Samplings and Analysis (February, 2015) 5-46

5.3.2-2 Results of Benthos Sampling and Analysis (February, 2015) 5-49

5.4.1-1 Distribution of Sample Size for the Socio-Economic Survey in 9 Villages 5-51

5.4.1-2 Households and Population in all Villages of the Study Area 5-52

5.4.1-3 Education Level of Villagers in the Project Study Area 5-53

5.4.1-4 Identified Vulnerable Group in the Project Study Area 5-53

5.4.1-5 Ethnic and Minority Group in the Project Study Area 5-54

5.4.2-1A Household Main Occupation by Village in the Project Study Area 5-55

5.4.2-1B Household Supplementary Occupation by Village in the Project Study Area 5-55

5.4.2-2 Average Employment and Wage Rate in the Project Study Area 5-56

5.4.2-3 Average Labor Working Outside the Villages of the Project Study Area 5-56

5.4.2-4A Work Place Where Labor Working Outside the Villages of the Project Study Area 5-57

5.4.2-4B Type of Work of Labor Work Outside the Villages of the Project Study Area 5-57

5.4.2-5A Agricultural Activities of Household in the Project Study Area 5-58

5.4.2-5B Average Income from Agricultural Production of Household in the Project Study Area 5-58

5.4.2-6 Household Livestock in the Project Study Area 5-59

5.4.2-7 Annual Average of Household Income of Villages in the Project Study Area 5-60

5.4.2-8 Annual Average of Household Expenditure in the Project Study Area 5-60

5.4.2-9 Sufficiency of Household Income in the Project Study Area 5-60

5.4.2-10 Current Land Holding in the Project Study Area 5-61

5.4.2-11 Household Sanitary and Waste Management in the Project Study Area 5-61

5.4.2-12 Common Disease and Treatment in the Project Study Area 5-62

5.4.2-13 Electricity in the Project Study Area 5-62

5.4.2-14A Drinking and Cooking Water in the Project Study Area 5-63

5.4.2-14B Washing and Cleaning Water in the Project Study Area 5-63

5.4.2-15A Satisfaction of the Living Condition in the Project Study Area 5-64

TABLE **PAGE**

5.4.2-15B Satisfaction of Life Current Situation in the Project Study Area 5-64

5.4.3-1 Five Leading Causes of Morbidity/Mortality in Launglon and Yebyu Township 5-67

5.4.3-2 Nutrition Information in Yebyu Township 5-67

5.4.4-1 Number of Schools and Religious Facilities 5-68

5.4.4-2 Passenger Car Equivalent Factor of Each Vehicle 5-72

5.4.4-3 Traffic Carrying Capacity and Highway Types 5-72

5.4.4-4 Range of V/C Ratio for Traffic Condition Classification 5-73

5.4.4-5 Existing Traffic Condition at Dawei River Bridge (January 30-31, 2015) 5-74

5.4.6-1 Land Use Types in the Study Area 5-76

6.2.1-1 Definitions of the Impact Areas 6-2

6.2.1-2 Temporal Scope 6-2

6.2.1-3 Levels of Impact of the Issue in Environment Management 6-9

6.2.1-4 VECs during Pre-Construction, Construction, Operation Phases and Decommissioning Phase 6-11

6.3.2.5-1 Calculations of Ambient Noise Levels at the Receptor 6-24

6.4.2-1 Environmental Issues to be Managed during Construction Work 6-26

6.4.3.2-1 Noise Levels of Construction Equipment Related to the Project 6-30

6.4.3.2-2 Calculations of Ambient Noise Levels at the Receptor 6-33

6.4.3.4-1 Amount of Construction Wastes for Non-residential Buildings 6-38

6.4.3.5-1 Impacts of Transport of Fill Materials on Existing Traffic 6-45

6.4.4-1 Mitigation Measures for Environmental Risk Management during Construction Phase 6-54

6.5-1 Receptors within 10 Km × 10 Km Square Area with the Power Plant Site at Its Center 6-58

6.5-2 Emission Standards for Natural Gas fired Combustion Turbine 6-59

6.5-3 WHO Ambient Air Quality Standard Adopted by IFC 6-59

6.5-4 Emission Data used in Air Quality Modeling 6-61

6.5-5 Summary of Air Quality Modeling Results 6-65

6.5-6 Estimation of Greenhouse Gas Emission during Operation 6-66

6.5-7 Noise Levels of Equipment and Facilities of Power Plants 6-68

6.5-8 Calculations of Noise Levels at the Receptor 6-70

6.5-9 Impacts of Transport of LNG on Existing Traffic 6-76

TABLE **PAGE**

6.6.2-1 Environmental Issues to be Managed during Decommission Phase 6-91

7.3-1 Predicted Impacts from Construction of the 15 MW Power Plant and the New Township on Fugitive Dust 7-3

7.3-2 Predicted Impacts from Construction of the 15 MW Power Plant and the New Township 7-4

7.3-3 Predicted Impacts of the Operation of 30 Units of 1 MW Gas Generation on NO_2 Concentration in Ambient Air in the Study Area 7-5

8.2-1 Content of the EIA Procedure Relevant to the EMPs 8-6

8.3-1 Anticipated Impacts during Construction Period 8-8

8.3-2 Budget and Schedule during Pre-Construction / Construction Phases 8-16

8.4-1 Budget and Schedule during Operation Phase 8-23

9.3-1 The First Period of Consultation Meetings with the Project's Stakeholders 9-5

9.3-2 The Second Period of Consultation Meetings with the Project's Stakeholders 9-6

9.3-3 The Third Consultation Meetings with the Project's Stakeholders 9-9

LIST OF PHOTOS

PHOTO **PAGE**

4.5.2-1 Gas Generator ... 4-8
4.5.2-2 Major Components of Proposed 15 MW Temporary Power Plant ... 4-10

5.2.2-1 Wind Speed and Wind Direction Station ... 5-13
5.2.3-1 Landforms in the Study Area ... 5-15
5.2.6-1 Soil Sampling Observation 1 ... 5-21
5.2.6-2 Soil Sampling Observation 2 ... 5-21
5.2.7-1 Air Quality and Noise Measurement Station within 5 km Radius of Power Plant ... 5-26
5.2.9-1 Sampling of Surface Water ... 5-29
5.2.10-1 Groundwater Sampling Activities at each Station ... 5-31
5.3.1-1 Forests Existing in the Study Area ... 5-35
5.3.1-2 Some Dominance Tree Species in the Study Area ... 5-36
5.3.1-3 Examples of Wildlife found in the Project Site ... 5-43
5.3.2-1 Aquatic Ecological Sampling Activities ... 5-44
5.4.2-1 Views at Nabule Beach ... 5-65
5.4.2-2 Views at Muangmagan Beach ... 5-65
5.4.4-1 Existing Condition of Road and Traffic Counting within Project Study Area ... 5-71
5.4.6-1 Typical Scenes of Land Use in the Study Area ... 5-77
5.5-1 Two Hundred Year Old Temple of Yalai ... 5-81
5.5-2 Temple in Pagaw Zoon ... 5-81
5.5-3 Use of Resource as a Livelihood of Locals ... 5-82
5.6-1 Scenery of Study Area ... 5-84

9.3-1 The First Consultation Meetings with Concerned Agencies and the Locals ... 9-7
9.3-2 The Second Consultation Meetings with Concerned Agencies, the Locals and NGO ... 9-8
9.3-3 The Third Consultation Meetings with Concerned Agencies, the Locals and NGO ... 9-9
9.6-1 Disclosure of the 1st Public Consultation Meeting ... 9-13
9.6-2 Disclosure of the 2nd Public Consultation Meeting ... 9-14

ABBREVIATION

ABBREVIATION

ACC	Air-cooled Condenser
ASMS	Ambient Air Quality Monitoring Stations
BAT	Best Available Techniques
BOD	Biochemical Oxygen Demand
CAR	Corrective Action Request
CCEMP	Contractor- CEMP
CEMs	Continuous Emission Monitoring System
CEMP	Construction Phase Environmental Management Plan
CDL	Construction, demolition, and land-clearing
CPMO	Contractor Project Management Office
CSR	Corporate Social Responsibility
CO	Carbon Monoxide
DHF	Dengue Hemorrhagic Fever
DO	Dissolved Oxygen
ECC	Environmental Compliance Certificate
ECD	Environment Conservation Department
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIF	Environmental Incident Form
EIR	Environmental Incident Register
EMP	Environmental Management Plan
EMS	Environmental Management System
ERR	Environmental Risk Register
ESHS	Environmental, Social, Health and Safety
ESMS	Environmental and Social Management System
EPA	Environmental Protection Agency
EPC	Engineering Procurement Construction
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
ESMMP	Environmental and Social Management and Monitoring Plan
FREDA	Forest Resources and Environment Development Association
GIS	Geographical Information System
GIIP	Good International Industry Practice

GLC	Ground Level Concentrations
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IPPs	Independent Power Producers
L&FS	Life and fire safety
LTIFR	Lost Time Injury Frequency Rate
MIC	Myanmar Investment Commission
MMC	Modern Methods of Construction
MOECAF	Ministry of Environmental Conservation and Forestry
MOEP	Ministry of Electric Power
MONREC	Ministry of Natural Resource and Environmental Conservation
MTIFR	Medical Treatment Injury Frequency Rate
NCB	National Coordinating Body
NCEA	National Commission on Environmental Affairs
NG	Natural Gas
NOx	Nitrogen Oxides
NSDS	National Sustainable Development Strategy
OCEMP	Owner-CEMP
OEMP	Operational Phase Environmental Management Plan
OSH	Occupational Safety and Health
O&M	Operation and Maintenance
PAPs	Project Affected Persons
PCE	Passenger Car Equivalents
PCU	Passenger Car Unit
PDCA	Plan-Do-Check-Act
PMO	Project Management Office
PPA	Power Purchase Agreement
PPAH	Pollution Prevention and Abatement Handbook
PPPs	Public-Private Partnerships
PS	Performance Standards
RO-RO	Roll-on-roll-off
SCADA	Supervisory Control and Data Acquisition
SFC	Static Frequency Converter
SNCR	Selective Non Catalytic Reduction
SOx	Sulphur Dioxide

TBS	Total Business Solution Co., Ltd., Myanmar
TC	Traffic Counting
TGC	TEAM Group of Companies
THW	Toxic and Hazardous Materials
TOR	Terms of Reference
TRIFR	Total Recordable Injury Frequency Rate
TSP	Total Suspended Particle
UN	United Nations
US.EPA	U.S. Environmental Protection Agency
V/C	Traffic Volume/Carrying Capacity
VECs	Valued Environmental Components
WB	World Bank
WHO	World Health Organization

စီမံခန့်ခွဲမှုအကျဉ်းချုပ်

အခန်း(၁)

စီမံခန့်ခွဲမှုအကျဉ်းချုပ်

၁.၁ နိဒါန်း

တနင်္သာရီတိုင်းဒေသ ရှိ ထားဝယ်အထူးစီးပွားရေးဇုန် တွင် (၁၅) မဂ္ဂါဝပ်ရှိသော ယာယီဓါတ်အားပေး စက်ရုံစီမံကိန်းကိုထားဝယ်လျှပ်စစ်ဓါတ်အားထုတ်လုပ်ရေး (DPG) ကုမ္ပဏီလီမိတက် (စီမံကိန်းအစီရင်ခံစာတင်သွင်းသူ) မှ ဆောက်လုပ်မည် ဖြစ်ပါသည်။ ယင်း (၁၅) မဂ္ဂါဝပ် ရှိ ယာယီဓါတ်အားပေးစက်ရုံစီမံကိန်း သည် ထားဝယ် အထူးစီးပွားရေး ဇုန် အတွက် သဘာဝဓါတ်ငွေ့ သုံး လည်ပတ် ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံ နှင့် ဓါတ်ငွေ့ဖြန့်ဖြူးရေး ဝန်ဆောင်မှုများကို ဆောက်လုပ်သွားမည် ဖြစ်ပါသည်။ ယင်း ဓါတ်အားပေးစက်ရုံသည် အမြင့်ဆုံး စွမ်းအင် (၁၅) မဂ္ဂါဝပ် အထိ ထုတ်လုပ်နိုင်စွမ်း ရှိပါမည်။ စီမံကိန်း ၏ ရည်ရွယ်ချက်မှာ ထားဝယ်အထူးစီးပွားရေးဇုန် ၏ ဆောက်လုပ်ရေးကာလအတွင်း စွမ်းအင် ထုတ်လုပ်ပံ့ပိုးပေးရန် ဖြစ်ပြီး Boil-off Gas ဓါတ်အားပေးစက်ရုံ စတင်လည်ပတ်မည့်နောက်ပိုင်းတွင်ဖယ်ရှားရပ်တန့်မည်ဖြစ်ပါသည်။၎င်းစီမံကိန်းထားဝယ်အထူးစီးပွားရေးဇုန်(DSEZ)တွင်အခြေခံအဆောက်အဦးနှင့်လမ်းပန်းဆက်သွယ်ရေးဖွံ့ဖြိုးတိုးတက်လာမှုအပေါ်အကဲဖြတ်ပါ လိမ့်မည်။ ၎င်းစီမံကိန်း သည်ထားဝယ်အထူးစီးပွားရေးဇုန်တွင်ရင်းနှီး မြှုပ်နှံမည့် သူများ၏ ရင်းနှီးမြှုပ်နှံနိုင်ရန်ယုံ ကြည်မှုကိုပိုမိုခိုင်မာလာစေရန် အကူအညီအထောက်အပံ့ဖြစ်စေမည်ဖြစ်ပါသည်။

စီမံကိန်း ၏ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးဆိုင်ရာ နယ်ပယ်တို့အတွက် စီမံကိန်းပြင်ဘက် ကုမ္ပဏီ သည် TEAM Consulting, Engineering and Management ကုမ္ပဏီလီမိတက်၊ ပြည်တွင်း TBS (အတိုင်ပင်ခံ) ကုမ္ပဏီတို့ နှင့် အတူတကွ ဇန်နဝါရီလ (၂၀၁၅) ခုနှစ် ဇန်နဝါရီလ မှ ဖေဖော်ဝါရီ လ အထိ ပြုလုပ်ခဲ့သော သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ (EIA) လေ့လာမှု တွင် ပူးပေါင်းပါဝင်ခဲ့ပါသည်။ သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ (EIA) လေ့လာမှုကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန ၏ ၂၀၁၄ ခုနှစ် ဇူလိုင်လ ပဥ္စမမြောက် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ချက် လုပ်ငန်းစဉ် တွင် ပြဋ္ဌာန်းထားသော လိုအပ်ချက်များ နှင့် အညီ နယ်ပယ်ခွဲခြားမှုအဆင့် နှင့် နိဂုံးချုပ်အဆင့် တို့ဖြင့် အဆင့်နှစ်ဆင့် ခွဲခြားဆောင်ရွက်ခဲ့ပါသည်။ နယ်ပယ်ခွဲခြားမှုအဆင့်ဆိုင်ရာ စာတမ်းသည် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကာကွယ်ရေး နှင့် သစ်တောရေးရာဝန်ကြီးဌာန မှ အကြံပြုချက်များကို ၂၀၁၅ ခုနှစ် ဇန်နဝါရီလ တွင် ရရှိခဲ့ပြီးဖြစ်ပါသည်။ လည်းကောင်းနှင့် တဆက်တည်း သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ (EIA) လေ့လာမှု ကို ဆက်လက်ဆောင်ရွက်ခဲ့ပြီး ယင်း၏ ရလာဒ်များကို နိဂုံးချုပ် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ (EIA) စာတမ်းတွင် အဓိကအပိုင်းတွင် ထည့်သွင်း တင်ပြထားပါသည်။ သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ (EIA) လေ့လာမှု ၏ အဓိက ရလာဒ်များကို လိုအပ်ချက်ဟု သတ်မှတ်ထားသည့်အတိုင်း စီမံခန့်ခွဲမှု အကျဉ်းချုပ် အပိုင်း အဓိက စာပိုဒ်တွင် ရည်ညွှန်းကာ အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

၁.၂ မူဝါဒများ၊ ဥပဒေဆိုင်ရာနှင့် ဖွဲ့စည်းဆောင်ရွက်ပုံဆိုင်ရာ လေ့လာသုံးသပ်ချက်

၁.၂.၁ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုလမ်းစဉ်များ ပူးပေါင်းဆောင်ရွက်ခြင်း

စီမံကိန်းအစီရင်ခံစာတင်သွင်းသည့်ကုမ္ပဏီသည် စီမံကိန်းတည်ဆောက်စဉ်နှင့် လည်ပတ်စဉ်ကာ လများတွင် သဘာဝ ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာ စီမံခန့်ခွဲမှု စသည့် ကိစ္စရပ်တွင် ဦးဆောင် လမ်းပြနိုင်ရန် သဘာဝပတ်ဝန်းကျင်နှင့်လူမှုဆိုင်ရာစီမံခန့်ခွဲမှုလမ်းစဉ်ကို ဖော်ဆောင်သွားမည် ဖြစ်ပါသည်။ စီမံကိန်းတင်သွင်းသည့် အဖွဲ့ ့အစည်းများသည် သဘာဝပတ်ဝန်းကျင်စီမံခန် ့ခွဲမှုနှင့် ကာကွယ်မှုစနစ် နှင့်အညီ စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာလုပ်ငန်းစဉ်များကို စီမံခန် ့ခွဲဆောင်ရွက် သွားမည် ဖြစ်ပါသည်။ တပြိုင်နက်တည်းတွင် စီမံကိန်းတင်သွင်းသည့်အဖွဲ့အစည်းများသည် စီမံကိန်းအတွက် သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေးစနစ် (EMS) ကို တည်ထောင်သွားမည် ဖြစ်ပြီး ယင်း EMS ကို သဘာဝပတ်ဝန်းကျင်စီမံခန် ့ခွဲမှုနှင့် ကာကွယ်မှုစနစ်၏ လိုအပ်ချက်များ နှင့်ကိုက်ညီရန် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ စီမံကိန်းတင်သွင်းသည့် အဖွဲ့အစည်းသည် ဆောက်လုပ်ရေးလုပ်ငန်းများ စတင်သည့်ကာလမှ စပြီး EMS စီမံခန့်ခွဲမှု စနစ်ကို တည်ထောင်ပြီး အကောင်ထည်ဖော်သွားမည် ဖြစ်ပါသည်။

၁.၂.၂ မူဝါဒများ နှင့် ဥပဒေ မူဘောင်များ

ဤစီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော မြန်မာနိုင်ငံဆိုင်ရာ အမျိုးသား မူဝါဒနှင့် ဥပဒေဖွဲ့စည်းမှုများကို အပိုင်း (၄) ပိုင်း ခွဲခြားနိုင်ပါသည်။ ယင်းတို့မှာ (၁) သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အတွက် အခြေခံများကို ထောက်ပံ့ပေးသော မူဝါဒ နှင့် ဥပဒေမူဘောင်များ၊ (၂) သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှုဆန်းစစ်ခြင်း (EIA) ဆိုင်ရာ လုပ်ငန်းစဉ်များ၊ သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုဆိုင်ရာ ကင်းရှင်းကြောင်း အသိမှတ်ပြုလက်မှတ် ထုတ်ပေးခြင်း အတွက် EIA စာတမ်းများ ဆိုင်ရာ လုပ်ငန်းစဉ်များ ၊ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်များ အကောင်အထည်ဖော်ခြင်း အစရှိသည့်တို့ကို ကွပ်ကဲသော နည်းဥပဒေများ၊ (၃) လူမှုစီမံခန့်ခွဲရေး လိုအပ်ချက်များ၊ သဘာဝပတ်ဝန်းကျင် အရည်အသွေး စံနှုန်း၊ သဘာဝပတ်ဝန်းကျင် ကာကွယ်ရေး တို့နှင့် သက်ဆိုင်သော ဥပဒေ နှင့် နည်းဥပဒေများ နှင့် (၄) စီမံကိန်းတည်နေရာနှင့်သီးခြားသက်ဆိုင်သော ဥပဒေများ စသည်တို့ဖြစ်ပါသည်။

ယင်း အုပ်စု (၄) ခု တို့၏ တစ်ခုဆီ အတွက် အမျိုးမျိုးသော ဥပဒေ နှင့် နည်းဥပဒေတို့ကို ပြန်လည်ချုံငုံ သုံးသပ်ပြီး အဓိက တွေ ့ရှိချက်များ နှင့် နိဂုံးချုပ် ကို အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။

(၁) သဘာဝပတ်ဝန်းကျင် စီမံခန့် ခွဲအတွက် အခြေခံများ

အမျိုးသား သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒ (၁၉၉၄) သည် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု နှင့် စီးပွားရေး ဖွံ့ဖြိုးတိုးတက်မှုတို့ကို ပေါင်းစည်းထားပြီး အခြေခံရေရှည်တည်တံ့ဖွံ့ဖြိုးရေးအား ရေးရှုကာ လူမှုစီးပွားရေး ဖွံ့ဖြိုးတိုးတက်ရေးတွင် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေးအတွက် အခြေခံများကို တည်ထောင်ထားပါသည်။ တနည်းအားဖြင့် ယင်းမူဝါဒသည် ရုပသဘာဝပတ်ဝန်းကျင် ကိုသာမက ဇီဝဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်၊ လူမှုစီးပွားရေး

ပတ်ဝန်းကျင်၊ ယဉ်ကျေးမှုနှင့် အမွေအနှစ်တို့ကိုပါ ပါဝင်ထည့်သွင်းထားပါသည်။ ယင်းမူဝါဒသည် ဖွဲ့စည်းပုံအခြေခံဥပဒေ (၂၀၀၈) ခုနှစ် ၏ အခန်း ၃၇၊၄၂ နှင့် ၃၉၀ တို့ကိုအထောက်အကူပြုထားပြီး (၂၀၁၂) ခုနှစ် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကာကွယ်ရေး ဥပဒေ ကို အသက်သွင်းထားသည့် မူဝါဒဖြစ်ပါသည်။ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေး ဥပဒေ နှင့် ယင်းနှင့် သက်ဆိုင်သော သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေး စည်းမျဉ်းများ သည် နိုင်ငံ၏ သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေး အတွက် ဥပဒေမူဘောင်ကို ထောက်ပံ့ပေးသော ပြီးပြည့်စုံသည့် ဥပဒေရေးရာ စာတမ်းဖြစ်ပါသည်။ အထူးစီးပွားရေးဇုန် (SEZ) ဥပဒေကို (၂၀၁၄) ခုနှစ်တွင် ပြဋ္ဌာန်းခဲ့ပါသည်။ ယင်းဥပဒေသည် ပို့ကုန်တိုးမြှင့်ရေး လုပ်ငန်းများကို အထောက်အပံ့ပေး ကူညီသွားမည်ဖြစ်ပါသည်။ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) ဥပဒေကို (၂၀၁၁) ခုနှစ်တွင် ပြဋ္ဌာန်းခဲ့ပါသည်။ ယင်းဥပဒေတွင် ပြည်ပပို့ကုန်တိုးမြှင့်ရေးလုပ်ငန်းများ နှင့် ထပ်မံလိုအပ်သည့် ကုန်ပစ္စည်းနှင့် ဝန်ဆောင်မှုလုပ်ငန်းများ ထုတ်လုပ်ဖြန့်ဝေမှုလုပ်ငန်းစဉ်များ အဆင့်ဆင့်တွင် ပါဝင်သော လုပ်ငန်းများ ကို အထောက်အကူပြုရန် ဟူသည့် လိုအပ်ချက်များ ပါဝင်ပါသည်။

(၂) သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း နှင့် စီမံခန့်ခွဲခြင်း တို့နှင့် ဆက်နွယ်သော နည်းဥပဒေများ

ဖွံ့ ဖြိုးရေး စီမံကိန်းများ အတွက် သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာထိခိုက်သက်ရောက်မှု စီမံခန့်ခွဲရေး နှင့် သက်ဆိုင်သော လိုအပ်ချက်များကို သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း လုပ်ငန်းစဉ် နှင့် လမ်းညွှန်ချက်များ စသည့် စာတမ်း နှစ်ခုတွင် ဖော်ပြထားပါသည်။ သဘာဝပတ်ဝန်းကျင်ထိခိုက်ဆန်းစစ်မှု လုပ်ငန်းစဉ် သည် ပြီးပြည့်စုံပြီး သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အစီအစဉ် (EMP) နှင့် (၂၀၁၄) ခုနှစ် သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း လမ်းညွှန်မှုများ အပါအဝင် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) အား ကြိုတင်ပြင်ဆင်ခြင်း နှင့် ပြန်လည်သုံးသပ်ခြင်းတို့ ကိုထည့်သွင်းပါဝင်ထားပါသည်။ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှုဆန်းစစ်ခြင်း (EIA) လမ်းညွှန်ချက်များ ၏ ရည်ရွယ်ချက်မှာ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှုဆိုင်ရာ စာတမ်းများ အတွက် စီမံကိန်း အစီရင်ခံစာတင်ပြသောအဖွဲ့အစည်းများ နှင့် လည်းကောင်းတို့၏ သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာအတိုင်ပင်ခံ များ ကိုတင်ပြခြင်း တို့အတွက် ဘုံမူဘောင်များကို ထောက်ပံ့ပေးရန် ဖြစ်ပါသည်။ စီမံကိန်းတင်သွင်းသော အဖွဲ့ အစည်းနှင့် ယင်းတို့၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လေ့လာရေး အဖွဲ့သည် နယ်ပယ်ခွဲခြားရေး စတမ်း (Scoping report) ၊ IEE စာတမ်း၊ EIA စာတမ်း နှင့် သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အစီအစဉ် အစရှိသည့် ဝန်ကြီးဌာနကို တင်သွင်းရန် လိုအပ်သည်တို့အတွက် ကြိုတင်ပြင်ဆင်ခြင်းဆိုင်ရာ လမ်းညွှန်ချက်များကို ထည့်သွင်းစဉ်းစားရန်လိုအပ်ပါသည်။

(၃) သဘာဝပတ်ဝန်းကျင်ကာကွယ်ရေး နှင့် လူမှုရေးဆိုင်ရာထိခိုက်သက်ရောက်မှု စီမံခန့်ခွဲရေး နှင့် သက်ဆိုင်သော ဥပဒေ နှင့် နည်းဥပဒေများ

သဘာဝပတ်ဝန်းကျင်ကာကွယ်ရေး နှင့် လူမှုရေးဆိုင်ရာထိခိုက်သက်ရောက်မှု စီမံခန့်ခွဲရေး တို့ကို အမျိုးမျိုးသော နယ်ပယ်တို့၏ ဥပဒေ နှင့် နည်းဥပဒေများ တွင် ထည့်သွင်းဖော်ပြထားပါသည်။ သဘာဝပတ်ဝန်းကျင်အရည်အသွေးစံနှုန်းများ အား တရားဝင်ထုတ်ပေးခြင်း နှင့် အကောင်အထည် ဖော်ခြင်း တို့သည် ပုံမှန်အားဖြင့် သီးခြား အမျိုးသား

သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ ဥပဒေ အပေါ်တွင် အခြေခံထားပါသည်။ လည်းကောင်းတွင် လူမှုရေးရာထိခိုက်သက်ရောက်မှု စီမံခန့်ခွဲရေး နှင့် သက်ဆိုင်သော ဥပဒေများပါဝင်ပြီး ယင်းတို့တွင် (၁၉၇၂)ခုနှစ် ပြည်သူ့ကျန်းမာရေး ဥပဒေ၊ အလုပ်ခွင်ကျန်းမာရေးနှင့် လုံခြုံရေး၊ (၁၉၅၁) ခုနှစ် လုပ်ငန်းပျက်ကွက်ခွင့်ယူခြင်း နှင့် အားလပ်ရက်ဆိုင်ရာ ဥပဒေ၊ အလုပ်ရုံများ အက်ဥပဒေ (၁၉၅၁)၊ ရှေးဟောင်းအဆောက်အဦးများ ကာကွယ်ထိန်းသိမ်းခြင်း (၂၀၁၅)၊ ရှေးဟောင်းပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းခြင်း (၂၀၁၅)၊ ရှေးဟောင်းအမွေအနှစ် အဆောက်အဦး ကာကွယ်ရေးဥပဒေ (၂၀၁၅)၊ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသ ကာကွယ်ရေးနှင့် ထိန်းသိမ်းစောင့်ရှောက်ရေး ဥပဒေ (၁၉၉၈) တို့ဖြစ်ပါသည်။ ဂေဟာဗေဒဆိုင်ရာ ပြဿနာများ နှင့် သက်ဆိုင်သော ဥပဒေ နှင့် နည်းဥပဒေတို့တွင် (၁၉၉၂) ခုနှစ် သစ်တောရေးရာ ဥပဒေ နှင့် (၁၉၉၄) ခုနှစ် သဘာဝတောရိုင်းတိရစ္ဆာန် ကာကွယ်ရေး နှင့် သဘာဝတည်နေရာများ ထိမ်းသိမ်းကာကွယ်ရေး ဥပဒေ တို့ ပါဝင်ပါသည်။

(၄) စီမံကိန်းတည်နေရာ နှင့် သီးခြားသက်ဆိုင်သော ဥပဒေ

စီမံကိန်းသည် ထားဝယ်အထူးစီးပွားရေးဇုန်(DSEZ) တွင် တည်ရှိမည်ဖြစ်ပါသည်။ ထားဝယ်အထူးစီးပွားရေးဇုန် အား (၂၀၁၁) ခုနှစ် ထားဝယ်အထူးစီးပွားရေးဇုန် ဥပဒေ နှင့်အညီ တည်ထောင်ခဲ့ခြင်း ဖြစ်ပါသည်။ လည်းကောင်း ဥပဒေ အား ထားဝယ်အထူးစီးပွားရေးဇုန် ဆိုင်ရာ လုပ်ငန်းဆောင်ရွက်ခြင်း နှင့် ဖွံ့ဖြိုးရေး အတွက် သီးသန့် အကောင်အထည်ဖော် ပြဋ္ဌာန်းခဲ့ခြင်း ဖြစ်ပါသည်။

၁.၂.၃ အပြည်ပြည်ဆိုင်ရာ ညီလာခံများ၊ စာချုပ်များ နှင့် သဘောတူညီမှုများ

မြန်မာနိုင်ငံသည် အမျိုးမျိုးသော ပတ်ဝန်းကျင်ဆိုင်ရာ ညီလာခံများ၊ စာချုပ်များ နှင့် သဘောတူညီမှုများ တွင် အသိအမှတ်ပြု လက်မှတ်ရေးထိုးထားပါသည်။ ယင်းသဘောတူညီမှု စာချုပ်များ အနက်မှ အချို့မှာ (၁၉၅၆) ခုနှစ် အရှေ့တောင်အာရှ နှင့် ပစိဖိတ် ဒေသ အပင်ရောဂါ ကာကွယ်ရေး သဘောတူညီမှု၊ (၁၉၉၂) ခုနှစ် ကုလသမဂ္ဂ ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ညီလာခံ၊ (၁၉၉၂) ခုနှစ် ရီယိုဒီ ဂျနေရိုး မြို့တွင် ကျင်းပသော ဇီဝမျိုးကွဲများ ဆိုင်ရာ ညီလာခံ၊ (၁၉၇၂) ခုနှစ် ပဲရစ်မြို့တွင် ကျင်းပသော ကမ္ဘာ့ယဉ်ကျေးမှု နှင့် သဘာဝ အမွေအနှစ်များ ကာကွယ်ခြင်းညီလာခံ၊ (၁၉၈၅)ခုနှစ် ကွာလာလမ်ပူမြို့တွင် ကျင်းပပြုလုပ်သည့် သဘာဝနှင့် သဘာဝအရင်းအမြစ်များ ထိန်းသိမ်းရေး အာဆီယံသဘောတူညီမှု၊ (၂၀၀၀) ခုနှစ် ကာတာဂျီနာတွင် ပြုလုပ်သည့် ဇီဝလုံခြုံရေးဆိုင်ရာ ကာတာဂျီနာ သဘောတူညီမှုစာချုပ်၊ (၁၉၉၇) ခုနှစ် တိုကျိုမြို့ တွင် ပြုလုပ်သည့် ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ကျိုတိုသဘောတူညီမှု စာချုပ်၊ (၁၉၄၈) ခုနှစ် အပြည်ပြည်ဆိုင်ရာ အာကာဝါဗေဒ အဖွဲ့အစည်း ညီလာခံ၊ (၁၉၇၈) ခုနှစ် မာပေါလ် MARPOL (၇၃/၇၈) သဘောတူညီမှု၊ (၁၉၈၂) ခုနှစ် ပင်လယ်ပြင်ဥပဒေဆိုင်ရာ ကုလသမဂ္ဂညီလာခံ တို့ဖြစ်ပါသည်။

၁.၂.၄ မြန်မာနိုင်ငံတော်အစိုးအဖွဲ့၏ မူဘောင်များ

(၁) နိုင်ငံတော်အဆင့်နှင့် နယ်ပယ်အဆင့် အစီအစဉ်များ

နိုင်ငံတော် အဆင့်တွင် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေး ကော်မတီ (ENCC) သည် ဝန်ကြီးဌာနများ အတွင်း အတူတကွ ပူးပေါင်းဆောင်ရွက်ရေးအတွက် အဓိက ယန္တရား အဖြစ် ဆောင်ရွက်လျှက်ရှိပါသည်။ ယခုစီမံကိန်း နှင့် ပတ်သက်သည့် ENCC ၏ အဓိက တာဝန်မှာ ECD မှ တစ်ဆင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်း ကာကွယ်ရေး နှင့် သစ်တောရေးရာ ဝန်ကြီးဌာန (MOECAF) မှ ကြီးကြပ်သည့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း လုပ်ငန်းစဉ် စီမံခန့်ခွဲရေး ကို ကြီးကြပ်ရန်ဖြစ်ပါသည်။ စီမံကိန်း ၏ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) လုပ်ငန်းစဉ်ကို ဗဟို ECD မှ ဒေသတွင်း ECD၊ ဒေသအဆင့် မြို့နယ်အဆင့် ခရိုင်အဆင့် အမျိုးမျိုးသော အစိုးရ အဖွဲ့စည်းများ နှင့် ပူးပေါင်းပြီး ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

(၂) စီမံကိန်း ဒေသ အတွင်း အစီအစဉ်များ

ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲရေး ကော်မတီ (DSEZMC) သည် အစိုးရ၊ ဗဟိုအဖွဲ့အစည်း နှင့် ရင်းနှီးမြှုပ်နှံသူများ အတွင်း ပြဿနာများကို ဖြေရှင်းရာတွင် အထောက်အပံ့ အကူအညီပေးရေး အတွက် အဓိက တာဝန်ရှိပါသည်။ အထွေထွေစီမံခန့်ခွဲရေး ဌာန၊ လူမှုနေရာချထားရေး နှင့် အိမ်ယာစီမံကိန်း ဌာန၊ လူဝင်မှု ကြီးကြပ်ရေး နှင့် အမျိုးသားမှတ်ပုံတင် ဌာန အစရှိသည့် အသီးသီးသော ဝန်ကြီးဌာန များမှ သက်ဆိုင် ရာ အစိုးရ ကိုယ်စားလှယ်များ နှင့် အဖွဲ့ အစည်းများ သည် စီမံကိန်း ဒေသ ၏ အထောက်အပံ့အကူညီပေးရေးအလုပ်အဖွဲ့အစည်း (SWB) ၏ ဖွံ့ဖြိုးတိုးတက်ရေး လုပ်ရှားမှုလုပ်ငန်းများ တွင်ပါဝင်ပါသည်။

၁.၂.၅ နိုင်ငံတကာမူဝါဒများ၊လမ်းညွှန်ချက်များနှင့်စံနှုန်းများ

နိုင်ငံအများစုမှ ရည်ညွှန်းအသုံးပြုသော စီမံကိန်းများ ၏ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာထိခိုက်သက်ရောက်မှု နှင့် သက်ဆိုင်သော အပြည်ပြည်ဆိုင်ရာ မူဝါဒများ၊ လမ်းညွှန်ချက်များ နှင့် စံနှုန်းများ သည် ကမ္ဘာ့ကျန်းမာရေး အဖွဲ့အစည်း (WHO)၊ အမေရိကန် သဘာဝပတ်ဝန်းကျင်ကာကွယ်ရေး ကိုယ်စားလှယ်အဖွဲ့ (EPA)၊ ကမ္ဘာ့ဘဏ် နှင့် အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေး အဖွဲ့ အစည်း (IFC) တို့မှ ပြဋ္ဌာန်းထားသည်တို့ ဖြစ်ပါသည်။

(၁) အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေးအဖွဲ့ အစည်း (IFC) ၏ စံနှုန်း နှင့် လမ်းညွှန်ချက်များ

အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေးအဖွဲ့အစည်း သည် လည်းကောင်း၏ ရင်းနှီးမြှုပ်နှံမှု ကာလတလျှောက် စားသုံးသူများ လိုက်နာရန်လိုအပ်သည့် စွမ်းဆောင်မှု စံနှုန်းများကို ဖော်ပြထားပါသည်။ ယင်းတို့တွင် သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာ အန္တရာယ် နှင့် ထိခိုက်သက်ရောက်မှုများ အား ဆန်းစစ်ခြင်း နှင့် စီမံခြင်း၊ အလုပ်သမား နှင့် လုပ်ငန်းခွင် အခြေအနေ၊ အရင်းအမြစ်ထိရောက်စွာ သုံးစွဲနိုင်မှု နှင့် ညစ်ညမ်းမှု ကာကွယ်ခြင်း၊ လူထု ကျန်းမာရေး လုံခြုံမှုရှိရေး နှင့် လုံခြုံရေး၊ မြေယာသိမ်းယူခြင်း နှင့် အတင်းအဓမ္မ ရွှေ့ပြောင်းခံရခြင်း၊ ဇီဝမျိုးကွဲများ ထိန်းသိမ်းကာကွယ်ခြင်း နှင့် သက်ရှိ သဘာဝ အရင်းအမြစ်များ ဒေသတွင်းတိုင်းရင်းသားများ နှင့် ယဉ်ကျေးမှု အမွေအနှစ်များ ရေရှည် စီမံခန့်ခွဲရေး စသည်တို့ပါဝင်ပါသည်။

အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေးအဖွဲ့ အစည်း ၏ စံနှုန်း နှင့် လမ်းညွှန်ချက်များ သည် (၂၀၀၇) ခုနှစ် သဘာဝပတ်ဝန်းကျင် ကျန်းမာရေး နှင့် လုံခြုံရေး ဆိုင်ရာ အထွေထွေ လမ်းညွှန်ချက်များ၊ (၂၀၀၈) ခုနှစ် အပူစွမ်းအင်သုံး ဓါတ်အားထုတ်လုပ်ရေးစက်ရုံ အတွက် သဘာဝပတ်ဝန်းကျင် ကျန်းမာရေး နှင့် လုံခြုံရေး လမ်းညွှန်ချက် တို့ ဖြစ်ပါသည်။

(၂) ကမ္ဘာ့ ဘဏ်၏ (၁၉၉၈) ခုနှစ်ထုတ် ပိုမိုသန့် ရှင်းသောထုတ်လုပ်ရေးလုပ်ငန်းများအား ရှေးရှုသည့် ညစ်ညမ်းမှု ကာကွယ်ရေး နှင့် လျှော့ချရေး လက်စွဲစာအုပ်

ကမ္ဘာ့ ဘဏ်၏ ညစ်ညမ်းမှု ကာကွယ်ရေး နှင့် လျှော့ချရေး လက်စွဲစာအုပ် (PPAH) သည် သဘာဝပတ်ဝန်းကျင် စီမံခန့် ခွဲမှု တွင် အသုံးချသည့် ဓါတ်ငွေ့ ထုတ်လွှတ်မှု နှင့် လေထု စံနှုန်းများကို ထောက်ခံဖော်ပြထားပြီး စက်မှုလုပ်ငန်းများ ၏ ညစ်ညမ်းမှု ထိန်းချုပ်ရေး အတွက် လမ်းညွှန်ချက်ပေးသော ပြီးပြည့်စုံသည့် စာတမ်းတစ်ရပ် ဖြစ်ပါသည်။ စီမံကိန်းနှင့် သက်ဆိုင်သော အပိုင်းနှစ်ခုတို့ မှာ "စီမံကိန်းအသစ် အတွက် လမ်းညွှန်ချက်များ (အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ)" နှင့် "လက်ရှိဓါတ်အားပေး စက်ရုံ ၏ ပြန်လည်ထူထောင်ရေး (အပူစွမ်းအင်သုံး ဓါတ်အားပေး စက်ရုံ)" တို့ ဖြစ်ပါသည်။

၁.၂.၆ စီမံကိန်းတွင် အသုံးချနိုင်သော လမ်းညွှန်ချက်များ နှင့် စံသတ်မှတ်ချက်များ

ဆောက်လုပ်ရေးလုပ်ငန်းများဆောင်ရွက်စဉ်ကာလ နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလများတွင် စီမံကိန်း ၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့် ခွဲမှု ကို နိုင်ငံတော် သို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ ၏ သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ လမ်းညွှန်ချက်များ နှင့် စံနှုန်းများ ကိုသင့်လျော်သလို ကျင့်သုံးသွားမည် ဖြစ်ပါသည်။ အပြည်ပြည်ဆိုင်ရာ လမ်းညွှန်ချက်များ နှင့် စံနှုန်းများကို နိုင်ငံတော်၏ လမ်းညွှန်ချက်များ နှင့် စံနှုန်းများ မတွေ့ ရှိမှသာလျင် အသုံးချ သွားမည် ဖြစ်ပါသည်။

၁.၃ စီမံကိန်း ဖော်ပြရှင်းလင်းချက် နှင့် အခြားရွေးချယ်နိုင်သည့် နည်းလမ်းများ

၁.၃.၁ စီမံကိန်း နှင့် အခြားရွေးချယ်နိုင်သည့် နည်းလမ်းများအား ဖော်ပြချက်

(၁) စီမံကိန်း ဖော်ပြချက်

စီမံကိန်း အရွယ်အစား

စီမံကိန်းတွင် စွမ်းအင်ထုတ်လုပ်ရေး ဝန်ဆောင်မှု နှင့် ဓါတ်ငွေ့ ဖြန့်ဝေခြင်း ဝန်ဆောင်မှု တို့ ပါဝင်မည် ဖြစ်ပါသည်။ စွမ်းအင်ထုတ်လုပ်ခြင်း ဝန်ဆောင်မှုတွင် အရေအတွက်အားဖြင့် (၁) မဂ္ဂါဝက် ရှိသည့် ကွန်တိန်နာ ဖြင့် ထည့်သွင်းသယ်ယူထားသော ဓါတ်ငွေ့ သုံးစွမ်းအင်ထုတ်လုပ်ရေး စက် (၁၅) လုံး အထိပါဝင်ပြီး ယင်းဓါတ်ငွေ့ အင်ဂျင်သုံး စွမ်းအင်ထုတ်လုပ်ရေး စက် တစ်ခုဆီတွင် စွမ်းအင်ထုတ်လုပ်အား ၁၁၂၀ ကီလိုဝက် ရှိပါသည်။ စီမံကိန်း အဆောက်အအုံများကို ထားဝယ်အထူးစီးပွားရေးဇုန် ၏ မြေနေရာတွင် တည်ဆောက်မည် ဖြစ်ပါသည်။ စီမံကိန်း တည်နေရာသည် ထိုင်းနိုင်ငံ နယ်စပ်နှင့် ထားဝယ်အထူးစီးပွားရေးဇုန် အား ဆက်သွယ်ထားသည့် လက်ရှိ လမ်းမကြီး၏ ခန့်မှန်းခြေ (၁၇)ကီလိုမီတာ အကွာတွင် တည်ရှိပါသည်။ အရွယ်အစားအားဖြင့်

အနားသတ်များအားလုံးတွင် ရှင်းလင်းထားသော မီတာ (၃၀) မပါဝင်ဘဲ (၂၅၀၀၀) စတုရန်းကီလိုမီတာ (သို့) (၆.၂၅) ဧက ရှိပါသည်။ စီမံကိန်းတည်နေရာသည် ယေဘုယျ နိုင်းယှဉ်ခြင်းအားဖြင့် ရေပျင်ညီ ဖြစ်ပြီး ပျမ်းမျှ အမြင့်ပေးအားဖြင့် ပင်လယ်ရေ မျက်နှာပြင်အထက် (၂၅) မီတာ ခန့်(+၂၅ မီတာ MSL) တွင် ရှိပါသည်။ စီမံကိန်း၏ (၅)ကီလိုမီတာ အချင်းအကွာအဝေးအတွင်း တွင် ကျေးရွာ (၁၂) ခုပါဝင်ပါသည်။ (အပိုင်း ၅.၄ သို့ ကြည့်ပါရန်)

အထောက်အပံ့ ဝန်ဆောင်မှုများ နှင့် အခြေခံ အဆောက်အဦးများ

ဤစီမံကိန်းတွင် အခြားစီမံကိန်း တစ်ခု၏ အောက်တွင် တည်ဆောက်မည့် ကူးပြောင်းသယ်ယူရေး လမ်းကြောင်း တစ်ခု မပါဝင်ဘဲ သဘာဝဓါတ်ငွေ့ သုံး လည်ပတ်အင်ဂျင် စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံ နှင့် ဓါတ်ငွေ့ ဖြန့်ဖြူးရေး ဝန်ဆောင်မှုများ ပါဝင်မည်ဖြစ်ပါသည်။

အချိန်ကာလ

လျှပ်စစ်ဓါတ်အားပေးစက်ရုံကို (၂၀၁၅) ခုနှစ် မှ (၂၀၁၇) ခုနှစ် အထိ ဆောက်လုပ်ရေး ကာလကို အထောက်အကူပြုရန် အတွက် တည်ဆောက်သွားမည် ဖြစ်ပြီး အငွေ့ပျံခြင်း ဖြင့် ပျောက်ဆုံးစေသောဓါတ်ငွေ့ (BOG) သုံးစွမ်းအင်စက်ရုံ စတင်လည်ပတ်မည့် အချိန်မှ စပြီး ဖယ်ရှားသွားမည် ဖြစ်ပါသည်။

ဆောက်လုပ်ရေး အကြိုကာလ

ဆောက်လုပ်ရေး အကြိုကာလအတွင်း ဆောင်ရွက်မည့် လုပ်ငန်းလုပ်ရှားမှုများတွင်

- အပေါ်ယံ မြေလွှာပျော့ နှင့် အပင်များ ဖယ်ရှား ခြင်းဖြင့် မြေယာရှင်းလင်းခြင်း
- စီမံကိန်းတည်နေရာအား ပုံစံသတ်မှတ်ထားသည့်အဆင့်အတိုင်း ဖြစ်ပေါ်လာစေရန် မြေနေရာညှိခြင်း၊ မြေဖြည့်ခြင်း နှင့် မြေဖိုသိပ်သည်းစေခြင်း တို့ ပါဝင်ပါသည်။

(က) ဆောက်လုပ်ရေး လုပ်ငန်းများ

ဤစီမံကိန်းသည် ကွန်တိန်နာနှင့် ထုတ်ပိုးသယ်ယူမည့်ပစ္စည်းများ အမြောက်အများကို အသုံးပြုမည် ဖြစ်သဖြင့် ဆောက်လုပ်ရေးလုပ်ငန်းများသည် အဓိကအားဖြင့် ယင်း ကွန်တိန်နာနှင့် ထုတ်ပိုးသယ်ယူမည့် စွမ်းအင်ထုတ်လုပ်ခြင်းဆိုင်ရာ စက်ပစ္စည်းများကို အထောက်အကူပြုမည့် . အောက်ခြေကွန်ကရစ် ကြမ်းခင်းပိုင်း နှင့် သက်ဆိုင်ပါသည်။ အကြိုးဆက်အားဖြင့် ဆောက်လုပ်ရေးလုပ်ငန်းများသည် စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံ အား တည်ထောင် ခြင်းနှင့် ဆောက်လုပ်ခြင်းတို့ ဖြစ်ပါသည်။ ဤဆောက်လုပ်ရေးလုပ်ငန်းများ ပြီးဆုံးသွားပါက စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံကို အစုတစ်ခုခြင်းဆီ နှင့် စနစ်တစ်ခုလုံးစာ ကို စမ်းသပ်ပြီးလည်ပတ်သွားမည် ဖြစ်ပါသည်။

(ခ) ဆောက်လုပ်ရေးလုပ်ငန်းအတွက် သွင်းအားစုများ

ဆောက်လုပ်ရေးလုပ်ငန်းသည် အောက်ပါဖော်ပြထားသော သွင်းအားစုများကို လိုအပ်မည် ဖြစ်ပါသည်။

- အဓိက ဆောက်လုပ်ရေးကာလတွင် လုပ်သား အားဖြင့် လူဦးရေ (၅၀) ခန့်
- စွမ်းအင်လိုအပ်ချက် အားဖြင့် ရွေ့လျားသယ်ဆောင်နိုင်သော မီးစက်များ

- စီမံကိန်းဧရိယာအတွင်း အသစ်တူးဖော်ထားသော မြေအောက်ရေမှ ရမည့် ရေချို

(ဂ) ဆောက်လုပ်ရေး ပစ္စည်းများနှင့် သိုလှောင်ရန်ဧရိယာ

အားလုံးသော အဆောက်အဦးဆိုင်ရာလုပ်ငန်းများကို ITD ဆောက်လုပ်ရေးအဖွဲ့မှ ဆောက်လုပ်သွားမည် ဖြစ်ပါသည်။ ထို့ကြောင့်ဆောက်လုပ်ရေးလုပ်ငန်းသုံး ပစ္စည်းများကို ITD ဆောက်လုပ်ရေးအဖွဲ့ ၏ နေရာအတွင်းရှိ သိုလှောင်ရန်နေရာများတွင် သိမ်းဆည်းသိုလှောင်ထားမည် ဖြစ်ပါသည်။ စက်မှုလုပ်ငန်းဆိုင်ရာ နှင့် လျှပ်စစ်စွမ်းအင်ဆိုင်ရာ လုပ်ငန်းများကို စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံ ထောက်ပံ့ရေးအဖွဲ့မှ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ စက်မှုလုပ်ငန်းဆိုင်ရာ နှင့် လျှပ်စစ်စွမ်းအင်ဆိုင်ရာ အတွက် အလုံးစုံသော စက်ပစ္စည်းများ နှင့် ကိရိယာများ ကို စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံတည်ဆောက်ရေး တည်နေရာ တွင် ထားရှိမည့် အလုပ်သမားများအတွက် ယာယီထားရှိသည့် အဆောက်အဦးတွင် သိုလှောင်သိမ်းဆည်းထားမည် ဖြစ်ပါသည်။

စွမ်းအင်ထုတ်လုပ်ရေး စက်ရုံ နှင့် ဓါတ်ငွေ့ဖြန့်ဖြူးရေး ရုံး အားတည်ထောင် ဆောက်လုပ်ခြင်း နှင့် သက်ဆိုင်သည့် စက်မှုလုပ်ငန်းဆိုင်ရာ နှင့် လျှပ်စစ်စွမ်းအင်ဆိုင်ရာ လုပ်ငန်းများအတွက် ကြီးကြပ်ကွပ်ကဲသူ အပါအဝင် အလုပ်သမား (၁၇) ဦး လိုအပ်ပါသည်။

လုပ်ငန်းလည်ပတ်စဉ်ကာလ

စွမ်းအင်ထုတ်လုပ်ရေးစက်ရုံ ၏ လုပ်ငန်းလည်ပတ်မှု နှင့် ပြုပြင်ထိန်းသိမ်းရေး တို့အတွက် (၂၄) နာရီ (၇) ရက် နှုန်းဖြင့် လုပ်ကိုင်မည့် လုပ်သား (၁၂) ဦးလိုအပ်ပါသည်။ ပြုပြင်ထိန်းသိမ်းရေး လုပ်ငန်းများအားလုံးကို အတွေ့အကြုံရင့် ကောင်းစွာလေ့ကျင့်သင်ကြားထားသော ဝန်ထမ်းများ မှဆောင်ရွက်မည် ဖြစ်ပါသည်။

(က) သွင်းအားစုများ

လုပ်ငန်းလည်ပတ်ရေး အတွက် အောက်ပါသွင်းအားစုများလိုအပ်ပါမည်။

- (၁၂) ဦးထက်မပိုသော လုပ်သား
- လျှပ်စစ်စွမ်းအင်လိုအပ်ချက် နှင့် အချိန်ဇယားသက်မှတ်ထားသော စွမ်းအင်ထုတ်လုပ်မှုတွင် မူတည်သော သဘာဝဓါတ်ငွေ့ ရည်အဆောက်အဦး (LNG)
- တစ်ရက်လျှင် (၁.၄၄) ကုဗမီတာ ခန့် ရှိသော ရေချို (လူတစ်ဦးဆီ အတွက် တစ်ရက်လျှင် ၁၂၀ လီတာ ရှိသော ရေအသုံးချမှု)

(ခ) စွမ်းအင်ထုတ်လုပ်မှုစက်ရုံလည်ပတ်ခြင်း နှင့် စီမံခန့်ခွဲခြင်း အတွက် အဖွဲ့ အစည်းများ

အတွေ့အကြုံရင့်ကျက်သော ပညာရှင်များပါဝင်သည့် အဖွဲ့အစည်းသည် နေ့စဉ်နှင့်အမျှ လုပ်ငန်းလည်ပတ်မှုများ၊ ပြဿနာရပ်ဖြေရှင်းမှုများ၊ အချိန်ဇယားအရသော်လည်းကောင်း အချိန်ဇယားတွင်မပါဝင်သော ပြုပြင်ထိန်းသိမ်းမှုများ နှင့် စီးပွားဖြစ် စတင်လည်ပတ်နိုင်မည့် ရက်စွဲမတိုင်ခင် စတင်ဝင်ရောက်မည့် ရေရှည်ဝန်ဆောင်မှု သဘောတူညီချက် (LTSA) အရ မူလ

ကိရိယာထုတ်လုပ်သူ (OEM) နှင့်ပူးပေါင်းဆောင်ရွက်ရေးတို့အတွက် တာဝန်ယူဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

ယင်း O & M အဖွဲ့အစည်းအား လုပ်ငန်း၏သမ္မတ မှ ဦးဆောင်သွားမည် ဖြစ်ပြီး ယင်းအား လုပ်ငန်းလည်ပတ်ရေး၊ ပြုပြင်ထိန်းသိမ်းရေး နှင့် ကြီးကြပ်ကွပ်ကဲရေး ဟူပြီး အဓိက ဌာနကြီး (၃) ခုအဖြစ်ခွဲခြားသွားပါမည်။ လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ ဌာနသည် စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်၊ လူမှုရေးရာ၊ လုံခြုံရေး နှင့် လုပ်ငန်းခွင် ကျန်းမာရေး ရှုထောင့် နှင့်သက်ဆိုင်သော လုပ်ငန်းများအတွက် တာဝန်ယူရမည် ဖြစ်ပါသည်။

(ဂ) လုပ်ငန်းလည်ပတ်စဉ်ကာလများအတွင်း သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု

စီမံကိန်းအား လုပ်ငန်းလည်ပတ်စဉ်ကာလများအတွင်း အောက်ဖော်ပြပါ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အတွက် စက်ကိရိယာများ (သို့) အထောက်အကူပြု ဝန်ဆောင်မှုများ ကို ပါဝင်ရန် ပုံစံဆွဲထားပါသည်။

- Sulfur oxide , nitrogen oxides, oxygen ,carbon monoxide, အလင်းပိတ်မှု၊ particulatesနှင့် အခိုးထုတ်ခါတ်ငွေ့အလျင်နှင့် အပူချိန်ကိုစစ်ဆေးရန်Continuous Emissions Monitoring System(CEMS)
- အိမ်သုံးမိလ္လာအညစ်အကြေးအတွက်အညစ်အကြေးရေဆိုးများပြုပြင်ပြောင်းလဲခြင်း

စီမံကိန်းအထောက်အပံ့ပစ္စည်းများသည် လုပ်ငန်းခွင်ဆိုင်ရာကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံမှု လိုအပ်ချက်များနှင့် ကိုက်ညီရန်ဒီဇိုင်းရေးဆွဲထားပါသည်။ ထို့အပြင် အဆောက်အဦးအားလုံး၏ ဗိသုကာဆိုင်ရာဒီဇိုင်းများနှင့် ဥယျာဉ်ပန်းမန်ဒီဇိုင်းများကို စီမံကိန်းဧရိယာနှင့် ပတ်ဝန်းကျင်ဧရိယာများ၏ သဘာဝအင်္ဂါရပ်များနှင့် သဟဇာတဖြစ်စေရန် ထည့်သွင်းစဉ်းစားပါမည်။ ဝန်းကျင်လေအဆင့်အတန်း ဆန်းစစ်ခြင်း(ASMS) ကိုလည်းဆုံးဖြတ်သွားပါမည်။

ပယ်ဖျက်ခြင်းအဆင့်

အလုပ်သက်တမ်းအဆုံးတွင်ဓါတ်အားပေးစက်ရုံကိုစနစ်တကျဖျက်သိမ်းပြီးစီမံကိန်းနေရာအားပြန်လည်အသစ်အသုံးပြုနိုင်ရန်ရှင်းလင်းပါမည်။စီမံကိန်းသည်အနည်းမြူဓါတ်အားပေးစက်ရုံ(သို့) သတ္တုခဲဓါတ်အားပေးစက်ရုံနှင့်မတူသောကြောင့်ပယ်ဖျက်ခြင်းနှင့်ပိတ်ပင်ခြင်းသည်ပတ်ဝန်းကျင်အပေါ်တွင်အနည်းငယ်အကျိုးသက်ရောက်မှုသာရှိပါလိမ့်မည်။

(၂) စီမံကိန်း၏တခြားနည်းလမ်းဖော်ပြချက်များ

စီမံကိန်းရေးဆွဲရာတွင်စီမံကိန်းကိုထောက်ပံ့အားပေးသူသည်အောက်ပါအကြောင်းအရာနစ်ခုကိုထည့်သွင်းစဉ်းစားရန်လိုအပ်ပါသည်။(၁)reciprocating gas engine generator နှင့်gas turbine Generatorကြားဓါတ်အားပေးထုတ်လုပ်နိုင်မှုအတွက်တခြားနည်းလမ်းများ (၂) liquefied natural gas(LNG) နှင့် diesel fuelကြားလောင်စာအတွက်တခြားရွေးချယ်စရာများ

1.3.2 Comparison and Selection of the Project Alternatives

(၁) Reciprocating Gas Engine Alternative

၎င်း၏ကျစ်လစ်သိပ်သည်းသောအရွယ်အစား၊သယ်ဆောင်ရလွယ်ကူခြင်းနှင့်တပ်ဆင်ရာတွင်လွယ်ကူခြင်း၊တွဲစပ်ဆောက်လုပ်ရန်အသင့်ထုတ်လုပ်ထားသောအစီအစဉ်စနစ်ရှိခြင်းတို့ကြောင့် Reciprocating Gas Engine ကို ရွေးချယ်အသုံးပြုရခြင်းဖြစ်သည်။ တခြားစီမံကိန်းနေရာများသို့လည်း ပြောင်းရွှေ့နိုင်သည်။ သဘာဝဓါတ်ငွေ့အင်ဂျင်ဓါတ်အားပေးစက် Model Cummins QSK60 ကိုရွေးချယ်ရခြင်းမှာ ၎င်းတွင်စက်၏စွမ်းရည်၊ ပတ်ဝန်းကျင်ဆိုင်ရာဆောင်ရွက်မှု၊ တစ်ယူနစ်ထုတ်လုပ် ပေးသည့် ကုန်ကျစရိတ်တို့တွင် အားသာချက်များရှိခြင်းကြောင့် ရွေးချယ်ခြင်းဖြစ်သည်။ 1 MW levelတွင်ဓါတ်ငွေ့တာဗိုင်လျပ်စစ်ဓါတ်အားပေးစက်များသည် reciprocating Gas engine generatorများနှင့် နှိုင်းယှဉ်နိုင်ခြင်းမရှိပါ။

(၂) LNG Alternative

LNG သည်သဘာဝဓါတ်ငွေ့ (methane, CH4) ဖြစ်ပြီးသိုလှောင်ရာနှင့်သယ်ယူပို့ဆောင်ရာတွင် လွယ်ကူရန်အရည်အဖြစ်သို့ပြောင်းလဲပြီးဖြစ်သည်။ ဓါတ်ငွေ့ရောနေသောပြောင်းလဲမှုအခြေအနေတွင် သဘာဝဓါတ်ငွေ့နှင့်ပတ်သက်၍ 1/600thvolumeကို ဖွင့်ရန်ကြာသည်။ LNG၏(ထုထည်ကြီးမားသော) စွမ်းအင်သိပ်သည်းမှုက CNG သို့မဟုတ် ၆၀ ရာခိုင်နှုန်းဒီဇယ်လောင်စာထက်၂.၄ကြိမ်သာကြီးမြတ် အောင်လုပ်ထားသော LNG compress လုပ်ထားသော သဘာဝဓါတ်ငွေ့ (CNG) ထက် volume မှာ မြင့်မားစွာလျော့ချနိုင်ပါသည်။ LNGကို ပိုက်လိုင်းများမတည်ရှိသော်လည်း ခရီးအဝေးများထိ သယ်ယူပို့ဆောင်ရာတွင်အကျိုးရှိစေမည်ဖြစ်ပါသည်။ LNG သည်အနံ့ အရောင်မဲ့၊အဆိပ်မရှိပြီး ပျက်စီး ယိုယွင်းခြင်းအက်ဆစ်ကဲ့သို့စားခြင်းလည်းမရှိပါ။ ကာဗွန်ဒိုင်အောက်ဆိုဒ်ထုတ်လွှတ်ခြင်း အနိမ့်ဆုံး ရှိသောကြောင့် LNGသည် ပတ်ဝန်းကျင် နှင့်သဟဇာတဖြစ်သောလောင်စာ အဖြစ်သတ်မှတ်နိုင်ပါသည်။ ဒီဇယ်လောင်စာသည် LNGနှင့်နှိုင်းယှဉ်ပါက ၎င်း၏ဓါတ်ငွေ့ထုတ်လွှတ်မှုနှင့် ကုန်ကျစရိတ်တွင် အားနည်းချက်များရှိသောကြောင့် ထည့်သွင်းမစဉ်းစားရခြင်းဖြစ်သည်။

၁.၄ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အခြေအနေများအားဖော်ပြခြင်း

၁.၄.၁ လေ့လာရေးတည်နေရာနှင့် သဘာဝပတ်ဝန်းကျင်နယ်ပယ်

သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) လေ့လာမှုတည်နေရာအား စီမံကိန်း၏ (၅) ကီလိုမီတာ အချင်းဝက် အတွင်း ရှိ တည်နေရာတစ်ခု တွင် သတ်မှတ်ထားပါသည်။ လေ့လာရေး ဧရိယာ တွင် ရေဖြူမြို့နယ်အတွင်း ရှိ ကျေးရွာ (၁၁) ရွာ ပါဝင်ပါသည်။

သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း အတွက် အခြေခံတည်ထောင်ရန်အတွက် လေ့လာရေး ဒေသ၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နဂိုမူရင်းသတင်းအချက်အလက်များကို ကွင်းဆင်းစစ်တမ်းကောက်ယူခြင်း နှင့် ဆင့်ပွားသတင်းအချက်အလက်များ (Secondary information) အား ပြန်လည် သုံးသပ်ခြင်းဖြင့်

စုဆောင်းခဲ့ပါသည်။ သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်တွင် "သဘာဝပတ်ဝန်းကျင်" အား ရုပ်ပိုင်းဆိုင်ရာ ၊ဇီဝပိုင်းဆိုင်ရာ၊ လူမှုစီးပွားရေးဆိုင်ရာ၊ ယဉ်ကျေးမှု ပိုင်းဆိုင်ရာ နှင့် အမြင်ပိုင်းဆိုင်ရာ အစိတ်အပိုင်းများ ဟု သတ်မှတ်ထားပါသည်။

၁.၄.၂ ရုပ်ပိုင်းဆိုင်ရာ အစိတ်အပိုင်းများ

လေ့လာရေးတည်နေရာ ၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အသုံးချရေးနှင့် ဆက်နွယ်သော ရုပ်ပိုင်းဆိုင်ရာ လက္ခဏာရပ်များ ကို အောက်ပါအတိုင်း မှတ်သားထားပါသည်။

- ဒေသ၏ ရာသီဥတု ကို အနောက်တောင် နှင့် အရှေ့မြောက် မုတ်သုံမှ သိသိသာသာ လွှမ်းမိုးလျက်ရှိပါသည်။ ပုံမှန်အားဖြင့် ဆောင်းရာသီပြီးနောက် နွေရာသီသည် တပေါင်းလမှ တန်ခူးလ အထိ ရှိပြီး မိုးရာသီသည် ပုံမှန်အားဖြင့် တန်ခူးလတွင် စတင်ပြီး တန်ဆောင်မုန်းလ မကုန်ခင်တွင် ပြီးဆုံးပါသည်။
- လေ့လာရေး တည်နေရာ (အချင်းဝက် ၅ ကီလိုမီတာ) ၏ ရုပ်ပိုင်းဆိုင်ရာ လက္ခဏာရပ်များ နှင့် ပက်သက်ပြီး ယင်းတည်နေရာသည် အမြင့်ပေအားဖြင့် မြောက်မှတောင်သို့ (၀) မှ ကီလိုမီတာ (၂၀) အထိ ရှိပါသည်။ လေ့လာရေး တည်နေရာ (အရှေ့ဘက်အပိုင်း) အားဖြတ်ကာ စီးဆင်းနေသော (၈) ကီလိုမီတာ ခန့် ရှည်လျားသည့် ထားဝယ်မြစ် ရှိပါသည်။ လေ့လာရေးတည်နေရာ အတွင်းတွင် ဦးတည်ချက်အားဖြင့် မြောက်မှတောင်သို့ သွယ်တန်းလျက်ရှိသော အရှေ့ပိုင်း တောင်တန်းများ ရှိပါသည်။
- လေ့လာရေးတည်နေရာ၏ မြေသား သည် FAO ၏ မြေအမျိုးအစား ခွဲခြားခြင်းတွင် ဖော်ထားသော ရွံ့ ့ဆေးဆန်သောမြေဆီလွှာ (Gley Swampy Soil) သို့မဟုတ် ရေလွှမ်းမှု အဆက်မပြတ် သော်ငှင်း ရံဖန်ရံခါ သော်ငှင်း ခံထားရသော မြေဆီလွှာ (Gleysol) ဟု ခွဲခြားနိုင်ပါသည်။
- တိုင်းတာရေး စခန်း (၂) ခုတွင်း လေထု၏ အရည်အသွေး- တိုင်းတာရေးစခန်းနှစ်ခု တွင် တိုင်းတာရရှိသော လေထု၏ အရည်အသွေးသည် ညစ်ညမ်းမှု ပြင်းအားအရ နိုင်းရ နိမ့်ကျ သည် ဟု သတ်မှတ်နိုင်သည် အထိ ကောင်းမွန်ပြီး ယင်းတွင် PM-10၊ TSP၊ NO_2 နှင့် SO_2 တို့ပါဝင်ပါသည်။
- လေထုအသံဆူညံမှု အား လေထုအရည်အသွေးတိုင်းတာသည့် နေရာတွင်သာတိုင်းတာခဲ့ပါသည်။ လေထုဆူညံမှု ရလာဒ်သည် စံနှုန်း၏ အောက်တွင်သာ ရှိပြီး အနည်းငယ်သာရှိဆဲ ဖြစ်ပါသည်။
- တိုင်းတာရရှိသည့် အချက်အလက်များအရ တိုင်းတာရေးစခန်းနှစ်ခုစလုံးရှိ မျက်နှာပြင်ရေထု ၏အရည်အသွေးသည် ရေထုဆိုင်ရာ ဂေဟဗေဒ အား အထောက်အကူပြုနိုင်သည် အထိ အရည်အသွေးကောင်းမွန်ကြောင်း ထင်ရှားစွာ ဖော်ပြလျှက်ရှိပါသည်။
- စစ်တမ်းကောက်ယူရာ ရေတွင်း (၂) ခု စလုံးအတွင်း မြေအောက်ရေအရည်အသွေးဆိုင်ရာ တိုင်းတာချက်များသည် အက်ဆစ်ဓါတ်အနည်းငယ်ပါဝင်မှုကြောင့် သောက်သုံးရန်မသင့်တော်ပါ။

အသေးစိတ် ဖော်ပြရှင်းလင်းချက်များ နှင့် တိုင်းတာရရှိချက်များ အား အဓိကစာပိုဒ် ၏ အခန်း (၅) တွင် ဖော်ပြထားပါသည်။

၁.၄.၃ ဇီဝပိုင်းဆိုင်ရာ အစိတ်အပိုင်းများ

စီမံကိန်းတည်နေရာတွင် အောက်ဖော်ပြပါ မြေပေါ်ပိုင်းအရင်းအမြစ်များ နှင့် ရေထုအပိုင်း ဂေဟာဗေဒ လက္ခဏာရပ်များ ကို တွေ့ ရှိရပါသည်။

- စီမံကိန်းတည်နေရာ၏ ပတ်ဝန်းကျင်သည် မြေအရိုင် နှင့် ဆီအုန်းစိုက်ခင်းများ သာ ဖြစ်ပြီး စီမံကိန်း၏ အချင်းဝက် (၅)ကီလိုမီတာ တည်နေရာတွင် မြေအရိုင်းများ၊ စိုက်ပျိုးမြေများ ဖြစ်သည့် စပါးခင်းများ၊ သရက်ခြံများ၊ သီဟိုခင်းများ၊ ဆီအုန်းစိုက်ခင်းများ နှင့် ပါရာ ရာဘာစိုက်ခင်းများ ရှိပါသည်။ သဘာဝသစ်တောများ၏ အမျိုးအစားများမှာ ရေငယုက် ရွက်ကြွေတော နှင့် ခြောက်သွေ့ အမြဲစိမ်းသစ်တော တို့ဖြစ်ပါသည်။
- ယင်းစီမံကိန်းတည်နေရာတွင် အပင်မျိုးစိပ်ပေါင်း (၄၈)ခု တွေ့ရှိရပြီး စီမံကိန်း၏ အချင်းဝက်ဖုန်သည် (၇၇)ခုသော သစ်ပင်မျိုးစိပ်များ နှင့် ပေါက်ရောက် ရှင်သန်ရာတည်နေရာ ဖြစ်ပါသည်။
- စီမံကိန်း၏ တည်နေရာတွင် ကျေးငှက်မျိုးစိပ် (၁၃)ခု၊ နို့တိုက်တိရစ္ဆာန် တွားသွားတိရစ္ဆာန်မျိုးစိပ် (၃) ခု အစရှိသဖြင့် တောရိုင်းတိရစ္ဆာန်မျိုးစိပ်ပေါင်း (၂၂) ခု ကို တွေ့ ရှိရပါသည်။ စီမံကိန်း၏ (၅) ကီလိုမီတာ အချင်းဝက်ဖုန် အတွင်းတွင် ငှက်မျိုးစိပ်ပေါင်း (၂၅) ခု၊ နို့တိုက်တိရစ္ဆာန်မျိုးစိပ် (၁) ခု နှင့် တွားသွားတိရစ္ဆာန် မျိုးစိပ် (၃) ခု စုစုပေါင်း တိရစ္ဆာန် မျိုးစိပ် (၂၉) ခု ကို တွေ့ ရှိရပါသည်။
- ရေနေ ဂေဟာဗေဒ လေ့လာရေး တွင် ရေအောက်နေအလွန်သေးငယ်သော အပင်ငယ်များ နှင့် အပင်ငယ်ပိုးမွှားငယ်များ (benthos) အား စစ်တမ်းကောက်ယူခြင်း ပါဝင်ပါသည်။
- စုစုပေါင်းအားဖြင့် ဖိုက်တိုပလန်တန် ခေါ် သေးမွှားသည့် အပင်ငယ်မျိုးစိပ်ပေါင်း (၁၆) ခု နှင့် သေးမွှားသည့် သက်ရှိအကောင်ငယ်ပေါင်း ဦးရေ (၉) ခု။ စုစုပေါင်အားဖြင့် အပင်ငယ်ပိုးမွှားငယ်များ (benthos) မျိုးစိပ်ပေါင်း (၃) ခု အား ဥပမာ ကောက်ယူသည့် စခန်း နှစ်ခု ရှိကောက်ယူရရှိသော အပင်ငယ်ပိုးမွှားငယ် မျိုးစိပ် (၃) ခုကိုလည်း ခွဲခြားတွေ့ ရှိခဲ့ရပါသည်။

၁.၄.၄ လူမှုစီးပွားရေး အစိတ်အပိုင်း

လေ့လာရေး ဒေသ၏ လူမှုစီးပွားရေး ပိုင်းဆိုင်ရာ သတင်းအချက်အလက်များအား ဆင့်ပွားသတင်းအချက်အလက် (secondary information sources) အရင်းအမြစ်များမှ ဖြည့်ဆည်းထားလျှက်ရှိသည့် ကွင်းဆင်း စစ်တမ်းကောက်ယူမှုများမှ တစ်ဆင့် စုဆောင်းရရှိခဲ့ပါသည်။ ကျေးရွာအဆင့် မူရင်းပထမ သတင်းအချက်အလက်များ (primary information) အား လေ့လာရေး ဒေသအတွင်း ကျေးရွာ (၉) ရွာ မှ ကျေးရွာသူကြီးများနှင့် အဓိကသတင်းအချက်အလက်ပေးနိုင်မည့် ရွာသားများ အား မေးမြန်းခြင်းဖြင့် ရရှိခဲ့ပါသည်။ ယင်းတို့မှာ ရေဖြူမြို့နယ်အတွင်းရှိ ကင်ရွာ၊ ပုလဲဂူ၊ ဝက်ချောင်း၊ ပဂေါ်ဇွန်၊ မင်းတက်၊ သပရာဇွန်၊ ကြောက်ထွက်ကုန်း၊ ရလိုင် နှင့် သစ်တိုတောက် တို့ဖြစ်ကြပါသည်။ အောက်ပါ စီမံကိန်း၏ လူမှုရေးရာ ရှုထောင့်နှင့် ဆီလျော်သော လူမှုစီးပွားရေးပိုင်ဆိုင်ရာ လက္ခဏာရပ်များမှာ အောက်ပါအတိုင်း ဖြစ်ပါသည်။

- အိမ်ထောင်စုပေါင်း (၂၂၃၁) ခုတွင် နေထိုင်သည့် စုစုပေါင်းလူဦးရေမှာ (၉၉၈၉) ဦး ဖြစ်ပါသည်။ လေ့လာရေးဒေသအတွင်း ရှိ လူဦးရေသည် ရေဖြူမြို့ နယ် စုစုပေါင်းလူဦးရေး ၏ (၈) ရာခိုင်နှုန်း ရှိပါသည်။ အမျိုးသား အမျိုးသမီး အချိုးမှာ (၁.၀၃၇၅ မှ ၁) အထိ ရှိပါသည်။ လူဦးရေ

အများစုမှာ ဗမာလူမျိုးများ ဖြစ်ကြပြီး ဗုဒ္ဓဘာသာကို ကိုးကွယ်ကြပြီး ဗမာစကားကို ပြောကြပါသည်။ အကာအကွယ်မဲ့သော အုပ်စုမှာ ကိန်းဂဏန်းအရ အနည်းငယ်သာ ရှိပါသည်။ ယင်းတို့၏ အရေအတွက်အား စုစုပေါင်းကျေးရွာလူဦးရေ ၏ (၃) ရာခိုင်နှုန်းခန့်သာရှိသည် ဟု ခန့်မှန်းရရှိပါသည်။

- လေ့လာရေး ဒေသအတွင်း ရှိ ကျေးရွာများ အားလုံးတွင် ဆေးရုံမရှိပါ။ ကျေးလက်ဆေးပေးရေး ဌာနခွဲ နှစ်ခုကိုသာလျှင် ပဂေါ့ဇွန်း နှင့် သီတော်ထောက် ကျေးရွာတွင် တွေ့ ရှိရပါသည်။
- စိုက်ပျိုးရေးလုပ်ငန်းသည် အဓိက စီးပွားရေးလုပ်ငန်းဖြစ်ပါသည်။ ဝင်ငွေအား နှစ်ရှည်သီးနှံ၊ အဓိကအားဖြင့် သီဟိုလ်စေ့၊ ကွမ်းသီး၊ ရာဘာ နှင့် အသီးအနှံ များမှ ရရှိပါသည်။ ကျေးရွာတိုင်းတွင် စပါးအား စိုက်ပျိုးကြပြီး ဥယျာဉ်မြေကဲ့သို့သော နေရာကျဉ်းသော ဒေသများတွင် မတွေ့ရှိရပါ။
- လူဦးရေ ၏ အများစုမှာ မူလတန်းပညာရေးသာ ရှိပါသည်။
- လေ့လာရေးဒေသတွင် ဆောက်လုပ်ရေး နေရာများ နှင့် ကျေးရွာ စိုက်ပျိုးမြေများ၊ စိုက်ပျိုးမြေများ သစ်တောမြေများ၊ နှင့် အခြားအထွေထွေ နေရာများ ပါဝင်ပါသည်။ ယင်းတို့မှာ လေ့လာရေး ဒေသ၏ ၃.၀၆ ရာခိုင်နှုန်း၊ ၈၃ ရာခိုင်နှုန်း၊ ၁.၂၉ ရာခိုင်နှုန်း နှင့် ၁၂.၂၂ ရာခိုင်နှုန်း စသည့်ဖြင့် အသီးသီး ပါဝင်ပါသည်။
- လေ့လာရေး ဒေသအတွင်းရှိ ကျေးရွားများကို ချိတ်ဆက်ထားသော လမ်းမများ သည် (၄) မီတာမှ (၆) မီတာအထိ ကျယ်သော ကတ္တရာခင်းမထားသည့် မြေသားလမ်းသာ ဖြစ်ပါသည်။ လေ့လာရေးဒေသအတွင်းရှိ အဓိကလမ်းမကြီးမှာ (၁၀) မီတာ အကျယ်ရှိသော နှစ်လမ်းသွား ကတ္တရာခင်းမထားသည့် မြေသားလမ်း သာဖြစ်ပါသည်။
- ယာဉ်ခရီးလမ်း ရေတွက်မှုဆိုင်ရာ ရလာဒ် များကို အပိုချက် (၅)ည ရှိ ဇယားလေးခုအတွင်းတွင် ဖော်ပြထားပါသည်။ အောက်ပါ အချက်အလက်များ သည် မော်တော်ယာဉ်အမျိုးအစား (၁၀) ခု၏ ယာဉ်ပမာဏ ကိုပြသထားပါသည်။ (၁) ခရီးသည်တင်ယာဉ် (၂) ဘတ်စ်ကားအသေးစား (၃) ဘတ်စ်ကား အလတ်စား (၄) ဝန်ချီစက် နှင့် မြေသားညှိစက် (၅) ကုန်တင်ယာဉ်အသေးစား (လိုက်ထရပ်) (၆) ခြောက်ဘီးတပ် ကုန်တင်ယာဉ် (၇) ဆယ်ဘီးတပ် ကုန်တင်ယာဉ် (၈) ဝန်ချီတွဲပါဝင်သည့် ကုန်တင်ကားအကြီးစား (၉) စက်ဘီးနှင့် သုံးဘီးဆိုင်ကယ်များ နှင့် (၁၀) မော်တော်ဆိုင်ကယ်။ မော်တော်ဆိုင်ကယ်များ သည် အများစု အသုံးပြုသော ယာဉ်ဖြစ်ပြီး ၄င်း၏ နောက်တွင် ခရီးသည်တင်ယာဉ်များသည် အများစုသော ယာဉ်ဖြစ်ပါသည်။
- လေ့လာရေးဒေသအတွင်း ရှိ ကျေးရွာများအားလုံးအတွင်းတွင် အစိုးရလျှပ်စစ်မီး ဖြန့်ဝေရေး မရှိပါ။ လျှပ်စစ်မီးအား ကျေးရွာတစ်ခုချင်းဆီ ၏ အရွယ်ငယ်ပုဂ္ဂလိကပိုင် ဒီဇယ်မီးစက်များဖြင့်သာ ထုတ်လုပ်ရရှိပါသည်။
- ကျေးရွာများသည် မြေအောက်ရေ (အဝိစိတွင်း နှင့် ရေတိမ် ရေတွင်းများ) နှင့် မိုးရေကို ရယူအသုံးပြုကြပါသည်။
- သမားရိုးကျ နည်းလမ်းများ အဖြစ် တည်နေရာအတွင်း လူအညစ်အကြေးများစွန့်လွှတ်ခြင်း ၊ စွန့်ပစ်အရည်များ နှင့် အစိုင်အခဲစွန့်ပစ် ပစ္စည်းများအား ကျေးရွာများတွင် အသုံးပြုကြပါသည်။

၁.၄.၅ ယဉ်ကျေးမှုနှင့် အမြင်ပိုင်းဆိုင်ရာ အစိတ်အပိုင်း

လေ့လာရေး ဒေသအတွင်းရှိ ကျေးရွာများအားလုံးသည် နှစ်ပေါင်း (၂၀၀) ကျော်တိုင် အခြေချနေထိုင်အခြေချလျက် ရှိသော ကျေးရွာလူထုများ ဖြစ်ပါသည်။ ယင်းအား သက်တမ်း (၂၀၀) ကျော်ရှိ ရလိုင် စေတီမှ အထောက်အထား ပြုလျက်ရှိပါသည်။ ယင်းဒေသတွင် သဘာဝတရားဆိုင်ရာ အလှတရားများ လည်း ပိုင်ဆိုင်ပါသည်။

၁.၅ ထိခိုက်သက်ရောက်မှုဆိုင်ရာ နှင့် ကျရောက်နိုင်မည့် အန္တရာယ်များ လျှော့ချခြင်းဆိုင်ရာ လုပ်ငန်းစဉ်များ

၁.၅.၁ ထိခိုက်သက်ရောက်မှုဆိုင်ရာ နှင့် ကျရောက်နိုင်မည့် အန္တရာယ်များ လျှော့ချခြင်းဆိုင်ရာ လုပ်ငန်းစဉ်များ

ဓါတ်အားပေးစက်ရုံ ၏ ဆောက်လုပ်ရေး လုပ်ငန်းများ ဆောင်ရွက်စဉ်ကာလ၊ လုပ်ငန်းလည်ပတ်ခြင်း ကာလ၊ ယင်းနှင့် သက်ဆိုင်သော အထောက်အကူပြု ဝန်ဆောင်မှုများ နှင့် လုပ်ငန်းပြန်လည် ရုတ်သိမ်းခြင်းကာလ တို့အတွက် ထိခိုက်သက်ရောက်မှုဆိုင်ရာ နှင့် ကျရောက်နိုင်မည့် အန္တရာယ်များ လျှော့ချခြင်းဆိုင်ရာ လုပ်ငန်းစဉ်များ သည် ဆီလျော်သော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နှင့် လူမှုရေးဆိုင်ရာ ပြဿနာရပ်များအပေါ်တွင် အဓိက အာရုံထားပါသည်။

၁.၅.၂ ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ရေး နည်းလမ်းများ

(၁) ဆန်းစစ်ခြင်း၏ နယ်ပယ်

တင်သွင်းအဆိုပြုထားသော ဖွံ့ဖြိုးရေး စီမံကိန်း ၏ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ရေး အား ယခုတွင် လည်းကောင်းအား အဓိကလိုအပ်သော သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အစီအစဉ် တစ်ခုအဖြစ် အသိအမှတ်ပြုထားပါသည်။ ဤအကြောင်းခြင်းအရာတွင် ထိခိုက်သက်ရောက်မှု နှင့် အန္တရာယ်များ ဆန်းစစ်ခြင်းနှင့် လျှော့ချစေခြင်းနည်းလမ်းများအား ဖော်ဆောင်ခြင်းသည် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံကိန်း အစီအစဉ်၏ ပထမကနဦး အဆင့်ဖြစ်ပါသည်။ ပြဿနာရပ်တစ်ခုချင်းဆီ ၏ ထိခိုက်သက်ရောက်မှု နယ်ပယ် နှင့် ယင်းထိခိုက်သက်ရောက်မှုများ အား ဆန်းစစ်အကဲဖြတ်ခြင်း အား အဓိက စာပိုဒ်၏ ဇယား ၆.၂-၁ နှင့် ဇယား ၆.၂-၂ တို့တွင် အသေးသီး တွေ့ရှိနိုင်ပါသည်။

(၂) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်တစ်ခုခြင်းဆီ၏ ထိခိုက်သက်ရောက်မှုဆိုင်ရာ ဆန်းစစ်အကဲဖြတ်ခြင်းအတွက် နည်းလမ်းများ

ထိခိုက်သက်ရောက်မှုများ အား ဆန်းစစ်ခြင်းတွင် (၁) လေထုပတ်ဝန်းကျင် အပေါ်တွင် ထိခိုက်သက်ရောက်မှုများ နှင့် (၂) လက်ခံသူများ အပေါ်သက်ရောက်မှုများ စသည်တို့ပါဝင်မည် ဖြစ်ပါသည်။

- လေထုပတ်ဝန်းကျင် အပေါ်တွင် ထိခိုက်သက်ရောက်မှုများ- သက်ဆိုင်ရာ လေထုပတ်ဝန်းကျင် အပေါ်တွင် သက်ရောက်မှုများအား ကြိုတင်ခန့်မှန်းထားမည် ဖြစ်ပြီး ဖြစ်နိုင်ပါက သင်လျော်သော သချာ်ပိုင်းဆိုင်ရာ ခန့် မှန်း မော်ဒယ် ကိုအသုံးပြုပြီး ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။
- လက်ခံသူများအပေါ်သက်ရောက်မှုများ- သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်တစ်ခုချင်းဆီတွင် ထိခိုက်သက်ရောက်မှု ရှိပါသည်။ ယင်းထိခိုက်သက်ရောက်မှုအား လက်ခံသူများမှာ လူများ၊ ဂေဟာစနစ် နှင့် ပြဿနာ၏ သဘာဝ အပေါ်တွင် မူတည်သော ဂုဏ်သတ္တိများ စသည်တို့ ဖြစ်ပါသည်။ လက်ခံသူများအပေါ် ထိခိုက်သက်ရောက်ခြင်းသည် လေထုပတ်ဝန်းကျင် အပေါ် သက်ရောက်ခြင်းမှ အကျိုးဆက်များ ဖြစ်ပါသည်။

(၃) နည်းလမ်းများ

သဘာဝပတ်ဝန်းကျင် ပြဿနာရပ်တစ်ခုချင်းဆီ ၏ ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်အကဲဖြတ်ခြင်း နည်းလမ်း အား အဓိက စာပိုဒ် ၏ ဇယား ၆.၂.၁-၃ တွင် နည်းလမ်းများ၏ ပုံစံတူအဖြစ် ပြသထားပါသည်။

(၄) သိသာထူးခြားမှုအား ဆုံးဖြတ်ချက်အတွက် နည်းလမ်း

သဘာဝပတ်ဝန်းကျင် ပြဿနာရပ်၏ ထိခိုက်သက်ရောက်မှုအား လက္ခဏာရပ် (၆) ရပ် အပေါ်တွင် အခြေခံကာ အဆင့် (၅) ဆင့် ခွဲခြားထားပါသည်။ ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း အား ထိန်းချုပ်မှုမပါဝင်သော သက်ရောက်မှု နှင့် ထိန်းချုပ်မှုပါဝင်သော သက်ရောက်မှု သို့မဟုတ် အကြွင်းသက်ရောက်မှု တို့ အတွက် ပြုလုပ်မည် ဖြစ်ပါသည်။ ယင်း အဆင့်(၅) ဆင့်မှာ-

- အဆင့် (၅)- အရေးပါဆုံးအဆင့်- ထိခိုက်သက်ရောက်မှုသည် ပြင်းထန်သော လူမှုစီးပွားရေးဆိုင်ရာ ထိခိုက်မှုများ (သို့) ဂေဟဗေဒဆိုင်ရာ ထိခိုက်မှုများ နှင့် ပက်သက်ပြီး ပြန်လည်ပြုပြင် မရနိုင်ပါ။ ပြဿနာရပ်သည် ဖြေရှင်း မရပါ။ စီမံကိန်း အစီအစဉ်အား ပြောင်းလဲရန်၊ ပြန်လည်နေရာချရန် သို့မဟုတ် ရပ်ဆိုင်းရန် လိုအပ်ပါမည်။
- အဆင့် (၄)- အဓိကအဆင့်- ထိခိုက်သက်ရောက်မှုသည် ကြီးမားပါသည် သို့သော်လည်း အင်ဂျင်နီယာပိုင်းဆိုင်ရာ (သို့) စီမံကိန်းပိုင်း ဆိုင်ရာ နည်းလမ်းများ အားအသုံးပြုကာ ထိထိရောက်ရောက် လျှော့ချနိုင်ပါသည်။ ကြွင်းကျန်ထိခိုက်သက်ရောက်မှုမှာ အနည်းငယ်သာဖြစ်ပါမည်။
- အဆင့် (၃)- အလည်အလတ်အဆင့်- ထိခိုက်သက်ရောက်မှု သည် အတိုင်းအတာ နှင့် ပြင်းအား အားဖြင့် အလည်အလတ်အဆင့်တွင် ရှိပြီး ရိုးရှင်းသော နည်းလမ်းများဖြင့် ထိရောက်စွာ လျှော့ချနိုင်ပါသည်။ ကြွင်းကျန်ထိခိုက်သက်ရောက်မှုမှာ မသိသာပါ။
- အဆင့် (၂)- သာမညအဆင့်- ထိခိုက်သက်ရောက်မှုသည် ပမာဏအားဖြင့် အနည်းငယ်သာဖြစ်ပြီး ဧရိယာ အားဖြင့် အရွယ်ငယ် အဖြစ်သာ သတ်မှတ်ထားပါသည်။ ယင်းအား ကောင်းမွန်သော ဆောက်လုပ်ရေး အလေ့အကျင့်များမှ တစ်ဆင့် အလွယ်တကူ စီမံနိုင်ပါသည်။ ကြွင်းကျန် ထိခိုက်သက်ရောက်မှုမှာ လစ်လျူရှု ရနိုင်ပါသည်။
- အဆင့် (၁)- သိသာမှုမရှိသောအဆင့်- ထိခိုက်သက်ရောက်မှုသည် အဆင့် (၂) သက်ရောက်မှုနှင့် နှိုင်းယှဉ်ပါက အလွန်သေးငယ်ပြီး ယင်းအား ကောင်းမွန်သော ဆောက်လုပ်ရေး အလေ့အကျင့်များမှ တစ်ဆင့် အလွယ်တကူ လျှော့ချနိုင်ပါသည်။ ကြွင်းကျန် ထိခိုက်သက်ရောက်မှုမှာ လစ်လျူရှု ရနိုင်ပါသည်။

စီမံကိန်း အတွက် တန်ဖိုးသက်မှတ်ထားသော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်းများ (VECs) သည် တင်သွင်းအဆိုပြုထားသော လူထု၊ အစိုးရ (သို့) ပညာရှင်များ နှင့် သက်ဆိုင်နေသည် ဟု သက်မှတ်ထားသော စီမံကိန်း ၏ ဖွံ့ဖြိုးတိုးတက်မှုများ နှင့် ပက်သက်သော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နှင့် လူမှုရေးရာ လက္ခဏာရပ်များ ဖြစ်ပါသည်။

၁.၅.၃ ဘေးအန္တရာယ်ဆန်းစစ်လေ့လာခြင်း

ထိုသဘောထားအမြင်များ၊ စီမံကိန်း အခြေခံကြီးကြပ်မှုများအပေါ် ခြေတည်၍ ဤစီမံကိန်း၏ သဘာဝ ပတ်ဝန်းကျင် အန္တရာယ် စီမံကွပ်ကဲခြင်းကို ထည့်သွင်း စဉ်းစားရာတွင် "ကိစ္စရပ် တခုခုဖြစ်ပေါ်လာသည်ဖြစ်စေ၊ မဖြစ်ပေါ်သည်ဖြစ်စေ" အကယ်၍ စီမံကိန်းအောင်မြင်သော်လည်း ထိုစီမံကိန်းမှ ထွက်ပေါ်လာသော နောက်ဆက်တွဲဆိုးကျိုး ထွက်လာပါက သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု လိုအပ်ချက်တွင် ၏ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနနှင့် အခြားအာဏာပိုင် တို့၏ သဘောတူညီချက်၊ စီမံကိန်းပိုင်ဆိုင်သူများ အထူးအားဖြင့် စီမံကိန်းဒေသခံရွာများ၏ သဘောထား မှတ်ချက်များကို လေးစား လိုက်နာရမည်ဖြစ်သည်။

ပတ်ဝန်းကျင် အန္တရာယ်ရှိမှု စီမံခန့်ခွဲခြင်း အစီအစဉ်တွင် ပါဝင်သောအချက်များမှာ- (၁) စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင် အတွက်အလျော့ပေးခြင်းအကျိုးဆက်များ၊ မသေချာ မရေရာသော ကိစ္စရပ်များပေါ်ထွက်လာခြင်းကို သတ်မှတ်ခြင်း (၂) သတ်မှတ်ထားသည့် ကိစ္စရပ်တိုင်းအတွက် အသက်မွေးမှုဆန်းစစ်ခြင်းနှင့် အကျိုးဆက်တွင်ဆက်စပ်နေသော ပတ်ဝန်းကျင် အန္တရာယ်နှင့် ၎င်း၏ အဆင့်အတန်း (၃) အန္တရာယ်ရှိသောကိစ္စရပ်၏ နောက်ကွယ်ရှိ အကြောင်းရင်းများကို ဖော်ထုတ်ခြင်း (၄)သတ်မှတ်သည့် အန္တရာယ်၏ အကြောင်းရင်းကို လျှော့ချစေသော နည်းလမ်း (၅) ၎င်းအန္တရာယ် အဆင့်အတန်းများ ၏ အဓိက၊ အသင့်အတင့် နှင့် သေးငယ်အဆင့်များကို ၎င်းတို့၏ နောက်ဆက်တွဲ သိသာထင်ရှားမှုများ ပေါ်ထွက်လာခြင်း၊ အသက်မွေးမှုတို့ပေါ်တွင် အခြေခံ၍ အဆင့်အတန်း ခွဲခြားသတ်မှတ်ခြင်း။ ၎င်းရလဒ် အဆင့်အတန်းများကို စီမံကိန်းတခုလုံး အတွက်ဖော်ပြ၍ ရိုးရှင်းသော အခြေအနေအားဖြင့် တင်ပြရမည်။ (ပင်မအစီရင်ခံစာပုံ **၆.၂.၂-၁** တွင် ကြည့်ရှုနိုင်သည်)

၁.၅.၄ ဆောက်လုပ်ရေး အကြိုကာလထိခိုက်သက်ရောက်မှုလေ့လာခြင်းနှင့် လျော့ချရေး

(၁) ဆောက်လုပ်ရေး အကြိုကာလ လုပ်ငန်းလုပ်ရှားမှုများ

ယင်းကာလအတွင်း လုပ်ငန်းလုပ်ရှားမှု အရေအတွက် အနည်းငယ်ကိုသာ တွေ့ရပါမည်။ စီမံကိန်းသည် ဓါတ်အားပေး စက်ရုံ ဆောက်လုပ်ရေးအတွက် မြေဧက (၆.၂၅) ခန့် လိုအပ်ပါသည်။ ဆောက်လုပ်ရေး အကြိုကာလ လုပ်ရှားမှုများတွင် တည်နေရာရှင်းလင်းခြင်း၊ တည်နေရာဖြည့်ဆည်းခြင်း နှင့် မြေဖို့ခြင်း၊ နှင့် ဖြည့်ဆည်းပစ္စည်း အား သယ်ယူပို့ဆောင်ရေးတို့ ဖြစ်ပါသည်။

(၂) ထိခိုက်မှုလျော့လာခြင်း

က။ ဂေဟာစနစ်အား ထိခိုက်မှု

(၁) ထိခိုက်မှုအားရှင်းလင်းဖော်ပြခြင်း။

စီမံကိန်းနေရာရှင်းလင်းခြင်း နှင့် စီမံကိန်းနေရာ မြေဖို့ခြင်းတို့ကြောင့် လက်ရှိတည်ရှိနေသော သစ်ပင်များအား အပြီးဖယ်ရှားခြင်းနှင့် ၎င်းဒေသတွင် ကျက်စားနေထိုင်သော သတ္တဝါများအား ဖယ်ရှာခြင်းများ ဖြစ်ပေါ်ပါမည်။

(၂) ထိခိုက်မှုလျော့လာခြင်း။ စီမံကိန်းကြောင့် ထန်းပင် ၆.၂၅ဧကကို ဖယ်ရှားမည်ဖြစ်ပါသည်။ ၎င်းကြောင့် သစ်တော ဧရိယာ အနည်းငယ် ဆုံးရှုံးပါမည်။ ၎င်းသည် အကြိုတည်ဆောက်ရေးကာလအတွက် သာမည ဦးစားပေး ပြသာနာ ဖြစ်ပါသည်။

(၃) ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများ။ ရှင်းလင်းရေးလုပ်ငန်းများ မစတင်မီ သစ်ပင်ပန်းမန်များနှင့် သတ္တဝါမျိုးစိတ်များကို ကွင်းဆင်းလေ့လာပြီး မှတ်သားထားရပါမည်။ စီမံကိန်းနေရာပတ်လည်တွင် စိမ်းလန်းသော ကြားခံဇုန်ကို အကောင်အထည်ဖော်ဆောင်ရွက် ရပါမည်။ သစ်ပင်ခုတ်ခြင်းကို ရှောင်ရှားပြီး စီမံကိန်းအကောင်အထည်ဖော်သူ၏ စီမံကိန်း မန်နေဂျာ၏ ခွင့်ပြုချက်မပါပဲ မည်သည့်အရာကိုမျှ မလုပ်ဆောင်ပါ။

ခ။ ဇီဝအမှိုက်စွန့်ပြစ်မှု

(၁) ထိခိုက်မှုအားရှင်းလင်းဖော်ပြခြင်း။ စီမံကိန်းနေရာအား ဖုံးလွှမ်း နေသော သစ်ပင်များအား ရှင်းလင်းခြင်း ကြောင့် ဇီဝအမှိုက်တန်ချိန် ၁၁.၉၄တန် ထွက်ရှိမည် ဖြစ်ပါသည်။

(၂) ထိခိုက်မှုလျော့လာခြင်း။ ကန်ထရိုက်တာသည် စီမံကိန်းတွင် ထွက်ရှိလာ မည့် ဇီဝအမှိုက်ထွက်ရှိမှု တန်ချိန်ကို ပိုမိုတိကျစေရန် စီမံကိန်းလေ့လာမှုများ ပြုလုပ်၍ အသေးစိတ် တွက်ချက် ရမည်ဖြစ်ပါသည်။

(၃) ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများ။ ဇီဝအမှိုက်များတွင် ပင်စည်များ၊ အမြစ်များ၊ အကိုင်းအခက်များနှင့် သစ်ရွက်များ ပါဝင်သည်။ ၎င်းတို့ကို ဆောက်လုပ်ရေးလုပ်ငန်းတွင်အသုံးပြုခြင်း၊ မီးသွေးဖုတ်ခြင်းနှင့် ထင်းအဖြစ်အသုံးပြုခြင်းစသည်ဖြင့် အသုံးပြုနိုင်ပါသည်။ ကျန်ရှိသော အသုံးမဝင်သောအရာများကို အရွယ်အစားသေးငယ်အောင်ပြုလုပ်၍ စီမံကိန်းနေရာရှိ land fill တွင် စွန့်ပြစ်မည် ဖြစ်ပါသည်။

ဂ။ ကျေးရွာသူ/သားတို့၏အသက်မွေးဝမ်းကြောင်းမှုအပေါ်ထိခိုက်မှုများ

(၁) ထိခိုက်မှုအားရှင်းလင်းဖော်ပြခြင်း။ စီမံကိန်းကြောင့် ရေဖြူမြို့ နယ်ရှိ ကျေးရွာသူ/သားများသည် ထန်းပင်စိုက်ပျိုးမှုဧရိယာအချို့ ထိခိုက်မှုများ ဖြစ်ပေါ်နိုင်ပါသည်။

(၂) ထိခိုက်မှုလျော့လာခြင်း။ ပကောဇွန်ရွာတွင် လူဦးရေစုစုပေါင်း ၂,၂၁၂ ဦးရှိပြီး ၎င်းတို့သည် စီမံကိန်းကြောင့် ထိခိုက်မှုများကို ခံစားရမည် ဖြစ်ပါသည်။ ၎င်းထိခိုက်မှုသည် အနည်းငယ်သော ထိခိုက်မှုဖြစ်ပေါ်နိုင်ပါသည်။

(၃) ထိခိုက်မှုလျှော့ချရေးနည်းလမ်းများ။

စီမံကိန်းအကောင်အထည်ဖော်သူသည် ထိခိုက်ခံစားရသောသူများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များနှင့် ဆွေးနွေးကာ အသက်မွေးဝမ်းကြောင်း ပြန်လည်တည်ထောင်မှု အစီအစဉ် (LRP) ကို သေချာဒီဇိုင်းဆွဲပြီး အကောင်အထည်ဖော်ရန် လိုအပ်ပါသည်။

ဃ။ ဖုန်မှုန့်များကြောင့်ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်အနောက်အယှက်ဖြစ်မှုများ

(၁) ထွက်ရှိရာ အရင်းအမြစ်များ - စီမံကိန်းအတွင်း တွေ့ရှိနိုင်သော ကျန်းမာရေးထိခိုက်စေနိုင်သော ဖုန်မှုန့်များ မှာ တည်နေရာရှင်းလင်းခြင်း၊ မြေတူးဖော်ခြင်းလုပ်ငန်းများ၊ ဆောက်လုပ်ရေးလုပ်ငန်းများ အား သယ်ယူပို့ဆောင်ခြင်း နှင့် ကိုင်တွယ်ခြင်း၊ ကြီးမားသော ယာဉ်ကြီးများ ရွေ့လျားခြင်းမှ တို့မှ ထွက်ရှိလာသည့် ဖုန်မှုန့်များ ဖြစ်ပါသည်။ ဆောက်လုပ်ရေး လုပ်ငန်းများ ၏ ဧရိယာအား ထည့်သွင်းစဉ်းစားခြင်းဖြင့် ယင်းဖုန်မှုန့်များ ထုတ်လွှတ်သည့် အကြီးမားဆုံး အရင်းအမြစ်မှာ (၁၅) မဂ္ဂါဝပ် ရှိသော ယာယီ ဓါတ်အားပေးစက်ရုံ ၏ မြေနေရာပင်ဖြစ်ပါသည်။

(၂) ဖုန်မှုန့်များ လက်ခံကျရောက်နိုင်သူများ၏ အားနည်းမှု - ယင်း ဖုန်မှုန့်များ လက်ခံကျရောက်နိုင်သူများ မှာ ပဂေါ့ဖွန်း ကျေးရွာ အနီးရှိ စီမံကိန်းတည်နေရာ အနီးရှိ လူထုများ နှင့် တည်နေရာ တွင် နေထိုင်သော အလုပ်သမားများ ဖြစ်ပါသည်။

(၃) ယင်းဖုန်မှုန့်များထွက်ရှိသည့် အရင်းအမြစ်များရှိ ဖုန်မှုန့်များ ထုတ်လွှတ်ခြင်း ပမာဏ - ဆောက်လုပ်ရေး လုပ်ငန်းတွင် ထုတ်လွှတ်လိုက်သော ယင်းဖုန်မှုန့်များ ၏ ပမာဏသည် ဆောက်လုပ်ရေးလုပ်ငန်းများ ၏ သဘာဝ အပေါ်တွင် ပဏာမ မူတည်နေပါသည်။ ဓါတ်အားထုတ်လုပ်ရေးစက်ရုံ နှင့် ယင်း (၆.၂၅) ဧက ၏ အထောက်အပံ့များ ၏ အဓိက ဆောက်လုပ်ရေး ဧရိယာတွင် စုစုပေါင်း ဖုန်မှုန့်ပမာဏအား တစ်လလျှင် (၇.၅၀) မက်ထရစ်တန် ရှိမည်ဟု ခန့်မှန်းထားပါသည်။ တစ်ရက်လျှင် အလုပ်ချိန် (၈) နာရီ နှင့် တစ်လလျှင် ရက် (၃၀) ဟု ယူဆကာ ယင်းဖုန်မှုန့်များ ထုတ်လွှတ်မှု အား တစ်နာရီ လျှင် (၀.၀၃၁၂၅) မက်ထရစ်တန် သို့မဟုတ် တစ်စက္ကန့် လျှင် (၈.၆၈၁) ဂရမ် ခန့် ရှိပါမည်။

(၄) အဆိုပြုတင်သွင်းထားသော အရင်းအမြစ်များမှ ဖုန်မှုန့်များ ထုတ်လွှတ်မှု လျှော့ချခြင်း နည်းလမ်းများ - ယင်းနည်းလမ်းများ အား ဖုန်မှုန့်များ ထုတ်လွှတ်မှု လျှော့ချခြင်း အတွက် လက်တွေ့အကောင်အထည် ဖော်သင့်ပါသည်။ အဓိက ဘုံအကျဆုံး နည်းလမ်းများမှာ ရေဖြန်းခြင်း၊ မော်တော်ယာဉ်များ နှင့် ကုန်တင်ကားများ အတွက် အမြန်နှုန်းသက်မှတ်ခြင်း အား လုပ်ဆောင်ခြင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းများ ပြီးစီးလျှင် ပြီးစီးခြင်း ပျက်ဆီးသော ဧရိယာများအား မြေနေရာညှိခြင်း နှင့် စွန့်ပစ်အမှိုက်များအား အလွှတ်မီးရှို့ခြင်း အား တားမြစ်ခြင်း တို့ ဖြစ်ပါသည်။

(၅) ဖုန်မှုန့်များအား ထိန်းချုပ်ခြင်းဆိုင်ရာ ပန်းတိုင်များ - စံနှုန်းများတွင် TSP ၏ ပမာဏအား (၁) ကုဗမီတာတွင် (၂၃၀) မိုက်ခရိုမီတာထက် မကျော်လွန်စေရန် ပြဋ္ဌာန်းထားပါသည်။ လက်ခံသူများတွင် ကျရောက်မည့် TSP အဆင့်သည် ယင်းကန့်သတ်ချက်ထက် မကျော်လွန်ပါ။

(၆) အဓိက ဆောက်လုပ်ရေး တည်နေရာမှ လက်ခံသူများတွင် ကျရောက်နိုင်မည့် ခန့်မှန်းရရှိသည့် TSP အဆင့် - Box Model (လေထုပြန်နှံ့ခြင်း ဆိုင်ရာ လက်စွဲစာအုပ်၊ ၁၉၈၇ ခုနှစ်) အားအသုံးပြုကာ ထွက်ရှိလာမည့် ဖုန်မှုန့်များ ၏ ဖြန့်ကြက်မှု ကို တွက်ချက်နိုင်ပါသည်။ TSP ၏ နောက်ခံ သည် (၂၄) နာရီ ပျမ်းမျှ TSP အား ပဂေါ့ဖွန်း မူလတန်းကျောင်းတွင် တိုင်းတာပါသည်။

ထိန်းချုပ်မထားသော ကဏ္ဍ နှင့် ထိန်းချုပ်ထားသော ကဏ္ဍ တို့တွင် တွေ့ရသော စုစုပေါင်း TSP ပမာဏမှာ တစ်ကုဗမီတာ တွင် (၂၃၅.၅၆) မိုက်ကရိုဂရမ် နှင့် (၁၉၂.၈၀) မိုက်ကရိုဂရမ် အသီးသီး ဖြစ်ကြပါသည်။ ပဂေါ့ဇွန်းကျေးရွာရှိ လက်ခံသူများသည် ဆောက်လုပ်ရေး တည်နေရာ၏ တောင်ဘက်ပိုင်း (၁.၁) ကီလိုမီတာ ခန့်အကွာအဝေးတွင် ရှိပြီး ဖုန်မှုန့်များ၏ သက်ရောက်မှုသည် ဆောက်လုပ်ရေးလုပ်ငန်းများ တည်နေရာ ၏ အနားပတ်ဝန်းကျင် ရှိ အဆင့်ထက် ယင်းနေရာတွင် ပိုမိုနိမ့်ပါးပါသည်။

(၇) ထောက်ခံထားသော ထိခိုက်သက်ရောက်မှု လျှော့ချရေးနည်းလမ်းများ - အနည်းငယ်သော ဖုန်မှုန့်များ အား ထည့်သွင်းစဉ်းစားခြင်းဖြင့် အခြားထပ်မံ ထိခိုက်သက်ရောက်မှုလျှော့ချရေး နည်းလမ်းများ အား ဆောက်လုပ်ရေးလုပ်ငန်းများ တည်နေရာ တွင် မလိုအပ်ပါ။ EPC ကန်ထရိုက်တာ မှ လက်တွေ့ဖော်ဆောင်နိုင်မည့် ထိခိုက်သက်ရောက်မှု လျှော့ချရေးနည်းလမ်းများ တွင် ကုန်တင်ကားများအတွက် အမြန်နှုန်း ကန့်သတ်ခြင်း နှင့် သယ်ယူပို့ဆောင်ရေးကာလအတွင်း ဆောက်လုပ်ရေး ပစ္စည်းများ အား အဝတ်ဖြင့် ဖုံးအုပ်ခြင်း တို့ ပါဝင်သင့်ပါမည်။

(၈) ဖုန်မှုန့်များ၏ အကျိုးသက်ရောက်မှု ထူးခြားမှု၏ အကဲဖြတ်ခြင်း - ဖုန်မှုန့်များ၏ ပြဿနာရပ်သည် ထိန်းချုပ်မှုတွင် မြင့်မားသော ဦးစားပေး ရရှိသင့်ပါသည်။

(၉) အဆိုပြုတင်သွင်းထားသော စောင့်ကြည့်ရေး အစီအစဉ်များ - ဖုန်မှုန့် များ၏ အဆင့်များအား စောင့်ကြည့်သင့်ပါသည်။

င။ ဆူညံသံများ

(၁) အရင်းအမြစ်များ - ဆူညံသံများသည် အများအားဖြင့် ဆောက်လုပ်ရေးလုပ်ငန်းများမှ ထွက်ရှိမည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းမှ ထွက်ပေါ်သည့် ဆူညံသံပမာဏသည် ဆောက်လုပ်ရေးအလုပ်သမားစုများ နှင့် အနီးဝန်းကျင်ရှိ လက်ခံသူများ အပေါ်သက်ရောက်နိုင်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - ဓါတ်အားပေးစက်ရုံ နှင့် အနီးဆုံးလက်ခံသူမှာ ဓါတ်အားပေးစက်ရုံတည်နေရာ ၏ (၁.၁) ကီလိုမီတာခန့်တွင်တည်ရှိသော ပဂေါ့ဇွန်း ကျေးရွာ ဖြစ်ပါသည်။

(၃) အရင်းအမြစ်များတွင် ဆူညံမှုအဆင့်၏ ပမာဏ - ဆောက်လုပ်ရေး လုပ်ငန်းနေရာ၏ ပတ်ဝန်းကျင်တွင် ဆူညံမှုများဖြစ်ပေါ်မှုကို ကာကွယ်ရန် ခက်ခဲပါသည်။ ထို့ကြောင့် EPC ကန်ထရိုက်တာနှင့် ၎င်း၏ ဆပ်ကန်ထရိုက်တာတို့သည် ဆူညံမှုကာကွယ်နိုင်သော ကိရိယာများ အသုံးပြုကာ အကောင်းဆုံးလုပ်ဆောင်မှုများကို ပြုလုပ်ပေးရန် လိုအပ်ပါသည်။

(၄) အရင်းအမြစ်များတွင် ဆူညံမှု လျှော့ချရန်အတွက်နည်းလမ်းများ - ဆောက်လုပ်ရေးတည်နေရာ ၏ သဘာဝပတ်ဝန်းကျင်အား တာရှည်ခံရေးအတွက် ကျင့်သုံးနိုင်သော ဆူညံမှုလျှော့ချနိုင်သော ဖြည့်ဆည်းကိရိယာများအား ပုံစံပြုလုပ်ခြင်းမှာ ခက်ခဲပါသည်။ ထို့ကြောင့် EPC ကန်ထရိုက်တာ နှင့် ယင်း၏ထပ်ဆင့် ကန်ထရိုက်တာများ သည် အကောင်းဆုံးသော ဆူညံမှုလျှော့ချခြင်းရှိသည့် ကိရိယာများအား အသုံးပြုရန် လိုအပ်ပါသည်။

(၅) ဆူညံမှု ထိန်းချုပ်ခြင်း ပန်းတိုင် - ဆောက်လုပ်ရေး ဆူညံမှုများသည် လက်ခံသူများအပေါ် ကျရောက်မည့် သတ်မှတ်ထားသော ပတ်ဝန်းကျင်ဆူညံမှုအဆင့် အား (၇၀) dB (A) Leq- ၂၄ နာရီ (USEPA စံနှုန်း) ထက်မကျော်လွန်ရပါ။ ပတ်ဝန်းကျင်ဆူညံမှုအဆင့် အား တိုးမြင့်စေခြင်းတွင် (3) dB (A) Leq- ၁ နာရီ (IFC စံနှုန်း) ထက်မကျော်လွန်ရပါ။

(၆) လက်ခံသူပေါ်တွင် ကျရောက်နိုင်သည့် ခန့်မှန်းရရှိသော ဆူညံမှုအဆင့် - ပတ်ဝန်းကျင် ဆူညံမှု အဆင့်ပေါ်တွင် ကျရောက်မည့် ဆောက်လုပ်ရေးလုပ်ငန်းများ ၏ ဆူညံမှု အသံတင်သက်ရောက်မှုတွက်ချက်ခြင်းအား အဓိက စာပိုဒ်၏ ဇယား ၆.၃.၂.၅-၁ တွင် ပြသထားသည့်အတိုင်း ထိန်းချုပ်မှုမပြုသော ကဏ္ဍ နှင့် ထိန်းချုပ်မှုပြုသော ကဏ္ဍဟု နှစ်ခုခွဲခြားနိုင်ပါသည်။

(၇) ထောက်ခံထားသော လျှော့ချရေးနည်းလမ်းများ - (၃) မီတာရှိသော နံရံကာများ (သို့) အသံကာများအား အသုံးပြုခြင်းဖြင့် ဆူညံသံလျှော့ချခြင်း၊ အလုပ်သမားများအား နားအကာများပေးခြင်းတို့ ပြုလုပ်နိုင်ပါသည်။ အဓိကဆောက်လုပ်ရေးလုပ်ငန်းဆောင်တာများအား နေ့အချိန်တွင်သာ ပြုလုပ်ရန်ကန့်သတ်သင့်ပါသည်။ ဆောက်လုပ်ရေးတည်နေရာ အတွင်း မော်တော်ယာဉ်များ၏ အမြန်နှုန်းအား တစ်နာရီ ကီလိုမီတာ (၄၀)ထက် မကျော်လွန်စေရန် ကန့်သတ်ပါသည်။ EPC ကန်ထရိုက်တာသည် လက်ခံသူများအပေါ်ကျရောက်မည့် ပတ်ဝန်းကျင်ဆူညံမှုအဆင့်များအား ပုံမှန်စောင့်ကြည့်အကဲဖြတ်ရန်လိုအပ်ပါသည်။

(၈) ဆူညံမှုများ၏ သက်ရောက်မှု ထူးခြားချက်အား အကဲဖြတ်ခြင်း - ဆောက်လုပ်ရေးလုပ်ငန်းမှ ဆူညံသံများ ပြဿနာသည် ထိန်းချုပ်မှုဆိုင်ရာတွင် မြင့်မားသော ဦးစားပေးမှု ရသင့်ပါသည်။

၁.၅.၅ တည်ဆောက်ရေးကာလထိခိုက်သက်ရောက်မှုလေ့လာခြင်းနှင့် လျှော့ချရေး

(၁) တည်ဆောက်ရေးကာလလုပ်ငန်းလုပ်ဆောင်မှုများ

တည်နေရာအတွင်း အထောက်အကူပြုမှု၏ ဆောက်လုပ်ရေးလုပ်ငန်း လှုပ်ရှားမှုများသည် စီမံကိန်းတည်နေရာတွင် အာရုံပြုပါမည်။ လုပ်ငန်းများ အားလုံးသည် ဓါတ်အားပေး စက်ရုံအား နှင့် ယင်းအထောက်အကူများ တည်ဆောက်ခြင်း တွင် နယ်ပယ်အရသာမက ပမာဏအရပါ အကြီးဆုံး ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်း လှုပ်ရှားမှုများအား စီမံကိန်း အစိတ်အပိုင်း တစ်ခုစီ အတွက် သီးခြားဆောင်ရွက်သွားပါမည်။ ယင်းတို့အား (၁) ဆောက်လုပ်ရေးလုပ်ငန်း (CW) နှင့် (၂) စက်ပိုင်းဆိုင်ရာ နှင့် လျှပ်စစ်ပိုင်းဆိုင်ရာ လုပ်ငန်းများ (MEW) ဟု အဖွဲ့ နှစ်ဖွဲ့ ခွဲခြားနိုင်ပါသည်။

(၂) သက်ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်များ

ဆောက်လုပ်ရေးလုပ်ငန်းများ ၏ သဘာဝနှင့် ပမာဏ အပေါ်တွင် မူတည်ကာ အတိုင်ပင်ခံ ပညာရှင်များသည် ဆောက်လုပ်ရေးကာလအတွင်း စီမံခန့်ခွဲရန်လိုအပ်သည့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်များ နှင့် သက်ဆိုင်သော ဆောက်လုပ်ရေး လုပ်ငန်းများအား အဓိက စာပိုဒ်၏ ဇယား ၆.၄.၂-၁ တွင် ဖော်ပြထားပါသည်။

က. ဓါတ်ငွေ့ပုံစံဖြင့် ထုတ်လုပ်ခြင်းများ

(၁) ထွက်ရှိရာ အရင်းအမြစ်များ - ဒီဇယ်ဖြင့် ဓါတ်အားထုတ်လုပ်သော လေ့လံသော ဆောက်လုပ်ရေး ပစ္စည်း၊ မော်တော်ယာဉ်များ နှင့် မီးအားပေးစက်များ သည် ဓါတ်ငွေ့ပုံစံဖြင့် ညစ်ညမ်းစေသော ပစ္စည်းများအား ထုတ်လွှတ်ခြင်း ၏ အဓိက အရင်းအမြစ်များဖြစ်ပါသည်။ ယင်း ထုတ်လွှတ်ခြင်းတွင် စံပြ ညစ်ညမ်းစေသော ပစ္စည်းများဖြစ်သော နိုက်ထရိုက်၊ ဆာလဖာဒိုင်အောက်ဆိုဒ် နှင့် ကာဗွန်မိုနောက်ဆိုဒ် တို့ဖြစ်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းမှု - လက်ခံသူများသည် ဆောက်လုပ်ရေးနှင့် သက်ဆိုင်ရာသူများ ဖြစ်ပါသည်။

(၃) ထုတ်လွှတ်ခြင်း ဝန်များ၏ ခန့်မှန်းချက် - အမျိုးမျိုးသော ညစ်ညမ်းစေသော ပစ္စည်းများ၏ ထုတ်လွှတ်ခြင်း ပမာဏအား ဒီဇယ်စက်သုံး ဆောက်လုပ်ရေး ပစ္စည်းများ၏ အရေအတွက် နှင့် အမျိုးအစား နှင့် ယင်းတို့၏ လည်ပတ်ခြင်း ကြာချိန်ဆိုင်ရာ သတင်းအချက်အလက်များမှ ခန့်မှန်းရရှိပါသည်။ ညစ်ညမ်းမှု ပမာဏသည် ကြီးမားမည်မဟုတ်ပါ။

(၄) ယင်းအညစ်အကြေးတို့၏ အရင်းအမြစ်များတွင် ထုတ်လွှတ်မှုများ လျှော့ချခြင်းအတွက် သက်ရောက်မှုလျှော့ချခြင်း နည်းလမ်းများ - ဓါတ်ငွေ့ အခြေအနေ အညစ်အကြေးများအား ယင်းတို့၏ အရင်းအမြစ်များ မှ ထုတ်လွှတ်ခြင်း အား အောက်ဖော်ပြပါ စီမံခန့်ခွဲမှု နည်းလမ်းများ ဖြင့် ဆောင်ရွက်ပါမည်။ ယင်းတို့မှာ ဆောက်လုပ်ရေးပစ္စည်းများအား သင့်လျော်သော အခြေအနေတွင် ရှိမရှိ စစ်ဆေးခြင်း၊ ပစ္စည်းကိရိယာ ကိုင်တွယ်သူများ အား လုံလောက်သော လေ့ကျင့်မှုများ ပေးခြင်း၊ ကိရိယာများအား သင်လျော်သော အရွယ်အစားကိုသာ အသုံးပြုခြင်း၊ နောက်ဆုံးပေါ် အညစ်အကြေး ထုတ်လွှတ်မှု နည်းပါးသော ကိရိယာများ တပ်ဆင်ထားသော စက်များကိုသာအသုံးပြုခြင်း၊ မော်တော်ယာဉ်များအား မျှဝေသုံးစွဲခြင်း၊ သယ်ပို့ဗန်များ၊ ကူးပြောင်းခွင့်များ နှင့် ဆောက်လုပ်ရေးအလုပ်သမားများ သွားလာရေးအတွက် စက်ဘီးရပ်နားရန် နေရာများအား သပ်မှတ်ပေးခြင်း နှင့် ဆောက်လုပ်ရေး တည်နေရာအတွင်း ဆောက်လုပ်ရေးယာဉ်များ အဝင်အထွက် အား စီမံခန့်ခွဲခြင်း တို့ပါဝင်ပါသည်။

(၅) ထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်း ပန်းတိုင် - ဆောက်လုပ်ရေးတည်နေရာ အတွင်းရှိ ပတ်ဝန်းကျင်လေထု အရည်အသွေးသည် သတ်မှတ်ထားသော ပတ်ဝန်းကျင်လေထု အရည်အသွေးနှင့် ကိုက်ညီပါမည်။

(၆) လက်ခံသူများပေါ်တွင် ကျရောက်နိုင်သော ခန့်မှန်းရရှိသည့် ထိခိုက်သက်ရောက်မှုများ - လက်ခံသူများပေါ်တွင် ကျရောက်နိုင်သော ခန့်မှန်းရရှိသည့် ထိခိုက်သက်ရောက်မှုများ မှာ အညစ်အကြေးထုတ်လွှတ်မှုနည်းသော ပမာဏ ဖြစ်ပါသည်။

(၇) ထိခိုက်သက်ရောက်မှုများ၏ ထူးခြားချက်အား အကဲဖြတ်ခြင်း - ဆောက်လုပ်ရေးကာလအတွင်း ဓါတ်ငွေ့ အခြေအနေရှိသော အညစ်အကြေးများထုတ်လွှတ်ခြင်း သည် ထူးခြားသော လေထုညစ်ညမ်းမှု ပြဿနာရပ်အား ဖြစ်ပေါ်စေမည်မဟုတ်ပါ။

(၈) ပြုလုပ်မည့် စောင့်ကြည့်ရေး အစီအစဉ်များ - အဓိက ဆောက်လုပ်ရေး တည်နေရာ၏ ပတ်ဝန်းကျင်လေထု အရည်အသွေးအား ဆောက်လုပ်ရေးလုပ်ငန်းများ အသေးစိတ် စတင်ဆောင်ရွက်စဉ်ကာလမှ စတင်ကာ လစဉ် တိုင်းတာသင့်ပါသည်။

၁။. ဆူညံသံများ

(၁) အရင်းအမြစ်များ - ဆူညံသံများသည် အများအားဖြင့် ဆောက်လုပ်ရေး လုပ်ငန်းများမှ ထွက်ရှိမည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းမှ ထွက်ပေါ်သည့် ဆူညံသံပမာဏသည် ဆောက်လုပ်ရေးအလုပ်သမားစေများ နှင့် အနီးဝန်းကျင်ရှိ လက်ခံသူများ အပေါ်သက်ရောက်နိုင်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - ဓါတ်အားပေးစက်ရုံ နှင့် အနီးဆုံး လက်ခံသူမှာ ဓါတ်အားပေးစက်ရုံတည်နေရာ ၏ (၁.၁) ကီလိုမီတာခန့်တွင်တည်ရှိသော ပဂေါ်ဖွန်း ကျေးရွာ ဖြစ်ပါသည်။

(၃) အရင်းအမြစ်များတွင် ဆူညံမှုအဆင့်၏ ပမာဏ - စီမံကိန်း ၏ ဆောက်လုပ်ရေး နှင့် သက်ဆိုင်သော အမျိုးမျိုးသော ဆောက်လုပ်ရေး ပစ္စည်းများ၏ ဆူညံမှုအဆင့် ဆိုင်ရာ အချက်အလက်များအား အဓိကစာပိုဒ် ၏ ဇယား ၆.၄.၃-၂ တွင် ပြသထားပါသည်။

(၄) အရင်းအမြစ်များတွင် ဆူညံမှု လျော့ချရန်အတွက်နည်းလမ်းများ - ဆောက်လုပ်ရေးတည်နေရာ ၏ သဘာဝပတ်ဝန်းကျင်အား တာရှည်ခံရေးအတွက် ကျင့်သုံးနိုင်သော ဆူညံမှုလျော့ချနိုင်သော ဖြည့်ဆည်းကိရိယာများအား ပုံစံပြုလုပ်ခြင်းမှာ ခက်ခဲပါသည်။ ထို့ကြောင့် EPC ကန်ထရိုက်တာ နှင့် ယင်း၏ထပ်ဆင့် ကန်ထရိုက်တာများ သည် အကောင်းဆုံးသော ဆူညံမှုလျော့ချခြင်းရှိသည့် ကိရိယာများအား အသုံးပြုရန် လိုအပ်ပါသည်။

(၅) ဆူညံမှု ထိန်းချုပ်ခြင်း ပန်းတိုင် - ဆောက်လုပ်ရေး ဆူညံမှုများသည် လက်ခံသူများအပေါ် ကျရောက်မည့် သတ်မှတ်ထားသော ပတ်ဝန်းကျင်ဆူညံမှုအဆင့် အား (၇၀) dB (A) Leq- ၂၄ နာရီ (USEPA စံနှုန်း) ထက်မကျော်လွန်ရပါ။ ပတ်ဝန်းကျင်ဆူညံမှုအဆင့် အား တိုးမြင့်စေခြင်းတွင် (3) dB (A) Leq- ၁ နာရီ (IFC စံနှုန်း) ထက်မကျော်လွန်ရပါ။

(၆) လက်ခံသူပေါ်တွင် ကျရောက်နိုင်သည့် ခန့်မှန်းရရှိသော ဆူညံမှုအဆင့် - ပတ်ဝန်းကျင် ဆူညံမှု အဆင့်ပေါ်တွင် ကျရောက်မည့် ဆောက်လုပ်ရေးလုပ်ငန်းများ ၏ ဆူညံမှု အသံတင်သက်ရောက်မှုတွက်ချက်ခြင်းအား အဓိက စာပိုဒ်၏ ဇယား ၆.၄.၃.၂-၂ တွင် ပြသထားသည့်အတိုင်း ထိန်းချုပ်မှုမပြုသော ကဏ္ဍ နှင့် ထိန်းချုပ်မှုပြုသော ကဏ္ဍဟု နှစ်ခုခွဲခြား နိုင်ပါသည်။

(၇) ထောက်ခံထားသော လျော့ချရေးနည်းလမ်းများ - (၃) မီတာရှိသော နံရံကာများ (သို့) အသံကာများအား အသုံးပြုခြင်းဖြင့် ဆူညံသံလျော့ချခြင်း၊ အလုပ်သမားများအား နားအကာများပေးခြင်းတို့ ပြုလုပ်နိုင်ပါသည်။ အဓိကဆောက်လုပ်ရေးလုပ်ငန်းဆောင်တာများအား နေ့အချိန်တွင်သာ ပြုလုပ်ရန်ကန့်သတ်သင့်ပါသည်။ ဆောက်လုပ်ရေးတည်နေရာ အတွင်း မော်တော်ယာဉ်များ၏ အမြန်နှုန်းအား တစ်နာရီ ကီလိုမီတာ (၄၀)ထက် မကျော်လွန်စေရန် ကန့်သတ်ပါသည်။ EPC ကန်ထရိုက်တာသည် လက်ခံသူများအပေါ်ကျရောက်မည့် ပတ်ဝန်းကျင်ဆူညံမှုအဆင့်များအား ပုံမှန်စောင့်ကြည့်အကဲဖြတ်ရန်လိုအပ်ပါသည်။

(၈) ဆူညံမှုများ၏ သက်ရောက်မှု ထူးခြားချက်အား အကဲဖြတ်ခြင်း - ဆောက်လုပ်ရေးလုပ်ငန်းမှ ဆူညံသံများ ပြဿနာသည် ထိန်းချုပ်မှုဆိုင်ရာတွင် မြင့်မားသော ဦးစားပေးမှု ရသင့်ပါသည်။

ဂ။ စွန့်ပြစ်အရည်များ

(၁) အရင်းအမြစ်များ - စွန့်ပစ်အရည်များအား အိမ်တွင်း မိလ္လာများ၊ ဆောက်လုပ်ရေး တည်နေရာမှ စွန့်ထုတ်အရည်များ နှင့် မြေပေါ်တိုက်စားစီးဆင်းလာသော ရေများ မှ ဖြစ်ပေါ်စေပါသည်။ ယင်းစွန့်ပစ်အရည်များအား ဆောက်လုပ်ရေးတည်နေရာမှ အခြားရေပြင်များသို့ ထုတ်လွှတ်ရာတွင် ယင်း စွန့်ပစ်အရည်များအား သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လျော့နည်းစေရန်အတွက် သင့်လျော်သော စီမံခန့်ခွဲမှုများအား လိုအပ်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - -ယင်းတို့၏ ကျန်ရှိသောပမာဏအား ယာယီ ဓါတ်အားပေးစက်ရုံ ဆောက်လုပ်ရေးတည်နေရာ ၏ ကန်များ တူမြောင်းများတွင် စုဆောင်း ထားခြင်းဖြင့် ယင်းတို့အား အနီးအနားရှိ သဘာဝ မြစ်ချောင်းအင်းအိုင်များအတွင်း ထုတ်လွှတ်ခြင်း ပြုလုပ်သွားမည်မဟုတ်ပါ။

(၃) စွန့်ပြစ်ရည် ပမာဏအား ခန့်မှန်းချက် - အိမ်တွင်းဆိုင်ရာ စွန့်ပစ်အရည်ထုတ်လွှတ်ခြင်းအား တစ်ရက်လျင် (၃.၂) ကုဗမီတာဟုခန့်မှန်းရရှိပါသည်။ ကုန်တင်ယာဉ် ဆေးကြောခြင်း အတွက် နေစဉ်အသုံးပြုသော ရေပမာဏမှာ တစ်ရက်လျင် (၂၀) ကုဗမီတာရှိပါသည်။ တစ်ပတ်လျှင် ကွန်ကရစ်ဆေးကြောရည်ပမာဏမှာ (၂.၀) ကုဗမီတာ သို့ (၂၀၀၀) လီတာရှိပါမည်။ မြေပြင်အပေါ်တွင် တိုက်စားစီးဆင်းလာသော ရေပမာဏမှာ (၁၀၄၇.၅) ကုဗမီတာ ဖြစ်ပါမည်။

(၄) စွန့်ပြစ်အရည် လျော့ကျရေး စီမံခန့်ခွဲ - အိမ်တွင်းစွန့်ပစ်အရည် နှင့် ဆေးကြောရည်များအား စီမံကိန်းတည်နေရာတွင် သိုလှောင်ရုံများဖြင့် စုဆောင်းခြင်း နှင့် ယင်းတို့အား တွင်းများအတွင်းသို့ စုဆောင်းပြီး ယင်းတို့အား တာဝန်ရှိ ကန်ထရိုက်တာမှ ဆောက်လုပ်ရေးဧရိယာ၏ ပြင်ပသို့ ပြောင်းလဲသွားပါမည်။

(၅) စွန့်ပြစ်အရည်ထိန်းချုပ်ခြင်း ပန်းတိုင် - ပြုပြင်ထားသည် စွန့်ပစ် အရည်များ၏ အရည်အသွေးသည် သတ်မှတ်ထားသော စွန့်ပစ်အရည် အရည်အသွေးစံနှုန်းနှင့် ကိုက်ညီရပါမည်။

(၆) လက်ခံသူများအပေါ်တွင် ခန့်မှန်းရရှိသော ထိခိုက်သက်ရောက်မှု - အိမ်တွင်းစွန့်ပစ်အရည်များသည် စီမံကိန်းအနီးအနားရှိ သဘာဝမြစ်ချောင်းအင်းအိုင်များအပေါ်တွင် သက်ရောက်မှုမရှိပါ။ pH မြင့်သော အစိုင်အခဲများပါဝင်သော ကွန်ကရစ် ဆေးကြောအရည်များမှာအား ပါဝင်သည့်အစိုင်အခဲများ ဖယ်ရှားခြင်း နှင့် လိုအပ်သော pH ဓါတ်ရရှိရန် ညှိနှိုင်းသွားပါမည်။ ဆောက်လုပ်ရေးတည်နေရာမှ မြေသားအပေါ်တွင်ဖြတ်သန်းစီးဆင်းလာသော အရည်များ ၏ အနီးအနား မြစ်ချောင်းအင်းအိုင်တို့အပေါ်ထိခိုက်သက်ရောက်မှုမှာ သိသာမှုမရှိပါ။ အဘယ့်ကြောင့်ဆိုသော် ဆောက်လုပ်ရေးလုပ်ငန်း တည်နေရာအား စွန့်ပစ်အရည်များအား ထိန်းသိမ်းရန်ကန်များ သို့ပို့ဆောင်မည့် အနည်းကျမြောင်းများနှင့် ပတ်လည်ဝန်းရံထားသောကြောင့် ဖြစ်ပါသည်။ ထို့ကြောင့် အနီးအနားရှိ မြစ်ချောင်းအင်းအိုင်များမှာ ဆောက်လုပ်ရေးမှထွက်ရှိမည့် စွန့်ပစ်အရည်များကြောင့် သက်ရောက်မှု မရှိနိုင်ပါ။

(၇) ထိခိုက်သက်ရောက်မှု လျော့ချရေးနည်းလမ်းများ - စွန့်ပစ်အရည်များအား စီမံခန့်ခွဲရေး စနစ်တွင် စုဆောင်းရေး စနစ်နှင့် ရိုးရှင်းသော ပြင်ဆင်ရေး စနစ်တို့ ပါဝင်ပါမည်။ ပြင်ဆင်ထားသော ပုံစံသဘောတရားသည် စွန့်ပစ်အရည်များ ခွဲခြားခြင်း၊ ဂုဏ်သတ္တိပြောင်းလဲစေခြင်း နှင့် ပြန်လည်အသုံးချခြင်း အခြေခံနည်းလမ်းများ အပေါ်တွင် အခြေခံထားပါသည်။

(၈) ထိခိုက်သက်ရောက်မှု ထူးခြားချက်အား အကဲဖြတ်ခြင်း - တည်ဆောက်ရေးကာလ၏ ရေဆိုးစီမံခန့်ခွဲမှု ပြဿနာသည် အလည်အလတ် ဦးစားပေး အနေအထားဖြစ်ပါသည်။

ဃ။ ဆောက်လုပ်ရေးမှထွက်ရှိသည့် စွန့်ပြစ်ပစ္စည်းများ

(၁) အရင်းအမြစ်များ - အမိုက်သရိုက်များအား တည်နေရာရှင်းလင်းခြင်း၊ မြေတူးဖော်ခြင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းမှ အညစ်အကြေး အမိုက်သရိုက်များ၊ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ နှင့် အိမ်တွင်း စွန့်ပစ်ပစ္စည်းများမှ ဖြစ်ပေါ်စေပါသည်။ ယင်းအမှိုက်သရိုက်များအား သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှု လျော့ချရေးအတွက် လုံလောက်စွာ စီမံခန့်ခွဲရန် လိုအပ်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းမှု - ယင်းကိစ္စရပ် ၏ လက်ခံသူများမှာ စွန့်ပစ်သည့်နေရာရှိ မြေနှင့် မြေအောက်ရေတို့ ဖြစ်ကြပါသည်။

(၃) စွန့်ပြစ်ပစ္စည်းများ၏ ပမာဏအား ခန့်မှန်းချက်

ဆောက်လုပ်ရေးလုပ်ငန်းမှ စွန့်ပြစ်ပစ္စည်းများ - စီမံကိန်းသည့် ဓါတ်အားပေးစက်ရုံနှင့် ယင်းနှင့် သက်ဆိုင်သော အဆောက်အအုံများအတွက် (၆.၂၅) ဧက သို့ (၂၅၀၀၀) ကုဗမီတာ ရှိသော မြေနေရာအား အသုံးပြုသွားပါမည်။ ဆောက်လုပ်ရေးတွင် ထုတ်လွှတ်နိုင်သည့် စုစုပေါင်း ဆောက်လုပ်ရေး စွန့်ပစ်ပစ္စည်းများ ၏ စုစုပေါင်း ပမာဏမှာ တန် (၅၀၀) ခန့်ရှိမည်ဟု ခန့်မှန်းထားပါသည်။ ဆောက်လုပ်ရေးကာလ (၃) လအတွက် ပျှမ်းမျှနေ့စဉ် စွန့်ထုတ်ပစ္စည်းပမာဏမှာ တစ်လလျှင် ဆောက်လုပ်ရေးလုပ်ငန်းလုပ်ဆောင်ရက် ၂၅ ရက်ပေါ်တွင် အခြေခံကာ တစ်ရက်လျှင် (၆.၆၇) တန် ရှိမည်ဟု ခန့်မှန်းထားပါသည်။

ဆောက်လုပ်ရေးမဟုတ်သော လုပ်ငန်းများမှ ထွက်သည့် စွန့်ပြစ်ပစ္စည်းများ - ယင်းတို့အား စီမံကိန်းတည်နေရာတွင် နေ့စဉ်နေထိုင်သော ဆောက်လုပ်ရေး အလုပ်သမားများမှ ထုတ်လုပ်ပါသည်။ ယင်း စွန့်ပစ် ပစ္စည်းများ ၏ စုစုပေါင်းပမာဏမှာ အမြင့်ဆုံး တစ်ရက်လျှင် ၄၀ ဂရမ်ရှိမည်ဟု ခန့်မှန်းထားကာ ယင်းပမာဏသည် ဆောက်လုပ်ရေးလုပ်ငန်းမှ စွန့်ပစ်ပစ္စည်းများ ထက် နည်းငယ်ပါသည်။

အန္တရာယ်ရှိသော စွန့်ပြစ်ပစ္စည်းများ - စွန့်ပစ်ပစ္စည်းတစ်ခုအား လည်းကောင်း၏ ဓါတုဗေဒလက္ခဏာရပ်များ သည် မီးလောင်ကျွမ်းနိုင်မှု၊ တိုက်စားနိုင်မှု၊ ဓါတ်ပြုနိုင်မှု နှင့် အဆိပ်အတောက်ဖြစ်စေမှု တို့အပေါ်တွင် အခြေခံကာ အန္တရာယ်ရှိသည် ဟု ယူဆပါသည်။ ဆောက်လုပ်ရေးမှ ယင်း အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများတွင် အသုံးပြုထားသော ဆီများ၊ ရေအားသုံး စွမ်းအင်ထုတ်လုပ်မှုတွင် သုံးသော အရည်များ၊ ဒီဇယ်ဆီများ၊ ရေးဆေးများ၊ ပျော့ဝင်ပစ္စည်းများ၊ ချိတ်၊ အငွေ့ပျံနိုင်သော ပျော်ဝင်ပစ္စည်းများ၊ တခေး၊ အမိုး ဘိလပ်မြေ၊ ကော်၊ စက်သုံးပစ္စည်း ချောဆီ၊ ရေစိုခံ ချိတ်၊ နှင့် သန့်ရှင်းရေး ပစ္စည်းများ စသည်တို့ပါဝင်ပါသည်။

(၄) ထုတ်လွှတ်သည့် အရင်းအမြစ်များတွင် စွန့်ပြစ်ပစ္စည်း အညစ်အကြေးများအား လျော့ချခြင်း နည်းလမ်းများ

ပုံစံနှင့် အစီအစဉ်ချခြင်း - အညစ်အကြေးလျော့ချရန် အတွက် ပုံစံဖော်ဆောင်ရေး လုပ်ငန်းအတွင်း ပုံစံပြုလုပ်ရေး အဖွဲ့သည် အဓိက နည်းဥပဒေ (၄) ရပ်ရှိပါသည်။ ယင်းတို့တွင် ပြန်လည်အသုံးပြုခြင်း နှင့် ပြန်လည်ထုထောင်ခြင်း အတွက် ပုံစံ၊ ပစ္စည်းကိရိယာများအား

ကောင်းမွန်စွာ အသုံးချခြင်း အတွက် ပုံစံ၊ စွန့်ပစ်ပစ္စည်း ထိရောက်မှု လိုင္စေထုတ်ပေးခြင်း အတွက် ပုံစံ နှင့် ဆောက်လုပ်မှုဖျက်သိမ်းခြင်း နှင့် ပြောင်းလဲနိုင်မှု ပုံစံ တို့ ဖြစ်ပါသည်။

ဆောက်လုပ်ရေး စီမံခန့်ခွဲမှုတွင် အကောင်းဆုံးသော အလေ့အကျင့်များ - ဆောက်လုပ်ရေးများအား စွန့်ပစ်ပစ္စည်းထုတ်လွှတ်မှု ပမာဏ လျော့ချရေး အတွက် အောက်ပါ အလေ့အကျင့်များကို ကျင့်သုံးသွားပါမည်။ ယင်းတို့မှာ အမိုက်သရိုက် ခွဲခြားခြင်း၊ အမိုက်သရိုက်များ စုဆောင်းခြင်း နှင့် သိုလှောင်ခြင်း ၊ စွန့်ပစ်ပစ္စည်းများအား ပြန်လည်အသုံးချခြင်း၊ စွန့်ပစ်ခြင်း နှင့် တည်နေရာအတွင်း မှတ်တမ်းထားရှိခြင်း တို့ပါဝင်ပါသည်။

(၅) စွန့်ပြစ်ပစ္စည်း ထိန်းချုပ်မှု ပန်းတိုင် - ဆောက်လုပ်ရေးလုပ်ငန်း စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်အား အောက်ပါ အရည်အသွေးပိုင်းဆိုင်ရာ ညွှန်ကိန်းများ နှင့် အကဲဖြတ်ပါမည်။ အန္တရာယ်ဖြစ်စေသော စွန့်ပစ်ပစ္စည်းများအား ဆောက်လုပ်ရေး တည်နေရာ ၏ အတွင်းပိုင်း သို့ အပြင်ပိုင်းအား စွန့်ထုတ်ခြင်း နှင့် ဆောက်လုပ်ရေး စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှု နှင့် သက်ဆိုင်သည့် ပြည်သူလူထု ကန့်ကွက်မှုမရှိခြင်းတို့ ဖြစ်ပါသည်။

(၆) လက်ခံသူများ အပေါ်တွင် ခန့်မှန်းထားသည့် သက်ရောက်မှုများ - ညစ်ညမ်းမှုဖြစ်ပေါ်စေသော စွန့်ပစ်ပစ္စည်းများ ၏ အနည်းငယ်ပမာဏ အားထည့်သွင်းစဉ်းစားခြင်းဖြင့် ထိခိုက်သက်ရောက်မှုများအား ခန့်မှတ် မရပါ။ သိသာထင်ရှားမှု အများအားဖြင့် နည်းပါသည်။

(၇) သက်ရောက်မှု လျော့ကျရေး နည်းလမ်းများ - ပြန်လည်အသုံးပြု မရသော ကျန်ရှိနေသော စွန့်ပစ်ပစ္စည်းများအား သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လျော့ချရေးအတွက် သင့်လျော်စွာ စွန့်ပစ်ရပါမည်။

(၈) သက်ရောက်မှုများ၏ သိသာမှုအား အကဲဖြတ်ခြင်း - ယင်းပြဿနာရပ်အား အလည်အလတ် ထိန်းချုပ်မှု ဦးစားပေးအဆင့်ဟု သတ်မှတ်ထားပါသည်။

င။ ယာဉ်ကြောပိတ်ဆို့မှု

(၁) အရင်းအမြစ်များ - ယာယီဓါတ်အားပေးစက်ရုံ နှင့် ၄င်း၏ အထောက်အကူများအား ဆောက်လုပ်ရေးအတွက် ဆောက်လုပ်ရေး ပစ္စည်းများ၊ စွန့်ပစ်အမှိုက်များ နှင့် စက်ရုံမှ ကိရိယာများအား သယ်ယူပို့ဆောင်ရန် လိုအပ်ပါမည်။ ဆောက်လုပ်ရေးကာလအတွင်း သက်ရောက်မှုများနှင့် သက်ဆိုင်သော ယာဉ်ကြောပိတ်ဆို့မှုများတွင် ဒေသတွင်း လမ်းများ ပိတ်မှု နှင့် ရုတ်တရက် ထိခိုက်အန္တရာယ်ဖြစ်ပွားမှု တို့ပါဝင်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - ယင်းမှာ ထားဝယ် အထူးစီးပွားရေးဇုန် နှင့် ထိုင်းနိုင်ငံနယ်စပ်အား ဆက်သွယ်ထားသော ITD အဓိကလမ်းမကြီး ဖြစ်ပါသည်။

(၃) ယာဉ်ကြောပိတ်ဆို့မှု၏ ခန့်မှန်းချက် - ယာဉ်ကြောပိတ်ဆို့မှုအား တစ်နာရီလျှင် ကုန်ကားခရီး အရေအတွက်ဖြင့် ဖော်ပြပါသည်။ ယင်းသည် ဆောက်လုပ်ရေး တည်နေရာ၏ အတွင်းနှင့် အပြင်သို့ သယ်ယူပို့ဆောင်ရန် လိုအပ်သည့် စုစုပေါင်း ပစ္စည်းပမာဏ အပေါ်တွင်မူတည်ပါသည်။ တည်နေရာ ဖြည့်ပစ္စည်းများ အတွက် လိုအပ်သော ကုန်တင်ကား ခရီးအရေအတွက်အား အပြင်းပိုင်းလမ်း နှင့် အတွင်းပိုင်းလမ်းဟု နှစ်မျိုးတွက်ချက်နိုင်ပါသည်။ ထို့ကြောင့် ကုန်တင်ယာဉ် ခရီးအရေအတွက် အား တရက်လျှင် (၁၈၂) ခရီး သို့ တနာရီလျှင် ခရီး (၂၀) ရှိပါမည်။ ကွန်ကရစ်လုပ်ငန်များ သည် ရက် (၃၀) ကြာမည်ဆိုပါက ကုန်တင်ကားခရီး အား

ပျမ်းမျှအားဖြင့် တနာရီလျှင် ခရီး (၃) ခု ဖြစ်ပါမည်။ ဓါတ်အားပေး စက်ရုံ အဆောက်အဦ နှင့် ကွန်ကရစ် လုပ်ငန်းတို့အတွက် စတီးချောင်းများ ပါဝင်ပါက ကုန်တင်ယာဉ်ခရီးသည် တနာရီလျှင် ခရီး (၁၀) ခုထက်မပိုပါ။

(၄) ယာဉ်ကြောပိတ်ဆို့မှု လျှော့ချရေး နည်းလမ်းများ - တည်နေရာသည် အနည်းငယ်မက်ဆောက်သဖြင့် စီမံကိန်းတည်နေရာမှ မြေဖို့ခြင်းပြုလုပ်ခြင်းဖြင့် ကုန်တင်ယာဉ်ခရီး အရေအတွက်အား လျှော့ချနိုင်ပါမည်။

(၅) မော်တော်ယာဉ် စီမံခန့်ခွဲရေး ပန်းတိုင် - သတ်မှတ်ထားသော သက်ရောက်မည့် နေရာများတွင် ဆောက်လုပ်ရေး မော်တော်ယာဉ်များနှင့် သက်ဆိုင်သော ထိခိုက်မှုမရှိပါ။

(၆) ခန့်မှန်းရရှိသော သက်ရောက်မှုများ - မြေဖြည့်ပစ္စည်းများအား သယ်ယူပို့ဆောင်ရေးသည် လက်ရှိယာဉ်ကြောပမာဏ ထက် တစ်နာရီ လျှင် (၃၈.၂) PCU တိုးမြင့်စေပါသည်။

(၇) စီမံခန့်ခွဲမှု လမ်းညွှန်ချက်များနှင့်သက်ရောက်မှု လျှော့ချရေးနည်းများ -

စီမံခန့်ခွဲမှု လမ်းညွှန်ချက်များ - အားအောက်ပါအတိုင်း ဆောင်ရွက်ပါမည်။ ယင်းတို့မှာ ဖြစ်ပွားနိုင်သော ဆောက်လုပ်ရေးဆိုင်ရာ ယာဉ်ကြောပိတ်ဆို့မှု အား ရှောင်ကျဉ်ခြင်း၊ လျှော့ချခြင်း နှင့် စီမံခန့်ခွဲခြင်း ပြုရန် ဆီလျော်သော လက်တွေ့ကြသော နည်းလမ်းများ ဖော်ဆောင်ခြင်း ၊ ဖြစ်ပေါ်နိုင်သော ယာဉ်ပိတ်ဆို့မှုများကို တတ်နိုင်သမျှ ဆီလျော်စွာ၊ လက်တွေ့ကြစွာ လျှော့ချခြင်း၊ စီမံကိန်း လုပ်ငန်းဧရိယာ အနီး လမ်းအသုံးပြုသူများ အတွက် လုံခြုံမှုပေးခြင်း၊ လုပ်ငန်းနေရာ နှင့် အခြားစီမံကိန်း အလုပ်များ အနီး မော်တော်ယာဉ် စီမံခန့်ခွဲမှု နည်းလမ်းများ လက်တွေ့ဖော်ဆောင်ခြင်း၊ နှင့် ဆောက်လုပ်ရေး လုပ်ငန်းအနီး ယာဉ်အသွားအလာ စောင့်ကြည့်ရေးတို့ ပါဝင်ပါသည်။

ထိခိုက်သက်ရောက်မှု လျှော့ချရေး နည်းလမ်းများ - အားအောက်ပါအတိုင်း ဆောင်ရွက်ပါမည်။ ကုန်တင်ယာဉ်လမ်းကြောင်းများ နှင့် ဆောက်လုပ်ရေး တည်နေရာသို့ ဝင်ရောက်ခွင့်၊ ဆောက်လုပ်ရေး ယာဉ်များအွန္တရာယ်၊ ဒေသတွင်း ယာဉ်များ၊ ITD အဓိကလမ်းမကြီး၏ လမ်းဆုံတွင် ယာဉ်ကြောစီမံခန့်ခွဲရေး နှင့် လူသွားလမ်း နှင့် စက်ဘီးလမ်းများ စသည်တို့ပါဝင်ပါသည်။

(၈) သက်ရောက်မှုများ၏ သိသာထင်ရှားမှုအား အကဲဖြတ်ခြင်း - ဆောက်လုပ်ရေးကာလအတွင်း ယာဉ်ကြောစီမံခန့်ခွဲရေးသည် မြင့်မားသော ဦးစားပေးတရပ် ဖြစ်ပါသည်။

စ။ ဒေသခံအသိုင်းအဝိုင်းများအား ထိခိုက်မှု

တည်ဆောက်ရေးလုပ်ငန်းလုပ်ဆောင်မှုများကြောင့် ဒေသခံအအသိုင်းအဝိုင်းများ အပေါ် အချို့သော ထိခိုက်မှုများ ဖြစ်ပေါ်နိုင်ပါသည်။ အဓိကအားဖြင့် (၁) ဒေသတွင်း စီးပွားရေး (၂) အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများ (၃) ရိုးရာနှင့် ယဉ်ကျေးမှု နှင့် (၄) ဒေသခံကျန်းမာရေး၊ ဘေးအွန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေး တို့ဖြစ်ပါသည်။

(၁) ဒေသတွင်း စီးပွားရေး

ထိခိုက်မှု။ တည်ဆောက်ရေးကာလ အမြင့်ဆုံးအချိန်တွင် ဆောက် လုပ်ရေး ဝန်ထမ်း ၅၀ လိုအပ်မည် ဖြစ်ပါသည်။ ၎င်းဆောက်လုပ်ရေးဝန်ထမ်းများအတွက် ဒေသခံ

ဝန်ဆောင်မှုများဖြစ်သော အစားအသောက်များလိုအပ်ပါသည်။ ထို့ကြောင့် ဒေသခံများ၏ စီပွားရေး ဝင်ငွေစီးဆင်းမှုများ ဖြစ်ပေါ်လာနိုင်ပြီး အသက်မွေးဝမ်းကြောင်းမှုဆိုင်ရာ ဝန်ဆောင်မှု လုပ်ငန်းများအား အကျိုးဖြစ်ထွန်းစေပါသည်။

တိုးမြှင့်မှု အတိုင်းအတာ။ အလုပ်အကိုင်အတွက် ဒေသခံများ အား ဦးစားပေးသွားမည် ဖြစ်ပါသည်။ အလုပ်အကိုင်ခေါ်ယူခြင်းသည် တရားမျှတမှုရှိခြင်း၊ အပြင် ပွင့်လင်း မြင်သာမှုရှိပြီး နှင့် အခကြေးငွေပေးရာတွင်လဲ ဝန်ထမ်း၏ အတွေ့အကြုံနှင့် ကျွမ်းကျင်မှုအပေါ်မူတည်၍ ပေးအပ်သွားမည် ဖြစ်ပါသည်။ ဝန်ထမ်းများ၏ အချက်အလက်များသည် အလုပ်သမား ဥပဒေ၊ လူမှုဖူလုံရေး ဥပဒေနှင့် အခကြေးငွေနှုန်းထား နှင့် အခြားသော သက်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေများနှင့် ကိုက်ညီရမည် ဖြစ်ပါသည်။

(၂) အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများ။ စီမံကိန်း တည်ဆောက်ရေးအတွက် အသုံးပြုရမည်ဖြစ်သော အကန့်အသတ်ရှိသည့် အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများကို ဒေသခံများနှင့် ယှဉ်ပြိုင်၍ အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ၎င်းယှဉ်ပြိုင်မှုသည် မလုံလောက်သော အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများအပေါ် အပိုဖိအားများဖြစ်ပေါ် စေနိုင်ပါသည်။ လမ်းနှင့် ဆေးဝါးဝန်ဆောင်မှုလုပ်ငန်းများသည် အဓိက အလေးထားစရာများ ဖြစ်ပါသည်။

လျှော့ချမှုအတိုင်းအတာများ။ ဆောက်လုပ်ရေး ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်းကို လမ်းကြပ်သည့်အချိန်တွင် ပို့ဆောင်ခြင်းကို ရှောင်ရှားရပါမည်။ အများပိုင်လမ်းတွင် ယာဉ်ကြီးများ သွားလာရာတွင် သတ်မှတ်ထားသော အရှိန်နှုန်းဖြင့်သာ သွားလာရပါမည်။ ဆောက်လုပ်ရေးနေရာရှိ ဝန်ဆောင်မှုများတွင် ရေအထောက်အပံ့၊ အမှိုက်စွန့်ပြစ်မှု၊ ရေဆိုးသန့်စင်မှု နှင့် ကျန်းမာရေး ဝန်ဆောင်မှုစသည့် ထောက်ပံ့ပေးမှုများ ပါဝင်သည်။ ဘေးအန္တရယ်လုံခြုံရေး နည်းဥပဒေများ၊ ရေးဦးသူနာပြုနည်းနှင့် စောင့်ရှောက်မှုများကို လိုက်နာဆောင်ရွက် ရပါမည်။

(၃) ရိုးရာနှင့် ယဉ်ကျေးမှု

ထိခိုက်မှု။ တည်ဆောက်ရေးလုပ်ငန်းခွင်တွင် ယဉ်ကျေးမှု သို့မဟုတ် ရှေးဟောင်းသုတေသန ထင်ရှားမှုများမရှိပေ။ ထို့ကြောင့် တည်ဆောက်ရေးလုပ်ငန်းများကြောင့် ယဉ်ကျေးမှု သို့မဟုတ် ရှေးဟောင်းသုတေသန အမွေအနှစ်များအား တိုက်ရိုက် ထိခိုက်မှုများ မရှိပါ။

လျှော့ချမှုအတိုင်းအတာ။ စီမံကိန်းတွင် ပါဝင်သူများသည် ဒေသ၏ ယဉ်ကျေးမှု၊ ရိုးရာနှင့် ဓလေ့ထုံးတမ်းများအား သတိပြုလိုက်နာရပါမည်။ တည်ဆောက်ရေး ပြုလုပ်စဉ် ရှေးဟောင်းသုတေသန ပစ္စည်းများ ရှာဖွေတွေ့ရှိပါက သက်ဆိုင်ရာ အာဏာပိုင်များထံသို့ ချက်ချင်း အပ်နှံမည် ဖြစ်ပါသည်။

(၄) ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေး

ထိခိုက်မှု။ တည်ဆောက်ရေးလုပ်ငန်းများကြောင့် ဒေသခံများ၏ ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေးတို့အပေါ်တွင် ထိခိုက်မှု အနည်းငယ် ဖြစ်ပေါ်လာနိုင်ပါသည်။ သင့်တော်သော စီမံခန့်ခွဲမှု မရှိခဲ့လျှင် ဆောက်လုပ်ရေးဝန်ထမ်းများ၏ ကျန်းမာရေး အန္တရာယ်သည် ဒေသခံများထံသို့ ရောက်ရှိနိုင်ပါသည်။ ဝန်ထမ်းများ၏ ရာဇဝတ်မှုများနှင့်

မူးယစ်ဆေးဝါးအသုံးပြုမှု စသော စည်းကမ်းချိုးဖောက်မှုများသည်လည်း ဒေသခံလူမှုအသိုင်းအဝိုင်း လုံခြုံရေးအတွက် အန္တရာယ်ရှိနိုင်ပါသည်။

လျော့ချမှုအတိုင်းအတာများ။ ရွေးချယ်ခံရသော ဝန်ထမ်း များကို မခန့်အပ်မီ အဓိက ဖြစ်သော ကူးစက်နိုင်သော ရောဂါများရှိ/မရှိ ကျန်းမာရေးစစ်ဆေးမှုများ ပြုလုပ်ပြီးမှသာ ခန့်အပ်မည် ဖြစ်ပါသည်။ နောက်ပိုင်းတွင် နှစ်စဉ် ဆေးစစ်မှုများ ပြုလုပ်ပေးသွားမည် ဖြစ်ပါသည်။ ဝန်ထမ်းအားလုံးသည် ဒေသခံလုံခြုံရေးအာဏာပိုင်များမှသတ်မှတ်ထားသော ရာဇဝတ်မှုများ နှင့် ကင်းရှင်းရမည် ဖြစ်ပါသည်။

(၃) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အန္တရာယ် စီမံခန့်ခွဲမှု - ဆောက်လုပ်ရေးကာလ

က။ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အန္တရာယ်စီမံခန့်ခွဲမှုအပိုင်း

EPC ကန်ထရိုက်တာသည် စာချုပ်ပါ သဘောတူညီချက်အရ (၁) ကိရိယာနှင့် အထောက်အကူများ၏ အသေးစိတ်ဖော်ပြချက်နှင့် ဒီဇိုင်းတို့အား ပြင်ဆင်ခြင်း (၂) ဆောက်လုပ်ရေး နှင့် လုပ်ကိုင်ရန် လိုငွေထုတ်ပေးခြင်း (၃) ခါတ်အားပေးစက်ရုံ နှင့် သက်ဆိုင်ရာ အထောက်အကူဝန်ဆောင်မှုများအား စီမံကိန်းတင်သွင်းသူထံ မလွှဲအပ်မီ စမ်းသက်ခြင်း တို့အတွက် တာဝန်ရှိပါသည်။ အားလုံးသော သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှု လျော့ချခြင်းဆိုင်ရာ နည်းလမ်းများ အား နိဂုံးချုပ် EIA စာတမ်းတွင် ထောက်ခံထားပြီး စီမံကိန်းတင်သွင်းသူနှင့် MOE မှ လက်ခံပြီးဖြစ်ပါသည်။ EPC ကန်ထရိုက်တာ၏ သဘာဝပတ်ဝန်းကျင် ဆောင်ရွက်ချက်အား စောင့်ကြည့်ရေးကို စီမံကိန်းတင်သွင်းသူ၏ စီမံကိန်းစီမံခန့်ခွဲရေးအသင်းမှ ဆောင်ရွက်သွားပါမည်။

ခ။ အန္တရာယ်များအား ခွဲခြားခြင်း

ဆောက်လုပ်ရေးကာလအတွင်း သေချာမှုမရှိသေးသော အန္တရယ်များ သို့ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အန္တရာယ် နှစ်ခုသည် စီမံကိန်းတင်သွင်းသူနှင့် သက်ဆိုင်မည်ဖြစ်ပါသည်။

- စီမံကိန်းသည် အခြားအာဏာပိုင်များ (သို့) သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာနမှ ပြဋ္ဌာန်းထားသော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များ နှင့် ကိုက်ညီမှုမရှိပါ။
- စီမံကိန်းသည် သက်ဆိုင်ရာအဖွဲ့အစည်း အထူးသဖြင့် အနီးအနားရှိ လူထုနှင့် ဆန့်ကျင်ဘက်ဖြစ်သည်။

ဂ။ အန္တရာယ်အား ခွဲခြမ်းစိတ်ဖြာခြင်း

အန္တရာယ် ၁ - သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များနှင့် ကိုက်ညီမှုမရှိခြင်း ဖြစ်ပေါ်စေသောအကြောင်းအရာများ

- EPC ကန်ထရိုက်တာ နှင့် ကန်ထရိုက်တာအခွဲတို့သည် စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင် ဆောင်ရွက်ချက်လိုအပ်မှုများအပေါ်တွင် လုံလောက်သောနားလည်မှုမရှိခြင်း
- သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှုလျော့ချခြင်း လုပ်ငန်းလှုပ်ရှားမှုများ အား လုံလောက်သော ကြီးကြပ်ကွပ်ကဲမှု နှင့် စောင့်ကြည့်မှု မရှိခြင်း
- ဆောက်လုပ်ရေးကာလအတွင်း ထိခိုက်သက်ရောက်မှုလျော့ချခြင်း နည်းလမ်းများအား ပြန်လည်သုံးသပ်ခြင်းမရှိဘဲ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များ ပြောင်းလဲမှု ဖြစ်ပေါ်ခြင်း

အန္တရာယ် ၂ - စီမံကိန်းအား လူထုမှ ကန့်ကွက်ခြင်း

ဖြစ်ပေါ်စေသော အကြောင်းအရာများ

- စီမံကိန်း၏ သက်ရောက်မှုများ ၏ သဘာဝ၊ ပြင်းအား နှင့် ပမာဏ တို့အပေါ်တွင် နားလည်မှုလွဲခြင်း
- စီမံကိန်း နှင့် ပတ်ဝန်းကျင်မှ လူထု အတွင်း ပြင်းထန်သော ဆက်ဆံရေးများ ဖြစ်ပေါ်ခြင်း

ဃ။ အန္တရာယ်များအား အမျိုးအစားခွဲခြားခြင်း

အန္တရာယ် ၁ အား အလည်အလတ်အဆင့် အန္တရာယ်ဟုသတ်မှတ်ပါသည်။ အဘယ့်ကြောင့်ဆိုသော် ယင်းတို့ ဖြစ်ပွားနိုင်ချေ နှင့် ထိခိုက်သက်ရောက်မှုများ၏ သိသာထင်ရှားမှုမှာ မြင့်မားသောကြောင့် ဖြစ်ပါသည်။

အန္တရာယ် ၂ အား အသေးစား အန္တရာယ် ဟုသတ်မှတ်ပါသည်။ အဘယ့်ကြောင့်ဆိုသော် ယင်းတို့၏ ဖြစ်ပွားနိုင်ချေ နှင့် ထိခိုက်သက်ရောက်မှုများ၏ သိသာထင်ရှားမှုမှာ အနည်းငယ်သောအဆင့်မျှသာ ရှိသောကြောင့် ဖြစ်ပါသည်။

င။ အန္တရာယ်လျော့နည်းစေခြင်းနည်းလမ်းများ

အန္တရာယ်လျော့နည်းစေခြင်း နည်းလမ်းများ သည် အန္တရာယ်၏ ဖြစ်ပွားစေသော အကြောင်းအရာများကို ဖြေရှင်းရန်လိုအပ်ပါသည်။ ခွဲခြားထားသော အန္တရာယ်နှစ်ခု နှင့် ယင်းတို့၏ ဖြစ်ပွားစေသော အကြောင်းအရာများအတွက် လျော့ကျစေရေး နည်းလမ်းများအား ဇယား ၆.၆-၁ (အခန်း ၆) တွင်တင်ပြထားပါသည်။

စ။ လက်တွေ့အကောင်အထည်ဖော်ရေး အစီအစဉ်များ

တာဝန်ရှိ ပုဂ္ဂိုလ်များ နှင့်အဖွဲ့အစည်းများ- CEMP တွင် တင်သွင်းထားသည့် သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အဖွဲ့အစည်းသည် ဆောက်လုပ်ရေးကြီးကြပ်ကွပ်ကဲမှု မန်နေဂျာနှင့် အတူလက်တွဲကာ သဘာဝပတ်ဝန်းကျင် အန္တရာယ် လျော့ချရေး နည်းလမ်းများအား လက်တွေ့ဆောင်ရွက်သွားပါမည်။

အန္တရာယ် စောင့်ကြည့်ရေး နှင့် အကဲဖြတ်ရေး- အန္တရာယ် စောင့်ကြည့်ရေးတွင် အန္တရာယ်ဖြစ်ပွားစေမှုများအား ကာလအလျောက် စောင့်ကြည့်ရေးများ ပါဝင်ပါသည်။ သဘာဝပတ်ဝန်းကျင် အန္တရာယ်စီမံခန့်ခွဲရေး ၏ အန္တရာယ်လျော့ချရေး နှင့် အကဲဖြတ်ရေးတို့အား သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေးအတွက် ဆောင်ရွက်သော သဘာဝပတ်ဝန်းကျင် စောင့်ကြည့်ရေး အစီအစဉ်အဖြစ် ပြုလုပ်ပါမည်။

စာတမ်းပြုစုခြင်း နှင့် ပြင်ဆင်ခြင်း လုပ်ငန်း- သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေးတွင် စာတမ်း ပြုစုခြင်း နှင့် ပြင်ဆင်ခြင်း လုပ်ငန်းများအား သဘာဝပတ်ဝန်းကျင်အန္တရာယ် စီမံခန့်ခွဲရေးတွင် အသုံးချသွားပါမည်။

၁.၅.၅ လုပ်ငန်းလည်ပတ်ရေးကာလထိခိုက်သက်ရောက်မှုလေ့လာခြင်းနှင့် လျှော့ချရေး

(၁) စီမံကိန်းလည်ပတ်ရေး၏ သဘာဝ

သဘာဝပတ်ဝန်းကျင်နှင့် သက်ဆိုင်သော ယာယီ ဓါတ်အားပေးစက်ရုံ လည်ပတ်ခြင်းတွင် အောက်ပါ လက္ခဏာရပ်များ ရှိပါသည်။ ယင်းတို့မှာ ထိုင်းနိုင်ငံ PTT သဘာဝဓါတ်ငွေ့ ရည် မှ ပံ့ပိုးသည့် သဘာဝဓါတ်ငွေ့ လောင်စာ၊ ဓါတ်ငွေ့တာဘိုင်များ ၏ ဒီဇယ် လောင်ကြွမ်းခြင်း အတွက် မထောက်ပံ့ခြင်း နှင့် ယင်းတို့အား သဘာဝဓါတ်ငွေ့ရည်ဖြင့်သာ လည်ပတ်သွားမည် ဖြစ်ပြီး နိုက်ထရိုက်လောင်ကြွမ်းမှု အနည်းငယ်သာ အသုံးပြုသွားပါမည်။

(၂) သက်ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင် ပြဿနာရပ်များ

စီမံကိန်းလည်ပတ်မှု ဆိုင်ရာ သတင်းအချက်အလက်များပေါ်တွင်မူတည်ကာ စီမံကိန်းလည်ပတ်ရေး ကာလအတွင်း စီမံကိန်း ဧရိယာနှင့် ယာယီ ဓါတ်အားပေးစက်ရုံ၏ သဘာဝပတ်ဝန်းကျင် ရှုထောင့်နှင့် ပက်သက်သော ဇဟုသုတများ လိုအပ်ပါသည်။ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာ ပြဿနာရပ်များအား ယင်းတို့၏ ဥပဒေရေးရာ နှင့် လူမှုရေးရာ တာဝန်းခံမှုများအပေါ်တွင် သက်ရောက်မှုများအား လျှော့ချရန်အတွက် လုံလောက်စွာ စီမံခန့်ခွဲရေး လိုအပ်ပါသည်။ ယာယီ ဓါတ်အားပေးစက်ရုံမှ ဖြစ်စေသော အမြင်ပိုင်းဆိုင်ရာ အနှောက်အယှက်များ နှင့် ကူးပြောင်းရေးလိုင်း သည် ပြဿနာရပ် မဖြစ်နိုင်ပါ။ အဘယ်ကြောင့်ဆိုသော် စီမံကိန်းတည်နေရာသည် မြေပြန့်ကာ သဘာဝအလှတရားများ မရှိပါ။ လေ့လာရေး တည်နေရာ တွင်း သိသာထင်ရှားသော ယဉ်ကျေးမှုဆိုင်ရာ နှင့် ဗိသုကာဆိုင်ရာထူးခြားသော နေရာများမရှိပါ။

က။ ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်း

(၁) အရင်းအမြစ်များ - စီမံကိန်းလည်ပတ်ရေး ကာလအတွင်း ယာယီဓါတ်အားပေး စက်ရုံသည် သဘာဝဓါတ်ငွေ့လောင်ကျွမ်းစေခြင်းဖြင့် လေထုညစ်ညမ်းစေသော ဓါတ်ငွေ့များကို အမြဲ ထုတ်လွှတ်နေပါသည်။ စံပြ သဘာဝဓါတ်ငွေ့သုံး ဓါတ်အားပေးစက်ရုံတစ်ခု အတွက် အဓိက လေထုညစ်ညမ်းစေသော ဓါတ်ငွေ့မှာ နိုက်ထရိုဂျင်အောက်ဆိုဒ် ဖြစ်ပါသည်။ ဆာလဖာဒိုင် အောက်ဆိုဒ် သည် ပုံမှန်အားဖြင့် ဆာလဖာပမာဏ အလွန်နည်းငယ်မှုကြောင့် သိသာမှုမရှိနိုင်ပါ။ ကာဗွန်ဒိုင်အောက်ဆိုဒ်သည် လေထုညစ်ညမ်းစေသော ဓါတ်ငွေ့မဟုတ်ပါ။ အဘယ်ကြောင့်ဆိုသော ၄င်းသည် ကမ္ဘာကြီးပူနွေးလာမှု ကြောင့် အာရုံထားမှု ရရှိလာသောကြောင့် ဖြစ်ပါသည်။

(၂) လက်ခံသူများ - လေ့လာရေး ဒေသအတွင်း ပုလဲဂူကျေးရွာ ရှိ လေထု အရည်အသွေး တိုင်းတာရေး ရုံး A1 နှင့် ပဂေါ်ဇွန်း ကျေးရွာ မှ A2 အပါအဝင် လက်ခံသူ (၃၄) စု အား တွေ့ရှိရပါသည်။

(၃) အရင်းအမြစ်များတွင် ညစ်ညမ်းမှု လျှော့ချရေး နည်းလမ်းများ - စီမံကိန်းမှ ဓါတ်ငွေ့ထုတ်သည့် မီးစက်အား ဖိအား အချိုးမြင့်မားသော LEAN BURN DESIGN အင်ဂျင်အား ရွေးချယ်ပါမည်။ ယင်းသည် ပိုမိုကောင်းမွန်သော စွမ်းဆောင်ရည် ၊ ထိရောက်သော လောင်စာအသုံးချမှု နှင့် နည်းငယ်သော ဟိုက်ထရိုကာဗွန် ထုတ်လုပ်မှုတို့ ပါဝင်ပါသည်။ နည်းငယ် နိုက်ထရိုဂျင် အောက်ဆိုဒ်ထုတ်လွှတ်သည့် နည်းပညာအား ဓါတ်ငွေ့ ထုတ်လွှတ်စက်မှ နိုက်ထရိုဂျင် အောက်ဆိုဒ် ထုတ်လွှတ်မှု လျှော့ချခြင်း အတွက် ထည့်သွင်း စဉ်းစားထားပါသည်။

(၄) ထိန်းချုပ်ရေး ပန်းတိုင် - ဓါတ်ငွေ့ထုတ်လွှတ်မှု ထိန်းချုပ်ရေး သည် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံအတွက် IFC ၏ EHS လမ်းညွှန်ချက်များ နှင့် ကိုက်ညီရန်ရည်ရွယ်ထားပါသည်။ ယင်းတို့တွင် (၁) ထုတ်လွှတ်မှု စံနှုန်း နှင့် (၂) ပတ်ဝန်းကျင်လေထု အရည်အသွေး စံနှုန်းတို့ပါဝင်ပါသည်။ ထို့အပြင် အတိုင်ပင်ခံ ပညာရှင်များသည် IFC မှ ကျင့်သုံးသည့် WHO ပတ်ဝန်းကျင် လေထု အရည်အသွေးအား ကိုက်ညီမှု ရှိမရှိ ပြင်ဆင် စစ်ဆေးသွားပါမည်။

(၅) ဓါတ်ငွေ့ ထုတ်လွှတ်မှု၏ သက်ရောက်မှုအား ခန့်မှန်းချက် - ဓါတ်အားပေးစက်ရုံမှ နိုက်ထရိုဂျင်အောက်ဆိုဒ် ထုတ်လွှတ်မှု နှင့်သက်ဆိုင်သော လေ့လာရေး ဧရိယာအတွင်း နိုက်ထရိုဂျင် အောက်ဆိုဒ် ၏ မြေပြင်အဆင့် ပမာဏအား AERMOD မော်ဒယ်နှင့် အခြေခံအချက်အလက်များ သုံးကာ ခန့်မှန်းသွားပါမည်။ အောက်ပါ နိဂုံးချုပ်သုံးသပ်ချက်များအား တွက်ချက်ခြင်းရလာဒ်များမှ ရရှိနိုင်ပါသည်။

စီမံကိန်းတည်နေရာတွင် တွေ့ရသော နောက်ခံအဆင့်ပမာဏ အပါအဝင် နိုက်ထရိုဂျင်ဒိုင် အောက်ဆိုဒ်၏ တစ်နာရီ တွင်း အမြင့်ဆုံးပတ်ဝန်းကျင်ရှိ ပမာဏမှာ တစ်ကုဗမီတာ တွင် (၅၀.၈၁) မိုက်ခရိုဂရမ် (AAQS ၂၅.၄၀ ရာခိုင်နှုန်း) ဖြစ်ပါသည်။ အားနည်းသော လက်ခံသူတွင် တွေ့ရသည့် နိုက်ထရိုဂျင်ဒိုင် အောက်ဆိုဒ်၏ တစ်နာရီ တွင်း ပမာဏအတွက် တန်ဖိုးမှာ တစ်ကုဗမီတာတွင် ၃၄.၀၄ မှ ၃၄.၅၆ မိုက်ခရိုဂရမ် (AAQS ၏ ၁၇.၀၂ မှ ၁၇.၂၈ ရာခိုင်နှုန်း) ဖြစ်ပြီးယင်းသည် အမြင့်ဆုံး ခွင့်ပြုနိုင်သော တစ်ကုဗမီတာတွင် ၂၀၀ မိုက်ကရိုမီတာထက် လျော့နည်းပါသည်။

စီမံကိန်းတည်နေရာတွင် တွေ့ရသော နောက်ခံအဆင့်ပမာဏ အပါအဝင် နိုက်ထရိုဂျင်ဒိုင် အောက်ဆိုဒ်၏ (၂၄) နာရီ တွင်း အမြင့်ဆုံးပတ်ဝန်းကျင်ရှိ ပမာဏမှာ တစ်ကုဗမီတာ တွင် (၁၉.၅၈) မိုက်ခရိုဂရမ် (AAQS ၁၃.၀၅ ရာခိုင်နှုန်း) ဖြစ်ပါသည်။ အားနည်းသော လက်ခံသူတွင် တွေ့ရသည့် နိုက်ထရိုဂျင်ဒိုင် အောက်ဆိုဒ်၏ တစ်နာရီ တွင်း ပမာဏအတွက် တန်ဖိုးမှာ တစ်ကုဗမီတာတွင် ၁၈.၀၀၂ မှ ၁၈.၀၄၃ မိုက်ခရိုဂရမ် (AAQS ၏ ၁၂.၀၂ မှ ၁၂.၀၃ ရာခိုင်နှုန်း) ဖြစ်ပြီးယင်းသည် အမြင့်ဆုံး ခွင့်ပြုနိုင်သော တစ်ကုဗမီတာတွင် ၁၅၀ မိုက်ကရိုမီတာထက် လျော့နည်းပါသည်။

စီမံကိန်းတည်နေရာတွင် တွေ့ရသော နှစ်စဉ် နိုက်ထရိုဂျင် ဒိုင်အောက်ဆိုဒ် ၏ အမြင်းဆုံး ပတ်ဝန်းကျင် ပမာဏ (အချက်အလက်များ မရရှိသောကြောင့် နှစ်စဉ် နိုက်ထရိုဂျင် ဒိုင်အောက်ဆိုဒ် ၏ နောက်ခံပမာဏ မပါဝင်ပါ) ။ နှစ်စဉ် နိုက်ထရိုဂျင် ဒိုင်အောက်ဆိုဒ် ၏ ပမာဏ သည် တစ်ကုဗမီတာ တွင် (၀.၅၇) မိုက်ခရိုဂရမ် (AAQS ၁.၄၃ ရာခိုင်နှုန်း) ဖြစ်ပါသည်။ အားနည်းသော လက်ခံသူတွင် တွေ့ရသည့် နိုက်ထရိုဂျင်ဒိုင် အောက်ဆိုဒ်၏ တစ်နာရီ တွင်း ပမာဏအတွက် တန်ဖိုးမှာ တစ်ကုဗမီတာတွင် ၀.၀၀၂ မှ ၀.၀၀၈၉ မိုက်ခရိုဂရမ် (AAQS ၏ ၀.၀၀၄ မှ ၀.၀၂၂၃ ရာခိုင်နှုန်း) ဖြစ်ပြီးယင်းသည် အမြင့်ဆုံး ခွင့်ပြုနိုင်သော တစ်ကုဗမီတာတွင် ၄၀ မိုက်ကရိုမီတာထက် လျော့နည်းပါသည်။

(၆) သက်ရောက်မှု လျော့ချရေး နည်းလမ်းများ - SCR ကဲ့သို့သော နည်းပညာအား အသုံးချကာ နိုက်ထရိုဂျင် ဒိုင်အောက်ဆိုဒ် ထက်မံလျော့ချရေး မလိုအပ်ပါ။

(၇) သက်ရောက်မှုများ၏ သိသာထင်ရှားမှု အကဲဖြတ်ခြင်း - သက်ရောက်မှုများမှာ သိသာမှု မရှိပါ။ ယင်းပြဿနာရပ်သည် ပြည်သူလူထု ၏ အာရုံအား ထည့်သွင်း

စဉ်းစားခြင်းဖြင့် ဓါတ်အားပေးစက်ရုံ၏ ပုံစံနှင့် လည်ပတ်ခြင်း တို့တွင် မြင့်မားသော ဦးစားပေးမှု ရှိပါသည်။

ခ။ ပတ်ဝန်းကျင် ဆူညံသံ -

(၁) အရင်းအမြစ်များ - အဓိက ဆူညံသံ အရင်းအမြစ်မှာ ဓါတ်ငွေ့အင်ဂျင် မီးစက်ဖြစ်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းမှု - ယာယီ ဓါတ်အားပေးစက်ရုံ၏ အနီးဆုံး လက်ခံသူမှာ ပဂေါ်ဖွန်း မူလတန်းကျောင်း နှင့် ပဂေါ်ဖွန်း ဘုန်းကြီးကျောင်း တို့ဖြစ်ပါသည်။

(၃) အရင်းအမြစ်များရှိ ဆူညံသံအဆင့်၏ ပမာဏ - စီမံကိန်း နှင့် ဆင်တူသော အဓိက ကိရိယာ နှင့် အထောက်အကူများ တပ်ဆင်ရေး မှ ဆူညံမှုအဆင့်၏ သတင်းအချက်အလက်များ အား အဓိကစာပိုဒ် ဇယား ၆.၅-၆ တွင် ဖော်ပြထားပါသည်။

(၄) ဆူညံသံ ထိန်းချုပ်ရေး ပန်းတိုင် - ဆူညံသံ ထိန်းချုပ်ရေး ပန်းတိုင်အား ဖြင့် နေ့ ဘက်အချိန် (၀၇.၀၀ မှ ၂၂.၀၀) နှင့် ညဘက်အချိန် (၂၂.၀၀ မှ ၀၇.၀၀) တို့တွင် (၇၀) dB (A) ထက် မကျော်လွန်ရပါ။ ယာယီဓါတ်အားပေး စက်ရုံ အပြင်ဘက် ပတ်ဝန်းကျင် ဆူညံသံ အဆင့်သည် (၈၅) dB (A) ထက်မကျော်လွန်ရပါ။

(၅) အရင်းအမြစ်များရှိ ဆူညံသံ လျှော့ချရေးဆိုင်ရာ နည်းလမ်းများ - EPC ကန်ထရိုက်တာသည် အထက်ပါ ဆူညံသံ ထိန်းချုပ်ရေး ပန်းတိုင် တွင် ဖော်ပြထားသည့်ထက် ယာယီဓါတ်အားပေး စက်ရုံ အပြင်ဘက် ပတ်ဝန်းကျင် ဆူညံသံ အဆင့်အားမကျော်လွန်စေရန် ဆောင်ရွက်ရပါမည်။ ယင်းအား အောက်ပါအတိုင်း အောင်မြင်စွာ ဆောင်ရွက်နိုင်ပါသည်။ (၁) စက်ရုံ၏ အခင်းအကျင်း နှင့် လက်ခံသူများ မှ အကာအဝေးကို ထည့်သွင်း စဉ်းစားကာ လုပ်ငန်းကိရိယာများ အား စဉ်းစားခြင်း (၂) ပုံစံများတွင် ဆူညံသံထိန်းချုပ်မှု အကောင်းဆုံး နည်းပညာများ ထည့်သွင်းခြင်း တို့ဖြစ်ပါသည်။

(၆) ခန့်မှန်းထားသော လက်ခံသူများတွင် ကျရောက်မည့် သက်ရောက်မှုများ - အနီးစပ်ဆုံး လက်ခံသူဖြစ်သော ပဂေါ်ဖွန်းကျေးရွာ တွင် သက်ရောက်မည့် ဆူညံမှု အဆင့်များမှာ ဆောက်လုပ်ရေးကာလ အတွင်း ဆူညံသံသက်ရောက်မှု လေ့လာခြင်းတွင် အသုံးပြုသည့် နည်းလမ်းကိုသာ သုံးပြီး တွက်ချက်ထားပါသည်။ နယ်စပ်ရှိ အမျိုးမျိုးသော ဆူညံမှု အဆင့်များ အတွက် တွက်ချက်ရရှိသော ရလာဒ်များ အား ဇယား ၆.၅.-၇ တွင် ဖော်ပြထားပါသည်။ အောက်ပါသုံးသပ်ချက်များ အား ပြုလုပ်ထားပါသည်။

၁)။ အနားပတ်ရှိ (၇၅) dB (A) ထိန်းချုပ်အဆင့်တွင် ဓါတ်အားပေးစက်ရုံသည် လက်ခံသူများ အပေါ်တွင် ကျရောက်မှု အား (၄၅.၃) dB (A) အထိ တိုးမြင့်ပါမည်။ နောက်ခံ ဆူညံမှု အဆင့် (၆၁.၅) dB (A) အပါအဝင်တွင် ဓါတ်အားပေးစက်ရုံ၏ သက်ရောက်မှုသည် (၂၄)နာရီ ဆူညံမှု ထိတွေ့ခြင်း အတွက် စုစုပေါင်း ဆူညံမှု အဆင့် (၆၁.၆) dB (A) နှင့် ထိန်းချုပ်မှု ပန်းတိုင် (၇၀) dB (A) ဟု တွေ့ရှိရပါသည်။

၂)။ အနားပတ်ရှိ (၇၅) dB (A) ထိန်းချုပ်အဆင့်တွင် ဓါတ်အားပေးစက်ရုံသည် လက်ခံသူများ အပေါ်တွင် နောက်ခံ တစ်နာရီချင်းဆီတွင် ဆူညံမှု

အဆင့်သည် (၀.၆၃) dB (A) ထက်မကျော်လွန်ပါ။ ထို့ကြောင့် ဆူညံမှုထိန်းချုပ်ရေး ပန်းတိုင်ဖြစ်သော (၃) dB (A)အောက်ဟုသည့် အဆင့်အား ကိုက်ညီပါသည်။

၃)။ စံနှုန်းသည် (၈၀) dB (A) အဆင့်တွင်ရှိပါသည်။ ထို့ကြောင့် (၇၅) dB (A) အဆင့်တွင် ထိန်းချုပ်မှုအဆင့်ထားရှိခြင်းသည် လုံခြုံစိတ်ချရသော (၅) dB (A) ခန့် အားပေးနိုင်ပါမည်။

(၇) လျှော့ချရေးနည်းလမ်းများ - အခြားထပ်မံ လျှော့ချရေး နည်းလမ်းများ မလိုအပ်ပါ။

(၈) ထိခိုက်သက်ရောက်မှု သိသာထင်ရှားမှု အကဲဖြတ်ခြင်း - ဆူညံမှုထိန်းချုပ်ရေးသည် ယာယီဓါတ်အားပေး စက်ရုံ ၏ ပုံစံပြုလုပ်ခြင်း နှင့် လည်ပတ်ခြင်း တို့တွင် မြင့်မားသော ဦးစားပေးမှု ရပါမည်။

ဂ။ **စွန့်ပြစ်အရည်များ -**

(၁) အရင်းအမြစ်များ - ဓါတ်အားပေးစက်ရုံ ၏ လုပ်ငန်းလည်ပတ်ရေးကာလ တွင် ထွက်ရှိသော စွန့်ပစ်အရည်များမှာ အိမ်တွင်းမှ မိလ္လာအညစ်အကြေးများ နှင့် စက်ရုံမှ ဆေးကြောသည့် အရည်များ ဖြစ်ပါသည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - ယင်းတွင် စီမံကိန်းတွင်း လက်ခံသူ မရှိပါ။

(၃) ခန့်မှန်းရရှိသော စွန့်ပြစ်အရည် ပမာဏ - လူ (၁၂) ယောက်မှ အိမ်တွင်း မိလ္လာစွန့်ပစ်ပစ္စည်းများ ၏ စုစုပေါင်း BOD ဝန်မှာ တစ်ရက်လျှင် (၀.၆) ကီလိုဂရမ် ရှိပါသည်။ ယင်းတို့၏ သက်ရောက်မှုမှာ အလွန် ပမာဏ နည်းပါသည်။

(၄) အရင်းအမြစ်တွင် စွန့်ပြစ်အရည်များ လျှော့ချခြင်းဆိုင်ရာ နည်းလမ်းများ - ဝန်ထမ်းများ၏ စာသုံးခြင်းထွက်သော စွန့်ပစ်ပစ္စည်းများ အား စီမံကိန်းတည်နေရာတွင်း သို့လှောင်ကန်များ ဖြင့် ဓါတ်သတ္တုပြုပြင်ပြောင်းလဲခြင်း ပြုလုပ်ကာ ယင်းဓါတ်သတ္တုပြုပြင်ပြောင်းလဲထားသော စွန့်ပစ်အရည်များအား ထပ်ဆင့်ကန်ထရိုက်တာမှ ပြင်ပသို့ စွန့်ထုတ်မည် ဖြစ်ပါသည်။ စွန့်ပစ်အရည်များအား အနီးပတ်ဝန်းကျင်သို့ စွန့်ပစ်ခြင်းမရှိပါ။

(၅) ထိန်းချုပ်ခြင်း ပန်းတိုင် - ဓါတ်သတ္တုပြောင်းလဲထားသော စွန့်ပစ်အရည်အများသည် စံနှုန်း ကန့်သတ်ချက်နှင့် ကိုက်ညီသွားပါမည်။ (IFC/ WB သဘာဝပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် လုံခြုံရေး လမ်းညွှန်ချက်များ)

(၆) ခန့်မှန်းရရှိသော လက်ခံသူများ အပေါ်တွင် ကျရောက်မည့် သက်ရောက်မှုများ - ဓါတ်သတ္တု ပြုပြင်ပြောင်းလဲခြင်းမရှိပဲနှင့် ပင်လျှင် အိမ်တွင်းစွန့်ပစ် အညစ်အကြေးများသည် ထိခိုက်သက်ရောက်မှု ရှိကြောင်းမတွေ့ ရပါ။

(၇) စွန့်ပြစ်အရည်များအား စီမံခန့်ခွဲရေး နည်းလမ်းများ - EPC ကန်ထရိုက်တာသည် အောက်ပါပုံစံ သဘောတရားများပေါ်တွင် အခြေခံကာ စွန့်ပစ်အရည်များအား ဓါတ်သတ္တုပြုပြင်ပြောင်းလဲခြင်း အထောက်အကူများ၏ အသေးစိတ် ပုံစံကို ပြင်ဆင်ပါမည်။ ယင်းတို့မှာ ဆီများပါဝင်ညစ်ညမ်းနေသော ဆေးကြောခြင်းမှ ထွက်ရှိသည့် အရည်များအား ဆီခွဲထုတ်စက်တွင် ယင်းဆီများအား ခွဲထုတ်ခြင်းကို ပြုလုပ်သွားပါမည်။ အိမ်တွင်းမိလ္လာအညစ်အကြေးများအား တိုင်ကီအတွင်း သိုလှောင်ကာ ပြင်ပသို့စွန့်ထုတ်ပါမည်။ ရေထုတ်တူးမြောင်း စနစ်အား

မြေပေါ်တွင်တိုက်စားစီးဆင်းလာသော ရေများအား စုဆောင်းရန်အတွက် ထောက်ပံ့သွားမည် ဖြစ်ပြီး ထိန်းသိမ်းရေး ကန်သို့ ထုတ်လွှတ်သွားပါမည်။

(၈) ထိခိုက်သက်ရောက်မှု၏ သိသာထင်ရှားမှုအား အကဲဖြတ်ခြင်း - စွန့်ပစ်အရည်များအား စီမံခန့်ခွဲမှု ပြဿနာရပ်သည် လုပ်ငန်းလည်ပတ်ရေးကာလအတွင်း အလည်အလတ် ဦးစားပေး ရှိသင့်ပါသည်။

ဃ။ ယာဉ်ကြောပိတ်ဆို့မှု -

(၁) အရင်းအမြစ်များ - ယာယီဓါတ်အားပေးစက်ရုံ၏ လည်ပတ်ခြင်းသည် သဘာဝဓါတ်ငွေ့ အရည် လောင်စာ သယ်ယူပို့ဆောင်ရန် လိုအပ်ပါမည်။ အကြိုးဆက်အားဖြင့် မော်တော်ယာဉ် အရည်အတွက်သည် နယ်စပ်မှ ဓါတ်အားပေးစက်ရုံ အထိ ITD အဓိကလမ်းမကြီး အပေါ်တွင် တိုးမြင့်စေပါမည်။

(၂) လက်ခံသူများ၏ အားနည်းချက် - ယင်းလမ်းမကြီးအား ITD မှ လောင်စာများအား ထိုင်းနိုင်ငံမှ စီမံကိန်း ဧရိယာအထိသယ်ယူရန် အတွက် အဓိက အသုံးပြုသွားပါမည်။

(၃) ယာဉ်အစီးအရေအတွက်အား ခန့်မှန်းခြင်း - ယင်း သဘာဝဓါတ်ငွေ့ရည် ပမာဏအား ကြီးမားသော ကုန်တင်ယာဉ် (၄) စီး နှင့် သယ်ယူပို့ဆောင်နိုင်ပြီး ယင်း ကုန်တင်ယာဉ်တစ်စုစီ၏ ကုန်သည်နိုင်စွမ်းအားသည် (၄၀) ကုဗမီတာ ရှိပါသည်။ ထို့အပြင် ကုန်တင်ယာဉ်ခရီး အရေအတွက်အား အပြင်လမ်း နှင့် အတွင်းလမ်းဟု တွက်ချက်ရပါမည်။ ထို့ကြောင့် ကုန်တင်ယာဉ်ခရီး အရေအတွက်သည် တစ်ရက်လျှင် ခရီး (၈) ခု ခန့် ရှိပါမည်။

(၄) ယာဉ်ခရီး အရေအတွက်အား လျှော့ချခြင်း နည်းလမ်းများ - သဘာဝဓါတ်ငွေ့ရည် လောင်စာ အလုံအလောက်ရှိပါက တစ်ရက်လျှင် ဖြတ်သန်းသွားလာသော ကုန်တင်ယာဉ်ခရီး အရေအတွက်အား ခရီးစဉ် (၁)ခု အထိ လျှော့ချနိုင်ပါသည်။

(၅) ယာဉ်ခရီးလမ်း စီမံခန့်ခွဲရေး ပန်းတိုင် - သတ်မှတ်ထားသော သက်ရောက်မှု ဧရိယာအတွင်း လုပ်ငန်းလည်ပတ်ရေး မော်တော်ယာဉ်များ နှင့် သက်ဆိုင်သည့် ရုတ်တရက်ထိခိုက်မှုများ မရှိစေရပါ။

(၆) ခန့်မှန်းထားသော သက်ရောက်မှုများ - သဘာဝဓါတ်ငွေ့ရည်လောင်စာ သယ်သူပို့ဆောင်ရေးသည် လက်ရှိမော်တော်ယာဉ်ဝန်ထက် တစ်နာရီ လျှင် (၂.၁) PCU ခန့် တိုးမြင့်နိုင်ပါသည်။ TC1 ရှိ V/C ratio သည် အဓိကစာပိုဒ် ၏ ဇယား ၆.၅-၈ တွင် ဖော်ပြထားပါသည်။

(၇) စီမံခန့်ခွဲရေး နည်းလမ်းများနှင့် ထိခိုက်သက်ရောက်မှု လျှော့ချခြင်းဆိုင်ရာ နည်းလမ်းများ - ကျရောက်ရန် အလားအလာရှိသော လုပ်ငန်းလည်ပတ်ရေးသုံး မော်တော်ယာဉ်တို့မှ ထိခိုက်သက်ရောက်မှုများ အား ရှောင်ရှားရန်၊ လျှော့ချရန် နှင့် စီမံခန့်ခွဲရန် အတွက် ဆီလျော်သော လက်တွေ့ကျသော နည်းလမ်းများအား လုပ်ဆောင်ပါမည်။ စီမံကိန်း၏ တည်နေရာအားလုံး အနီးရှိ လမ်းအသုံးပြုသူများအတွက် လုံခြုံမှုအား ထိန်းသိမ်းခြင်းကို ပြုလုပ်ပါမည်။ လုပ်ငန်းနေရာများ နှင့် အခြားစီမံကိန်း၏ လုပ်ငန်းများအတွက် မော်တော်ယာဉ်ပိုင်းဆိုင်ရာ စီမံကိန်း နည်းလမ်းများ အား လက်တွေ့ဖော်ဆောင်ခြင်းကို လည်း ပြုလုပ်သွားပါမည်။ လုပ်ငန်းလည်ပတ်ရေး တည်နေရာများအနီးအနား ရှိ မော်တော်ယာဉ်အသွားအလာအား စောင့်ကြည့်ရေး နှင့် ယင်းတို့အား

ပြန်လည်ပြင်ဆင်ခြင်း လုပ်ငန်းစဉ်များအား ဆောင်ရွက်သွားပါမည်။ သယ်ယူပို့ဆောင်ရေးကာလအတွင်း လမ်းဆုံအတွင်း ယာဉ်ကြောပိတ်ဆိုရေး အား ထိန်းချုပ်ရန်အတွက် ယာဉ်ထိန်းရဲနှင့် အခြားသက်ဆိုင်သော အရာရှိများအား ခန့်အပ်ခြင်းတို့ကိုပါ ပြုလုပ်ပါမည်။

(၈) သက်ရောက်မှုများ၏ သိသာထင်ရှားမှု အကဖြတ်ခြင်း - မော်တော်ယာဉ် စီမံခန့်ခွဲရေးသည် မြင့်မားသော ဦးစားပေးမှု ရရှိသင့်ပါသည်။

င။ လုပ်ငန်းခွင်ဆိုင်ရာ လုံခြုံရေးနှင့် ကျန်းမာရေး -

(၁) သက်ဆိုင်သော ကဏ္ဍများ - ယင်းတို့မှာ အမျိုးမျိုးသော လုပ်ငန်းရပ်များ တွင် လုပ်ငန်းလည်ပတ်ရေးတွင် သက်ဆိုင်ရာ ဖြစ်လေ့ဖြစ်ထရှိသော ပြဿနာရပ်များ ဖြစ်ကြပါသည်။ သို့သော်လည်း ၎င်းတို့၏ သဘာဝသည် လုပ်ငန်းအမျိုးအစားအပေါ်တွင် မူတည်ပါသည်။ OSH စီမံခန့်ခွဲမှုစနစ် နှင့် တည်ထောင်ရန် လိုအပ်သည့် လုပ်ငန်းစဉ်များ သည် အောက်ပါပြဿနာရပ်များကို ထည့်သွင်းစဉ်းစားသင့်ပါသည်။ ယင်းတို့မှာ အပူဓါတ်၊ ဆူညံသံ၊ သတ်မှတ်နေရာ အကျယ်အဝန်း နှင့် လျှပ်စစ်မီး အန္တရာယ်များ စသည်တို့ဖြစ်ပါသည်။

(၂) စီမံခန့်ခွဲရေး နည်းလမ်းများ

စက်ရုံပုံစံနှင့် ကိရိယာများအားရွေးချယ်ခြင်း

- OSH ၏ ယာယီ ဓါတ်အားပေးစက်ရုံ ပုံစံ နှင့် သက်ဆိုင်ရာ အထောက်အကူပြုဝန်ဆောင်မှုများ မှ EPC ကန်ထရိုက်တာ၏ အားလုံးသောလိုအပ်ချက်များ အား EPC စာချုပ်တွင် ထည့်သွင်းခြင်း
- EPC ကန်ထရိုက်တာသည် စီမံကိန်း၏ ယာယီဓါတ်အားပေးစက်ရုံ နှင့် သီးခြားသက်ဆိုင်သော စီမံကိန်းတင်သွင်းသူ၏ OHS စီမံခန့်ခွဲရေး အစီအစဉ် နှင့် လက်တွေ့အကောင်အထည်ဖော်ရေး လုပ်ငန်းစဉ်များ အတွက် နှင့် ပိုင်ရှင်၏ OSH ဥပဒေ နှင့် လုပ်ငန်းစဉ်များ အား ထည့်သွင်းစဉ်းစားခြင်းအတွက် ကြိုတင်ပြင်ဆင်ရန် လိုအပ်ပါမည်။

စက်ရုံစတင်တည်ဆောက်ရေးအတွက် လိုအပ်ချက်များ ပြင်ဆင်အသိမှတ်ပြုရေးကာလ - ယင်းကာလအတွင်း EPC ကန်ထရိုက်တာသည် လိုအပ်သော လုပ်ငန်းနေရာချထားရေး နှင့် ပိုင်ရှင်၏ ဓါတ်အားပေးစက်ရုံ လည်ပတ်ရေး အဖွဲ့အား လေ့ကျင့်သင်တန်းပေးရေးတို့အား ဆောင်ရွက်ရန်လိုအပ်ပါမည်။

လုပ်ငန်းလည်ပတ်ရေးကာလ - EHS မန်နေဂျာသည် သက်ဆိုင်ရာ လိုအပ်ချက်များနှင့် အညီ OSH လုပ်ငန်းစဉ်များ အား လက်တွေ့အကောင်အထည်ဖော်ဆောင်ရာတွင် စောင့်ကြည့်ရေးအား ပြုလုပ်သွားပါမည်။

စ။ လူထု ကျန်းမာရေး၊ လုံခြုံမှုရှိရေးနှင့် လုံခြုံရေး

(၁) ပြဿနာရပ် - လူထုကျန်းမားရေးနှင့် လုံခြုံမှုရှိရေးအတွက် စွမ်းဆောင်ရည် စံနှုန်း နံပတ် (၄) သည် လူထု ကျန်းမာရေး၊ လုံခြုံမှုရှိရေး နှင့် သက်ဆိုင်သော အောက်ပါ ကဏ္ဍ (၅) ရပ်အား ခွဲခြားထားပါသည်။

(၁) အဆောက်အဦး နှင့် ကိရိယာ ပုံစံ နှင့် ယင်းနှင့် ပက်သက်သော လုံခြုံရေး

(၂) အန္တရာယ်ဖြစ်စေသော ပစ္စည်းများအား စီမံခန့်ခွဲရေး နှင့် ယင်းနှင့်ပတ်သက်သော လုံခြုံရေး

(၃) ဂေဟစနစ်ဆိုင်ရာ ဝန်ဆောင်မှုများ

(၄) လူထု၏ ရောဂါအန္တရာယ် ဖြစ်ပေါ်နိုင်မှု

(၅) အရေးပေါ် ကြိုတင်ပြင်ဆင်မှု နှင့် တုံ့ပြန်နိုင်မှု

(၂) ဆန်းစစ်အကဲဖြတ်မှု

အဆောက်အဦးနှင့် ကိရိယာပုံစံနှင့် ယင်းနှင့်ပတ်သတ်သော လုံခြုံရေး - အဓိက ပြဿနာရပ်မှာ ဓါတ်ငွေ့ထောက်ပံ့ရေးစနစ် နှင့် ဓါတ်တာဘိုင် လည်ပတ်ရေးတို့နှင့် ဆက်နွယ်သော မီးဘေး နှင့် ပေါက်ကွဲခြင်းဆိုင်ရာ အန္တရာယ်များ ဖြစ်ပါသည်။

အန္တရာယ်ဖြစ်စေသော ပစ္စည်းများအား စီမံခန့်ခွဲရေးနှင့် ယင်းနှင့် ပတ်သက်သော လုံခြုံရေး - ဓါတုပစ္စည်းများ နှင့် ဆီများသည် လည်းကောင်တို့၏ အသုံးချမှု သဘာဝအား ထည့်သွင်းစဉ်းစားလျှင် ပမာဏ ကြီးမားစွာ သိုလှောင်မှုပြုမည် မဟုတ်ပါ။ ယင်းအန္တရာယ်ရှိသော ပစ္စည်းများ အား လူထုမှ ထိရောက်နိုင်မှု မှာ အလွန်ပင်နည်းပါးပါသည်။

ဂေဟစနစ်ဆိုင်ရာ ဝန်ဆောင်မှုများ - ရေထု အရည်အသွေးပေါ်တွင် သက်ရောက်မှုမှာ လျစ်လျူရှုနိုင်ပါသဖြင့် ဂေဟစနစ်ဆိုင်ရာ ဝန်ဆောင်မှုများ သည် ပြဿနာရပ် မဖြစ်နိုင်ပါ။

လူထု၏ ရောဂါအန္တရာယ် ဖြစ်ပေါ်နိုင်မှု - နည်းငယ်သော ဝန်ထမ်းများသည် ဒေသခံလူထုအပေါ်သို့ တစုံတခုသော ကျန်းမာရေး အန္တရာယ်အား မဖြစ်ပေါ်စေနိုင်ပါ။

အရေးပေါ် ကြိုတင်ပြင်ဆင်မှု နှင့် တုံ့ပြန်နိုင်မှု - မီးဘေး နှင့် ဓါတ်ငွေ့ပေါက်ကွဲရေးတို့သည် ယာယီဓါတ်အားပေးစက်ရုံလည်ပတ်ရေး ၏ အဓိက အန္တရာယ် ပြဿနာရပ်များ ဖြစ်သည်ဟု သုံးသပ်နိုင်ပြီး အရေးပေါ် ကြိုတင်ပြင်ဆင်မှု နှင့် တုံ့ပြန်နိုင်မှု သည် တည်ထောင်ရန်လိုအပ်သော လိုအပ်လာလျှင် အစဉ်သင့်ဖြစ်ရန် လိုအပ်သော အဓိက အန္တရယ်စီမံခန့်ခွဲရေး နည်းလမ်းများထဲမှ တစ်ခု ဖြစ်ပါသည်။

ဆ။ မြေအောက်ရေ တူးဖော်သုံးစွဲခြင်း -

(၁) ပြဿနာရပ် - လုပ်ငန်းလည်ပတ်ရေးကာလ အတွင်း ယာယီဓါတ်အားပေးစက်ရုံသည် လုပ်ငန်းတွင်အသုံးပြုရန်အတွက် ရေသန့် တစ်ရက်လျှင် (၁.၈) ကုဗမီတာ ခန့် လိုအပ်ပါမည်။

(၂) ထောက်ခံချက်ရရှိထားသော လုပ်ငန်းရပ်များ - ယာယီဓါတ်အားပေး စက်ရုံမှ လိုအပ်မည့် မြေအောက်ရေတူးဖော်မှု ပမာဏအား ထည့်သွင်းစဉ်းစားခြင်းဖြင့် အနီးအနားရှိ ရေတွင်းများအား ထိခိုက်သက်ရောက်မှုရှိမှု နည်းပါးပါမည်။ သို့သော်လည်း စီမံကိန်းတင်သွင်းသူသည် စမ်းသပ်ရေတွင်းများအား ရေစုပ်ယူများ စမ်းသပ်ခြင်း အပါအဝင် မြေအောက်ရေအား စမ်းသပ်ရေးကို စတင်လုပ်ကိုင်ဆောင်ရွက်သင့်ပါသည်။

ဇ။ လူထုဖွံ့ဖြိုးတိုက်တက်ရေး အထောက်အပံ့များ

(၁) ပြဿနာရပ်များ - လုပ်ငန်းလည်ပတ်ရေးကာလအတွင်း အနီးအနားရှိ ပြည်သူလူထုအပေါ်တွင် ကျရောက်နိုင်သည့် ယာယီဓါတ်အားပေးစက်ရုံ၏ အပြုသဘော နှင့် အဖျက်သဘောဆိုင်ရာ သက်ရောက်မှုများ သည် ဆောက်လုပ်ရေးကာလတွင် ကြုံတွေ့ရမည့် သက်ရောက်မှုများအောက် အလွန်နည်းပါးပါမည်။ ထို့ကြောင့် လုပ်ငန်းလည်ပတ်ရေး ကာလအတွင်း စီမံကိန်း၏ အပြုသဘောဆိုင်ရောက် အကျိုးသက်ရောက်မှုများသာလျင် စီမံကိန်း တင်သွင်းသူ၏ ပူးပေါင်းလူထုတာဝန်ယူမှု (CSR) အောက်မှ လူထုဖွံ့ ဖြိုးတိုးတက်မှု ထောက်ပံ့ရေးအစီအစဉ်မှ တွေ့ ရပါမည်။

(၂) ထောက်ခံချက်ရရှိထားသော လုပ်ငန်းရပ်များ - လူထုဆွေးနွေးတိုင်ပင်ရေး ညီလာခံများတွင် ပါဝင်တက်ရောက်သူများသည် လျှပ်စစ်မီးထောက်ပံ့ရေး၊ သောက်သုံးရေထောက်ပံ့ရေး၊ လမ်းပန်းဆက်သွယ်ရေး နှင့် ပညာရေးဆိုင်ရာ အထောက်အကူများအား တောင်းဆိုခဲ့ကြပါသည်။ စီမံကိန်းတင်သွင်းသူသည် ယင်းတို့၏ လိုအပ်ချက်များနှင့် ကိုက်ညီစွာ လူထုအထောက်အပံ့ပေးအတွက် CSR (ပူးပေါင်းလူထုတာဝန်ယူမှု) အားထည့်သွင်းစဉ်းစားသင့်ပါသည်။

(၃) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အန္တရာယ်စီမံခန့်ခွဲမှု - လုပ်ငန်းလည်ပတ်ရေးကာလ

က။ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ အန္တရာယ်စီမံခန့်ခွဲမှုအပိုင်း

လုပ်ငန်းလည်ပတ်ရေးကာလအတွင်း သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ အန္တရာယ်စီမံခန့်ခွဲမှု အား EHS အဖွဲ့ မှ ယာယီဓါတ်အားထုတ်လုပ်ရေးစက်ရုံ တစ်ခုလုံး အန္တရယ်စီမံခန့်ခွဲရေး အစိတ်အပိုင်းအဖြစ် ဆောင်ရွက်သွားပါမည်။ ပတ်ဝန်းကျင် အန္တရာယ်လျှော့ချရေး နည်းလမ်းများအား ယာယီဓါတ်အားထုတ်လုပ်ရေးစက်ရုံ အန္တရယ်စီမံခန့်ခွဲရေး အတွက် လုပ်ငန်းစဉ်များ နှင့် နယ်ပယ်များအတွင်း ယာယီ ဓါတ်အားပေးစက်ရုံ စီမံခန့်ခွဲရေးအဖွဲ့ မှ ဆောင်ရွက်သွားပါမည်။

ခ။ အန္တရာယ် ခွဲခြားခြင်း

စမ်းသပ်ရေးကာလ နှင့် လုပ်ငန်းလည်ပတ်ရေးကာလများတွင် အဓိက ပြဿနာရပ်မှာ ဖြစ်ပေါ်လာနိုင်သော အန္တရာယ်ရှိသည့် အခြေအနေရပ်များ ဖြစ်ပြီး ယင်းတို့သည့် ယာယီဓါတ်အားပေးစက်ရုံအား ပြင်းထန်စွာထိခိုက်စေပြီး အနီးအနားရှိလူထု နှင့် လုပ်ငန်းလည်ပတ်ရာတွင် ပါဝင်သော ပုဂ္ဂိုလ်များ အား ထိခိုက်မှု နှင့် သေကြေပျက်စီးမှုများ အထိဖြစ်ပေါ်စေပေါ်စေပါသည်။

ဓါတ်ငွေ့ ယိုစိမ့်ခြင်း- စက်ပစ္စည်းပိုင်းဆိုင်ရာ မှားယွင်းမှုများ၊ လုပ်ငန်းလည်ပတ်ခြင်း နှင့် ထိန်းသိမ်းရေးလုပ်ငန်းစဉ်များ မှ အမှားများ၊ သဘာဝ အဖြစ်အပျက်များ၊ ပေါက်ကွဲခြင်း သို့ ယာယီဓါတ်အားပေးစက်ရုံ၏ အခြားအစိတ်အပိုင်းများမှ မီးများထွက်ရှိမှု စသည်တို့၏ အကျိုးဆက်အားဖြင့် ဓါတ်ငွေ့ ယိုစိမ့်ခြင်းသည် အမြဲလိုလိုဖြစ်ပေါ်တက်ပါသည်။

အတွင်းပိုင်းဆိုင်ရာ ပေါက်ကွဲမှု- အတွင်းပိုင်းဆိုင်ရာ ပေါက်ကွဲမှု သည် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံအတွက် အသိအမှတ်ပြုထားသော အန္တရာယ် အဖြစ်အပျက် တစ်ခုဖြစ်ပြီး ယင်းတို့၏ အရင်းအမြစ်မှာ မီးတောက်စနစ်၊ ဓါတ်ငွေ့ အသုံးပြုစက် နှင့် မမှန်ကန်သော စတင်ရေး လုပ်ငန်းစဉ်များ ဖြစ်ပါသည်။

အခြားအန္တရာယ်များတွင် သဘာဝပတ်ဝန်းကျင် လိုအပ်ချက်ဆိုင်ရာ သဘောတူညီမှုနှင့် ကိုက်ညီမှုမရှိသော ပြဿနာရပ်များ ဖြစ်ပါသည်။ ယင်းတို့မှာ (၁) ဓါတ်ငွေ့ထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်း နှင့် (၂) စွန့်ပစ်အဂုည်များ စီမံခန့်ခွဲရေး တို့နှင့် သက်ဆိုင်ရာများ ဖြစ်ကြပါသည်။

ဂ။ အန္တရာယ်များ ခွဲခြားစိတ်ဖြာခြင်း

လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ အန္တရာယ်များ- ပြင်းထန်သော လွဲမှားမှုများ ဖြစ်ပေါ်လာပါက ထိခိုက်မှုသည် ယာယီဓါတ်အားပေးစက်ရုံ တည်နေရာအတွင်းတွင် ဖြစ်ပြီး အနီးဆုံး လူထုမှာ မီတာ (၁၀၀၀) အကွာအဝေးတွင်း ရှိပါသည်။ အမျိုးမျိုးသော ဓါတုနှင့် ယာယီဓါတ်အားပေးစက်ရုံ မှားယွင်းမှုများအား လေ့လာခြင်းများတွင် အောက်ပါ ဖြစ်ပေါ်စေသော အကြောင်းအရာများ သို့ အရင်းအမြစ်များကို တွေ့ရှိရပါသည်။ ယင်းတို့မှာ (၁) မှားယွင်းသော ပုံစံများ (၂) ချို့ယွင်းနေသော ကိရိယာ နှင့် မသင့်လျော်သော ကိရိယာတပ်ဆင်ခြင်း နှင့် တည်ဆောက်ခြင်း (၃) လိုလောက်မှုမရှိသော သို့ မသင့်လျော်သော လုပ်ငန်းလည်ပတ်ခြင်း နှင့် ထိန်းသိမ်းရေးလုပ်ငန်းစဉ်များ နှင့် (၄) လုပ်ငန်းလည်ပတ်ခြင်း နှင့် ထိန်းသိမ်းရေးလုပ်ငန်းစဉ်များ တွင် လူတို့၏ အမှားများ တို့ဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ အန္တရာယ်များ ၏ ဖြစ်ပေါ်နိုင်မှုသည် အောက်ပါနည်းလမ်းများအတိုင်း လုပ်ဆောင်ပါက လျော့နည်းသက်သာမည် ဖြစ်ပါသည်။ ယင်းတို့မှာ (၁) နည်းပညာပိုင်းဆိုင်ရာ တိကျရှင်းလင်းစွာ ဖော်ပြခြင်း နှင့် လုပ်ငန်းဆောင်ရွက်မှု လိုအပ်ချက်များအား တချုပ်တွင် ရှင်းလင်းစွာ ဖော်ပြထားခြင်း (၂) ကိရိယာပံ့ပိုးသူများ အနေဖြင့် လုံခြုံဆိုင်ရာ ကောင်းမွန်သောမှတ်တမ်းထားရှိမှု ရှိခြင်း (၃) အနီးကပ်ကြီးကြပ် ကွပ်ကဲခြင်း နှင့် တပ်ဆင်ခြင်း နှင့် တည်ဆောက်ရေးတို့၏ အရည်အသွေးထိန်းချုပ်မှု ထားရှိခြင်း (၄) လုပ်ငန်းဆောင်ရွက်သူများအား ခိုင်မာသော လေ့ကျင့်ရေးများ ပေးခြင်း (၅) အားလုံးလုပ်ငန်းလည်ပတ်ရေး နှင့် ပြုပြင်ထိန်းသိမ်းရေး တို့အတွက် ရှင်းလင်း ကာ လုံလောက်သော လည်ပတ်ရေးဆိုင်ရာ လုပ်ငန်းစဉ်များ ဖော်ဆောင်ရေး (၆) ထိရောက်မှုရှိသော စက်ရုံလုံခြုံရေး စီမံခန့်ခွဲမှု တို့ဖြစ်ပါသည်။

ဓါတ်ငွေ့ ထုတ်လွှတ်ခြင်း ထိန်းချုပ်မှု အန္တရယ်များ- စီမံကိန်း၏ ဓါတ်အားပေးစက်ရုံသည် နိုက်ထရိုက်၊ နှင့် ဆာလဖာဒိုင် အောက်ဆိုဒ်ပမာဏ အနည်းငယ်ကိုသာ ထုတ်လွှတ်ပါသည်။ ဓါတ်ငွေ့ထုတ်လွှတ်ရေး ထိန်းချုပ်မှု လိုအပ်ချက်ဆိုင်ရာတို့နှင့် ကိုက်ညီမှုမရှိမှု ၏ ဖြစ်ပွားနိုင်မှုအခြေအနေသည် နိမ့်ပါးပါသည်။

စွန့်ပစ်အရည်များ ထိန်းချုပ်မှု အန္တရယ်- ယာယီဓါတ်အားပေးစက်ရုံ လည်ပတ်ရေးတွင် ထုတ်လွှတ်သော အညစ်အကြေးအရည်များအား ဓါတ်သတ္တုပြောင်းလဲမှု ပြုလုပ်ခြင်း မပါရှိဘဲနှင့် ထုတ်လွှတ်ခြင်းတွင် အနီးအနားရှိ မြစ်ချောင်းအင်းအိုင်များအတွင်း အဆိပ်အတောက် ဖြစ်စေသော အညစ်အကြေးပမာဏသိသာမှု မရှိသော ပမာဏ ကိုသာ ဖြစ်ပေါ်စေပါသည်။ စွန့်ပစ်အရည်များ ထိန်းချုပ်မှု လိုအပ်ချက်များနှင့် ကိုက်ညီမှုမရှိမှု ၏ ဖြစ်ပွားနိုင်မှုမှာ နိမ့်ပါးပါသည်။

ဃ။ အန္တရာယ် အမျိုးအစားခွဲခြားခြင်း

လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ အန္တရာယ်- လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ အန္တရာယ်များသည် ယာယီဓါတ်အားပေးစက်ရုံ ပေါ်တွင် ပြင်းထန်သော သက်ရောက်မှုများ ရှိနိုင်ပြီး ယင်းတို့၏ ဖြစ်ပွားနိုင်မှုမှာ နိမ့်ကျပါသည်။ ထို့ကြောင့် ယင်းတို့အား အလည်အလတ်အဆင့် အန္တရာယ်အဖြစ် အမျိုးအစား ခွဲခြားနိုင်ပါသည်။

ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်း ထိန်းချုပ်မှု- ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်း ထိန်းချုပ်မှု လိုအပ်ချက်များ နှင့် ကိုက်ညီမှု နှင့် သက်ဆိုင်သော အန္တရာယ်အား အသေးစား သို့ သိသာမှုမရှိသော အန္တရယ်အဖြစ်သတ်မှတ်ထားပါသည်။

စွန့်ပစ်အရည်များ ထိန်းချုပ်မှု အန္တရယ်- စွန့်ပစ်အရည်များ ထိန်းချုပ်မှု လိုအပ်ချက် ဆိုင်ရာ ကိုက်ညီမှု နှင့် သက်ဆိုင်သော အန္တရာယ်အား အသေးစား အန္တရာယ်ဟု သတ်မှတ်ထားပါသည်။

င။ အန္တရာယ်လျှော့ချရေး နည်းလမ်းများ

လုပ်ငန်းလည်ပတ်ရေးကာလ - လုပ်ငန်းလည်ပတ်ရေး အန္တရာယ်များအား စီမံခန့်ခွဲရေးအတွက် နည်းလမ်းများအား အဖွဲ့နှစ်ဖွဲ့ ခွဲခြားနိုင်ပါသည်။ ပထမအဖွဲ့သည် မှားယွင်းသော ပုံစံများ နှင့် ကိရိယာချို့ယွင်းမှုများ၊ ကိရိယာတပ်ဆင်ခြင်း နှင့် ဆောက်လုပ်ရေး ချို့ယွင်းမှု ဖြစ်နိုင်ချေအား လျှော့ချရေးအတွက် ရည်ရွယ်ပါသည်။ ဒုတိယ အဖွဲ့သည် လုပ်ငန်းလည်ပတ်ရေး နှင့် ပြုပြင်ထိန်းသိမ်းရေး လုပ်ငန်းစဉ်များ တွင် မလုံလောက်မှုများ နှင့် ယင်း လုပ်ငန်းလည်ပတ်ရေး နှင့် ပြုပြင်ထိန်းသိမ်းရေး လုပ်ငန်းစဉ်များ မှ လူတို့၏ အမှားများအား လျှော့ချရာတွင် ရည်ရွယ်ပါသည်။ ပထမအဖွဲ့သည် EPC ကန်ထရိုက်တာ၊ လည်းကောင်း၏ အတိုင်ပင်ခံ နှင့် ထပ်ဆင့်ကန်ထရိုက်တာတို့ နှင့် အဓိကဆက်နွယ်လျက်ရှိပါသည်။ ဒုတိယ အဖွဲ့သည် EPC ကန်ထရိုက်တာ နှင့် ယာယီဓါတ်အားပေးစက်ရုံ လည်ပတ်ရေးအဖွဲ့ နှစ်ခုစလုံးနှင့် ဆက်နွယ်နေပါသည်။

ညစ်ညမ်းမှု ထိန်းချုပ်ရေး အန္တရာယ် - အထူးအန္တရယ်လျှော့ချရေး နည်းလမ်းများ မလိုအပ်ပါ။ နိုက်ထရိုက်လောင်စေမှု နိမ့်ကျသော အဆင့်အား သေချာစွာ ရွေးချယ်ခြင်းဖြင့် အန္တရာယ်အား လျော့ကျစေပါသည်။

စ။ လက်တွေ့ဆောင်ရွက်ရေး အစီအစဉ်များ

တာဝန်ရှိသော ပုဂ္ဂိုလ်များနှင့် အဖွဲ့အစည်းများ - CEMP တွင် တင်သွင်းထားသော သဘာဝပတ်ဝန်းကျင်စီမံ ခန့်ခွဲရေး အဖွဲ့အစည်းသည် သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ အန္တရာယ် စီမံခန့်ခွဲမှုအတွက် တာဝန်ရှိပါသည်။ လုပ်ငန်းလည်ပတ်ရေးဆိုင်ရာ အန္တရာယ်များအား စီမံခန့်ခွဲရေးအတွက် အဆိုပြုထားသော နည်းလမ်းများအား စီမံကိန်း စီမံခန့်ခွဲမှု အဖွဲ့မှ လက်တွေ့ဖော်ဆောင်ရန်လိုအပ်ပါသည်။ ယာယီဓါတ်အားပေးစက်ရုံ စီမံခန့်ခွဲရေး အဖွဲ့သည် ယာယီဓါတ်အားပေးစက်ရုံ မန်နေဂျာမှ ဦးဆောင်သည့် လုပ်ငန်းလည်ပတ်ရေး မန်နေဂျာ နှင့် EHS မန်နေဂျာတို့ ပါဝင်သည့် အန္တရာယ်စီမံခန့်ခွဲရေး ကော်မတီတစ်ခု ဖွဲ့စည်းသင့်ပါသည်။

အန္တရာယ်စောင့်ကြည့်ရေးနှင့် အကဲဖြတ်ရေး

လုပ်ငန်းလည်ပတ်ရေး အန္တရာယ်များ - ယင်းအန္တရာယ်များအား ဖြစ်ပေါ်စေသော အကြောင်းအရာများကို နေ့စဉ်စောင့်ကြည့်ရေး နှင့် အကဲဖြတ်ရေး အတွက် ထည့်သွင်းစဉ်းစားသင်ပါသည်။ ယင်းတို့တွင် ဓါတ်ငွေ့ယိုစိမ့်မှု ရုတ်တရက်မှားယွင်းမှုများ ၏ မှတ်တမ်းထားရှိမှု၊ ယင်း မှတ်တမ်းထားသော ယိုစိမ့်မှုများအား ဖြေရှင်းရန် အချိန်သက်မှတ်မှု နှင့် လုပ်ငန်းစဉ်များနှင့် ကိုက်ညီမှုမရှိသော မှတ်တမ်းရရှိသည့် ရုတ်တရက်မှားယွင်းမှုများ တို့ပါဝင်ပါသည်။

ညစ်ညမ်းမှု ကန့်သတ်ရေး အန္တရာယ် - စောင့်ကြည့်ရေး နှင့် အကဲဖြတ်ရေးတို့တွင် CEMS ၏ မှားယွင်းသော ဆောင်ရွက်ချက်များ၊ စွန့်ပစ်အရည်ထုတ်လုပ်မှုဆိုင်ရာ စံနှုန်းနှင့် ကိုက်ညီမှုမရှိသော အကြိမ်အရေအတွက် နှင့် ဓါတ်သတ္တုပြောင်းလဲထားသော စွန့်ပစ်အရည် များ ၏ စွန့်ပစ်အရည်ထုတ်လုပ်မှုဆိုင်ရာ စံနှုန်းနှင့် ကိုက်ညီမှုမရှိသော အကြိမ်အရေအတွက် တို့ပါဝင်ပါသည်။

စာတမ်းပြုစုခြင်းနှင့် အမှန်ပြင်ဆင်ရေး လုပ်ငန်းများ - သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု ၏ စာတမ်းပြုစုခြင်း နှင့် အမှန်ပြင်ဆင်ရေး လုပ်ငန်းများ အတွက် လုပ်ငန်းစဉ်များ သည် သဘာဝပတ်ဝန်းကျင် အန္တရာယ် စီမံခန့်ခွဲမှုတွင် အသုံးချသွားမည် ဖြစ်ပါသည်။

၁.၅.၇ ပိတ်သိမ်းမှုကာလ

စီမံကိန်းပိတ်သိမ်းမှု လုပ်ငန်းသည် လုပ်ငန်းသက်တမ်းကုန်ဆုံးသွားချိန်တွင် စတင်အကောင် အထည် ဖော်မည် ဖြစ်သည်။ ပိတ်သိမ်းခြင်းလုပ်ငန်းဆောင်တာများသည် တည်ဆောက်မှု အစီအစဉ်များနှင့် ဆန့်ကျင်ဘက်ဖြစ်ပြီး ၄င်းတို့ကို ထိုအချိန်၏ ရေပန်းစားသော ဥပဒေများနှင့်အညီ ဆောင်ရွက်မည် ဖြစ်ပါသည်။ ကွန်ကရစ်အောက်ခံကြမ်းခင်းကို အခြားလုပ်ငန်းဆောင်တာများ လုပ်ဆောင်မှုအတွက် အသုံးပြုနိုင်ပါသည်။

(၁) ပိတ်သိမ်းမှုကာလလုပ်ဆောင်မှုများ

ဓါတ်အားပေးစက်ရုံပိတ်သိမ်းမှု အခြေအနေတွင် စီမံကိန်းလည်ပတ်မှုကို ရပ်နားခြင်း၊ ဖြိုချခြင်းလုပ်ငန်းများပြုလုပ်ပါမည်။ ပိတ်သိမ်းမှုကာလ၏ အဓိကလုပ်ဆောင်မှုများမှာ

- ဂျင်နရေတာစက်ပစ္စည်းများအား ဖယ်ရှားခြင်း (လုပ်ဆောင်မှုများစွာပါဝင်ပြီး လျှပ်စစ် ပစ္စည်းများနှင့် ဆက်စပ်နေပါသည်။
- ဓါတ်ငွေ့ဖြန့်ဝေမှုနေရာနှင့် အခြားသော ပစ္စည်းများဖယ်ရှားခြင်း တို့ဖြစ်ပါသည်။

အဓိကပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများမှာ ယာဉ်ကြီးများနှင့် စက်ကိရိယာကြီးများ ကြောင့် ဖုန်မှုန့်ထွက်ရှိမှုနှင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှု၊ ဆူညံမှု၊ အမှိုက်စွန့်ပြစ်မှုနှင့် အန္တရာယ်ရှိသော စွန့်ပြစ်ပစ္စည်းတို့ဖြစ်ပါသည်။ စီမံကိန်းပိတ်သိမ်းမှုကာလအတွင်းဖြစ်ပေါ်လာနိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်းများမှာ လေထုအရည်အသွေး၊ ဆူညံမှု၊ အကြွင်းအကျန်နှင့် အသုံးပြု၍မရသော အမှိုက်တို့ဖြစ်ပါသည်။

(၂) သက်ရောက်မှုလေ့လာစမ်းစစ်ခြင်း

 က။ ဖုန်မှုန့်နှင့် ဆူညံမှုတို့ကြောင့်ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်ဆိုင်ရာ နောက်ယှက်မှုများ

၁) ထိခိုက်မှုဖော်ပြခြင်းနှင့် လေ့လာစမ်းစစ်ခြင်း

ပဂေါ်ဖွန်းကျေးရွာသည် စီမံကိန်းနေရာမှ တောင်ဘက် ၁.၁ ကီလိုမီတာ အကွာအဝေးတွင် တည်ရှိပြီး စီမံကိန်းပိတ်သိမ်းမှုလုပ်ဆောင်ချက်များကြောင့် ဖြစ်ပေါ်လာသော ဖုန်မှုန့်ပြန့်လွင့်ခြင်းနှင့် ဆူညံမှုစသော ထိခိုက်မှုများ ကျေးရွာသို့ မရောက်ရှိစေရန် မြေယာပြန်လည်ပြုပြင်ခြင်းလုပ်ဆောင်မှုများပြုလုပ်ရာတွင် ကြီးကြပ်မှုများဖြင့် ဆောင်ရွက်ပါမည်။

ဖုန်မှုန့်ပျံ့လွင့်မှုနှင့် ဆူညံမှုပျံ့နှံ့ခြင်းများ၏ တွက်ချက်မှု ရလဒ်များကြောင့် စီမံကိန်းပိတ်သိမ်းမှုနေရာတွင် ဖြစ်ပေါ်လာနိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ နောက်ယှက်မှုများကို ထိန်းချုပ်ရမည် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ဆိုင်ရာနောက်ယှက်မှုများ၏ ထိခိုက်မှုများကို စဉ်းစားရာတွင် သိသာထင်ရှားမှုရှိပြီး စီမံကိန်းအလုပ်သမားများအတွက် အကောင်းဆုံးကြီးကြပ်မှုလိုအပ်ပြီး ကာကွယ်ရန် လိုအပ်ပါသည်။

၂) ထိခိုက်မှုလျော့ချခြင်းနည်းလမ်းများ

မြေယာပြုပြင်ခြင်းကြောင့်ထွက်ပေါ်လာသော ဖုန်မှုန့်ထွက်ရှိမှုကို မကြာခဏ ရေဖြန်းခြင်းဖြင့် ဖုန်မှုန့်များသိပ်သည်းခြင်းဖြစ်ပေါ်ပြီး ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကိုလျော့ကျစေပါသည်။ (US.EPA (2006), AP42, chapter 13.2.2)

ရွေ့လျားနေသော စက်ပစ္စည်းများမှထွက်ပေါ်လာသော ဆူညံမှုကို ထိန်းချုပ်ရန် ခက်ခဲပါသည်။ ထွက်ပေါ်လာသော ဆူညံမှုများ လျော့ကျစေရန် အသင့်တော်ဆုံးနည်းလမ်းမှာ စီမံကိန်းဝန်ထမ်းများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရန်ဖြစ်ပါသည်။ ထို့အပြင် မြေယာပြုပြင်ခြင်းများပြုလုပ်ချိန်တွင် ယာယီအသံကာတံတိုင်းများ တပ်ဆင်ခြင်းဖြင့် ပဂေါ်ဖွန်းကျေးရွာသို့ ဆူညံမှုထိခိုက်ခြင်း လျော့ကျစေပါသည်။

ခ။ အမှိုက်စွန့်ပြစ်မှု စီမံခန့်ခွဲခြင်း

၁) ထိခိုက်မှုဖော်ပြခြင်းနှင့် လေ့လာစမ်းစစ်ခြင်း

စီမံကိန်းပိတ်သိမ်းမှုကာလတွင် အလုပ်သမားမှာမှ အမှိုက်ထွက်ရှိခြင်း၊ သစ်သားအပိုင်းအစများ၊ သံ၊ ဘိလပ်မြေစသော အကြွင်းအကျန်အမှိုက်များ၊ အန္တရာယ်ရှိစွန့်ပြစ်ပစ္စည်းများ ဖြစ်သော ချောဆီ၊ ဓါတုပစ္စည်းများနှင့် ၎င်းတို့၏ ပုလင်းများစသည်တို့ကြောင့် အမှိုက်ထွက်ရှိမှုများ တိုးပွားလာမည် ဖြစ်ပါသည်။

စီမံကိန်းပိတ်သိမ်းမှုကာလသည် ကာလတို (ပျမ်းမျှ ၂လ)ဖြစ်သော်လည်း အရည်အသွေးနိမ့်သော စွန့်ပြစ်ပစ္စည်းများနှင့် မသင့်တော်သော စီမံခန့်ခွဲမှုများကြောင့် ခြင်၊ ယင်ကောင်နှင့် ကြွက် စသည်တို့ ပေါက်ပွားမှုများ ဖြစ်ပေါ်စေနိုင်ပါသည်။ ၎င်းအခြေအနေသည် အနီးအနားရှိ ဒေသခံများကို ထိခိုက်မှုဖြစ်ပေါ်စေပါသည်။ သင့်တော်သော စွန့်ပြစ်ပစ္စည်းစီမံခန့်ခွဲမှုနှင့် ထိခိုက်မှုလျော့ချခြင်းများကြောင့် ထိခိုက်မှုအဆင့်ကို လျော့ချပေးနိုင်ပါသည်။

၂) ထိခိုက်မှုလျော့ချခြင်းနည်းလမ်းများ

• ကန်ထရိုက်တာသည် အမှိုက်အမျိုးအစားခွဲခြင်း စနစ်၊ လုပ်ထုံးလုပ်နည်းကိုဒီဇိုင်းဆွဲကာ အကောင်အထည်ဖော်ဆောင်ရွက်ရမည်ဖြစ်ပြီး အမှိုက်အမျိုးအစား ခွဲရာတွင် အလုပ်သမားများအား သေချာစွာ ခွဲခြားရန် အလေးပေးဆောင်ရွက်ရမည် ဖြစ်ပါသည်။

• သင့်တော်သောအရွယ်အစားနှင့် သင့်တော်သော အမျိုးအစား ရှိသည့် အမှိုက်ပုံးများကို လုံလုံလောက်လောက်ထားရှိပေးပြီး အမှိုက်အမျိုးအစားခွဲမှုကို အထောက်အကူပြုစေပါမည်။ အမှိုက်အမျိုးအစားခွဲခြားရာတွင် ပြန်လည်အသုံးချ၍ရသော အမျိုးအစား၊ ပြန်လည်အသုံးပြု၍ရသော အမျိုးအစားနှင့် စွန့်ပြစ်ရမည့် အမျိုးအစားဟူ၍ အမျိုးအစားခွဲခြားပါမည်။

ဂ။ မြေယာပြန်လည်ပြုပြင်ခြင်း

၁) ထိခိုက်မှုဖော်ပြခြင်းနှင့် လေ့လာစမ်းစစ်ခြင်း

စီမံကိန်းပိတ်သိမ်းမှုကာလအပြီးတွင် ဓါတ်အားပေးစက်ရုံနေရာသည် ပွင့်လင်းဧရိယာအဖြစ် ပြောင်းလဲသွားမည် ဖြစ်ပါသည်။ ထို့ကြောင့် စီမံကိန်းအကောင်အထည်ဖော်သူသည် သက်ဆိုင်ရာ အာဏာပိုင်များ၊ ဒေသခံအဖွဲ့အစည်းများနှင့် ဆွေးနွေးတိုင်ပင်ပြီး ၎င်းမြေနေရာအား စီမံခန့်ခွဲရန် အစီအစဉ်များ ပြင်ဆင်သင့်ပါသည်။

၂) ထိခိုက်မှုလျော့ချခြင်း နည်းလမ်းများ

စီမံကိန်းအကောင်အထည်ဖော်သူသည် သက်ဆိုင်ရာဒေသခံအာဏာပိုင် များ၊ ဒေသခံ ကျေးရွာသူကျေးရွာသားများနှင့် ပွင့်လင်းမြေနေရာအား မည်သို့အသုံးချရန် တိုင်ပင်ညှိနှိုင်းရပါမည်။ ၎င်းမြေနေရာအား အသုံးချနိုင်သော အမျိုးအစားများမှာ အပန်းဖြေပန်းခြံများပါဝင်သည့် စက်မှုဇုန်၊ ပြတိုက် သို့မဟုတ် သန့်ရှင်းသောစွမ်းအင်ပြသမှုနေရာ၊ သို့မဟုတ် စက်မှုဇုန်အလင်းရရှိရန် စက်ရုံများ တည်ဆောက်ခြင်း တို့ဖြစ်ပါသည်။

၁.၆ စုစုပေါင်းသက်ရောက်မှု ဆန်းစစ်အကဲဖြတ်ခြင်း

ဆောက်လုပ်ရေးကာလ၏ စုစုပေါင်း သက်ရောက်မှု အကဲဖြတ်ခြင်း (CIA) သည် လုပ်ငန်းမှထွက်ရှိသည့် ဖုန်မှုန့် (fugitive dust) နှင့် ယာဉ်လမ်းခရီးလုံခြုံမှုရှိရေး တို့အပေါ်တွင် ကြရောက်မည့် သက်ရောက်မှုများကို အဓိက အာရုံထားမည် ဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ခြင်းကာလ အတွက် ပတ်ဝန်းကျင်လေထုအတွင်းရှိ နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပမာဏ အပေါ်တွင် သက်ရောက်မှု အားအဓိက အာရုံထားမည် ဖြစ်ပါသည်။ အဘယ်ကြောင့်ဆိုသော် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်သည် သဘာဝဓါတ်ငွေ့ အသုံးပြုလည်ပတ်သော ဓါအားပေး စက်ရုံများ အတွက် အဓိက ညစ်ညမ်းပစ္စည်း ဖြစ်သောကြောင့် ဖြစ်ပါသည်။

၁.၆.၁ ဆောက်လုပ်ရေးလုပ်ငန်းများဆောင်ရွက်စဉ်ကာလ

ထုတ်လွှင့်ဖုန်မှုန့်များ (fugitive dust) မှ စုစုပေါင်းသက်ရောက်မှုများ သည် စီမံကိန်းအား ထိန်းချုပ်မှု လုပ်ငန်းစဉ် ကို စီမံကိန်းနှင့် တချိန်တည်း တွင် ဆောက်လုပ်ရေးလုပ်ငန်းလုပ်ဆောင်မည့် အခြားစီမံကိန်းများ ရှိပါက ထိန်းချုပ်မှုလုပ်ငန်းစဉ် တစ်ခုအား ဖော်ဆောင်ရမည် ဖြစ်ကြောင်း ညွှန်ပြလျက်ရှိပါသည်။

ယာဉ်လမ်းခရီးများ လုံခြုံမှုရှိရေး အပေါ်တွင် စုစုပေါင်းသက်ရောက်မှုအား ဆောက်လုပ်ရေး လုပ်ငန်းများ အကြိုကာလအတွင်းတွင် အရွယ်ဖြည့်ဆည်းမည့် ပစ္စည်းများ သယ်ယူပို့ဆောင်ရေး အတွက် ကြိုတင်ခန့်မှန်းထားပါသည်။ (၁၅) မဂ္ဂါဝက် ရှိသော ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံအတွက် နှင့် မြို့သစ်အတွက် ဖြည့်ဆည်းမည့် ပစ္စည်းများ အား သယ်ယူပို့ဆောင်ရေး အတွက် စုစုပေါင်း အသုံးပြုမည့် ကုန်တင်ယာဉ်ခရီးစဉ်သည် ယခုလက်ရှိ ယာဉ်လမ်းခရီး ဝန်ရိုန်များ အား တစ်နာရီလျင် (၃၄) ခရီး ခန့် တိုးမြှင့်စေမည် ဖြစ်ပါသည်။ သို့သော်လည်း ITD အဓိကလမ်းမကြီး ရှိ ယာဉ်လမ်းသွားလာရေး သည် ကျေနပ်လက်ခံဖွယ်ရာ နှုန်းဖြင့် ကောင်းမွန်သော အခြေအနေတွင် ရှိပါသည်။

ဇယား ၁.၆-၁

၁၅မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံနှင့် မြို့သစ် တည်ဆောက်ရေးလုပ်ငန်းကြောင့်ထွက်ပေါ်လာသော ဖုန်မှုန့် ထိခိုက်မှု ခန့်မှန်းခြင်း

အနေအထား	TSP (ဓါတ်အားပေးစက်ရုံ) µg/m³	TSP (မြို့) µg/m³	စုစုပေါင်း TSP µg/m³	စံနှုန်း TSP[1] µg/m³
ထိန်းချုပ်မှု မရှိ	၅၇.၀၀	၁၄၄.၆၈	၃၀၀.၂၄	၂၃၀
ထိန်းချုပ်မှု ၇၅% ဖိနှိပ်မှု	၁၄.၁၅	၃၆.၁၇	၂၂၈.၉၈	

[1] WHO Ambient Air Quality Guideline stated on Environmental, Health and Safety Guidelines: Air Emission and Ambient Air Quality of International Finance Corporation –IFC (April 30, 2007)

၁.၆.၂ လုပ်ငန်းလည်ပတ်စဉ်ကာလ

ပတ်ဝန်းကျင်လေထုထဲတွင် ရှိသော နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် (NO_2) အပေါ်တွင် စုပေါင်း သက်ရောက်မှု အား အထပ်အမြင့်ပေ (၅) မီတာ တွင် ခန့်မှန်းထားပါသည်။ လေ့လာရေးဒေသအတွင်း ရှိ တည်နေရာအမျိုးမျိုးတွင် ရှိသော နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ၏ ခန့်မှန်းရရှိသော ပမာဏကို အောက်ပါ ဇယား ၁.၆-၂ တွင်ဖော်ပြထားပြီး ယင်းတွင် နိုင်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ၏ အမြင့်ဆုံးပမာဏ နှင့် တည်နေရာများကို ပြသထားပါသည်။

ဇယား ၁.၆.၂

လေ့လာရေးဒေသအတွင်း ပတ်ဝန်းကျင်လေထုအတွင်းရှိ နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပမာဏအပေါ်တွင် ကျရောက်သည့် (၁) မဂ္ဂါဝပ်ရှိ ဓါတ်ငွေ့လည်ပတ်စက်၏ ယူနစ် (၃၀) လည်ပတ်ခြင်း၏ သက်ရောက်မှုများ

ရလဒ်	ယူနစ် (၃၀) နိုက်ထရိုဂျင် ဒိုင်အောက်ဆိုဒ် (မိုက်ကရိုဂရမ်/ ကုဗ မီတာ)		
	(၁) နာရီ	(၂၄) နာရီ	(၁) နှစ်
လေ့လာရေးကာလ တစ်ခုလုံးအတွင်း			
-အမြင့်ဆုံး တိုးမြင့်လာသော ပမာဏ	၃၃.၆၂	၃.၁၅	၁.၁၃
-အမြင့်ဆုံး တန်ဖိုး၏ တည်နေရာ	စီမံကိန်း တည်နေရာ	စီမံကိန်း တည်နေရာ	စီမံကိန်း တည်နေရာ
-ကိုအောဒီးနိတ် (UTM (WGS84))	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N
-နောက်ခံအဆင့် ၏ အမြင့်ဆုံးပမာဏ	၃၄	၁၈	မရှိ
-နောက်ခံအဆင့် အပါအဝင် အသားတင် အမြင့်ဆုံး ပမာဏ	၆၇.၆၂	၂၁.၁၅	၁.၁၃
ပတ်ဝန်းကျင်လေထု အရည်အသွေး စံသတ်မှတ်ချက် ရာခိုင်နှုန်း (%)	၃၃.၈၁	၁၄.၁၀	၂.၈၃
ခံစားနိုင်စွမ်း မြင့်မားသော နေရများ အတွင်းသာ			
-ပမာဏများ ၏ ပြောင်းလဲခြင်း အတိုင်းအဆ	၀.၀၈-၁.၁၁	၀.၀၀၅-၀.၀၈၇	၀.၀၀၀၃-၀.၀၁၇၈
-နောက်ခံအဆင့် အပါအဝင် အသားအတင် အမြင့်ဆုံး ပမာဏ	၃၄.၀၈-၃၅.၁၁	၁၈.၀၀၅-၁၈.၀၈၇	၀.၀၀၀၃-၀.၀၁၇၈
ပတ်ဝန်းကျင်လေထု အရည်အသွေး စံသတ်မှတ်ချက် ရာခိုင်နှုန်း (%)	၁၇.၀၄-၁၇.၅၆	၁၂.၀၀-၁၂.၀၆	၀.၀၀၀၈-၀.၀၄၄၆
စံနှုန်းသတ်မှတ်ချက်	၂၀၀[1/]	၁၅၀[2/]	၄၀[1/]

မှတ်ချက်။ [1/]သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ၊ ကျန်းမာရေးဆိုင်ရာ နှင့် လုံခြုံမှုရှိရေး လမ်းညွှန်ချက်၊ အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေး ပေါင်းစည်းအဖွဲ့အစည်း ၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာလေထုအတွင်း ထုတ်လွှတ်မှု နှင့် ပတ်ဝန်းကျင်လေထု အရည်အသွေး၊ ကမ္ဘာ့ ဘဏ် အဖွဲ့ ၊ ၂၀၀၇ ခုနှစ်

[2/] အပူစွမ်းအင်၊ စက်ရုံလုပ်ငန်းအသစ်များအတွက် လမ်းညွှန်များ၊ ညစ်ညမ်းမှု ကာကွယ်ခြင်း နှင့် တိုက်ဖျက်ခြင်း လက်စွဲစာအုပ်၊ ကမ္ဘာ့ ဘဏ်အဖွဲ့ ၊ ၁၉၉၈ ခုနှစ် ဇူလိုင်လ

၁.၇ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အစီအစဉ်များ

၁.၇.၁ သဘောတရားပိုင်းဆိုင်ရာမူဘောင်

EIA လုပ်ငန်းစဉ်တွင် ထည့်သွင်းဖော်ပြထားသည့် အတိုင်း EIA စုံစမ်း စစ်ဆေးရေး သည် ဆောက်လုပ်လုပ်ငန်းစဉ်များ ဆောက်ရွက်စဉ်ကာလ (CEMP) အတွက် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေး အစီအစဉ် (EMP) တစ်ခု နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလ အတွက် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေး အစီအစဉ် (EMP) တစ်ခု စုစုပေါင်း EMP နှစ်ခုကို ပြင်ဆင်ထားပါသည်။ ယင်း EMP နှစ်ခုသည် အများစုသော EIA စာတမ်းတွင်တွေ့ရသည့် အကျဉ်းချုပ် EMP များထက် ပိုမိုကာ အသေးစိတ်အချက်အလက်များ ပါဝင်ထည့်သွင်းထားပါသည်။ သို့သော်လည်း ယင်းစီမံကိန်း အစီအစဉ်များ ရေးဆွဲစဉ်ကာလတွင် ယင်း EMP နှစ်ခု သည် ဆောက်လုပ်ရေးလုပ်ငန်းများ ဆောင်ရွက်စဉ်နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလများအတွင်း စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အတွက် အခြေခံသဘောတရားများ နှင့် လမ်းညွှန်ချက်များ ကို ထောက်ပံ့ပေးမည့် ပြောင်းလဲမှုမရှိသော မူဘောင် (သို့) သဘောတရားရေးရာ အစီအစဉ်များ အဖြစ်ရှိပါမည်။ အဓိက စာတည်းပိုင်းတွင် တင်ပြထားသော EMP နှစ်ခုအား သေချာစွာ စဉ်းစားဆုံးဖြတ်ပြီး EMP ပိုင်ရှင်များ စီမံကိန်းတင်သွင်းသူများ ထံသို့ ရည်ညွှန်းဖော်ပြထားပါသည်။ EPC ကန်ထရိုက်သမားများသည် ပိုင်ရှင်-CEMP အား အသေးစိတ်အချက်အလက်များပါဝင်သော ကန်ထရိုက်တာ-CEMP အဖြစ် နောက်ဆုံးထုတ် ပုံစံများ နှင့် EPC ကန်ထရိုက်တာမှ ပြင်ဆင်ထားသော ဆောက်လုပ်ရေး အစီအစဉ်ပေါ်တွင် အခြေခံကာ ပြင်ဆင်ရန်လိုအပ်ပါသည်။ EPC ကန်ထရိုက်တာသည် အမှန်တကယ်ဆောက်လုပ်ရေးလုပ်ငန်းများ ဆောင်ရွက်မှု၊ စက်ရုံကော်မရှင် ၏ ရလာဒ်များ နှင့် နောက်ဆုံးရ လုပ်ငန်းလည်ပတ်ရေး လုပ်ငန်းအဆင့်ဆင့် စသည်တို့အပေါ်တွင် အခြေခံကာ စီးပွားရေးအရ လုပ်ငန်းလည်ပတ်နိုင်မှု မစခင်တွင် အသေးစိတ် OEMP ကန်ထရိုက်တာကို အချိန်မီ ပြင်ဆင်ရန်အတွက် ပိုင်ရှင်-OEMP ကိုလည်း ဖော်ထုတ်ရပါမည်။

ဆောက်လုပ်ရေးကာလ အတွင်း စီမံကိန်း မန်နေဂျာ၏ အကြီးအမှူးအောက်တွင် EPC ကန်ထရိုက်တာသည် ကန်ထရိုက်တာ-CEMP အား လက်တွေ့ အသုံးချသွားပါမည်။ ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံလည်ပတ်ရေး အဖွဲ့၏ ပိုင်ရှင်သည် လုပ်ငန်းလည်ပတ်ခြင်း ကာလအတွင်း နိဂုံးချုပ် OEMP အား ပြင်ဆင်ပြီး လက်တွေ့ အကောင်ဖော်ဆောင်ရေး အတွက် သင့်လျော်သလို ကန်ထရိုက်တာ-OEMP အား ပြန်လည်ပြင်ဆင်ရေးတို့ ဆောင်ရွက်သွားပါမည်။ စီမံကိန်း ၏ ဆောက်လုပ်ရေးလုပ်ငန်းများ ဆောင်ရွက်ခြင်းကာလနှင့် လုပ်ငန်းလည်ပတ်ရေး ကာလတို့တွင် သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အား စီမံကိန်းကာလတစ်ခုချင်းဆီ ၏ အခြေခံ စီမံကိန်းဆိုင်ရာ နည်းဥပဒေများ အပေါ်တွင် အခြေခံထားပြီး ထို့ကြောင့် လည်းကောင်း တွင် အစီအစဉ် ချခြင်း ၊ စတင်လုပ်ကိုင်ခြင်း ၊ စစ်ဆေးခြင်း နှင့် ပြုမူခြင်း စသည့် သက်ဆိုင်သော တာဝန်လေးခု ပါဝင်ပါသည်။

၁.၇.၂ စီမံကိန်း၏ EHS မူဝါဒ၊ ဝန်ခံချက်များနှင့် ဥပဒေရေးဆိုင်ရာ လိုအပ်ချက်များ

ဆောက်လုပ်လုပ်ငန်းများ နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလများ အတွင်း စီမံကိန်း၏ သဘာဝ ပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး ကို အကျုံးဝင်သော တရားဥပဒေဆိုင်ရာ လိုအပ်ချက်များအရ သော်လည်းကောင်း DPG ၏ EHS မူဝါဒ များနှင့် အညီ သော်လည်းကောင်း စီမံကိန်း တင်သွင်းသူ၏ EHS မူဝါဒ ဖြင့် လမ်းညွှန်ပြသွားမည်။

စီမံကိန်းတင်သွင်းသူသည် (၁) ဆောက်လုပ်လုပ်ငန်းများ နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလများ အတွင်း စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး ကို အထောက်အကူပြုသော သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး စနစ်ကို တည်ထောင်ခြင်း (၂) CEMP-ပိုင်ရှင် နှင့် အတည်ပြုထားသော CEMP-ကန်ထရိုက်တာ တွင် ပြဋ္ဌာန်းထားသည့် OHS လိုအပ်ချက်များ ပါဝင်သည့် အလုံးစုံသော ထိခိုက်သက်ရောက်မှု လျှော့ချရေး ဆိုင်ရာ အစီအစဉ်များအား EPC ကန်ထရိုက်တာ နှင့် ထပ်ဆင့်ကန်ထရိုက်တာ များ လက်တွေ့ ဆောင်ရွက်မှု ရှိရန် သေချာစေရေး (၃) ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံ လည်ပတ်ရေး ၏ အလုံးစုံသော OSH လိုအပ်ချက်များ အတိုင်းကိုက်ညီရေး နှင့် သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှုများ အား အနည်းငယ်ဆုံးအထိလျှော့ချနိုင်ရေး အတွက် ကြိုးစားအားထုတ်ခြင်း စသည်တို့ကို ဆောင်ရွက်ရန် ဝန်ခံထားပါမည်။

စီမံကိန်း ၏ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု သည် ESIA လုပ်ငန်းစဉ် (၂၀၁၅) ခုနှစ်၊ လျှပ်စစ်စွမ်းအင်ဥပဒေ (၂၀၁၃) ခုနှစ် နှင့် ယာယီ သဘာဝပတ်ဝန်းကျင် ထိမ်းသိမ်းကာကွယ်ရေး စည်းမျဉ်း (၂၀၁၃) ခုနှစ် တို့တွင် ပြဋ္ဌာန်းထားသည့် EMP သို့ ဆီလျော်သည့် တရားဥပဒေရေး ဆိုင်ရာ လိုအပ်ချက်များနှင့် အညီ လုပ်ဆောင်သွားပါမည်။ ESIA လုပ်ထုံးလုပ်နည်းတွင်ပါဝင်သော ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုပြဿနာများအားလုံးကိုခြုံ၍ ဇယား ၁.၇.၁တွင် ဖော်ပြထားပါသည်။

ဇယား ၁.၇.၁

EMP နှင့်သက်ဆိုင်သော ESIA ၏ လုပ်ထုံးလုပ်နည်းများ

အမျိုးအစား	သက်ဆိုင်ရာ စာတမ်းများ
EMPs အကြောင်းအရာ	၆၀
စီမံကိန်းလက်ခံကြောင်းလိုအပ်ချက်များ	
- ECC ထုတ်ပေးရေး	၆၇
- ECC ၏ အခြေအနေ	၇၇၊ ၇၈၊ ၈၀၊ ၈၁၊ ၈၂၊ ၈၃၊ ၈၄၊ ၈၆၊ ၈၇၊ ၈၈
- CEMP နှင့် OEMP တင်သွင်းခြင်း	၈၂၊ ၈၄
EMPs သုံးသပ်ခြင်းနှင့် ပြင်ဆင်ခြင်း	၈၄၊ ၈၇၊ ၈၈၊ ၈၉
EMPs ပြီးစီးဆောင်ရွက်ခြင်း	၉၃၊ ၉၄
- စောင့်ကြည့်လေ့လာခြင်းနှင့် အစီရင်ခံစာတင်ခြင်း	
- စောင့်ကြည့်လေ့လာခြင်းတာဝန်	၉၅၊ ၉၆
- စောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာအကြောင်းအရာ	၉၈
- စောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာတင်ခြင်း	၉၇
- စောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာထုတ်ဖော်ခြင်း	၉၉
- MONREC မှကြည့်ရှုစစ်ဆေးခြင်း	၁၀၀-၁၀၁

၁.၇.၃ CEMP၏ အကျဉ်းချုပ်ဖော်ပြချက်

(၁) သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု၏ နယ်ပယ်အတိုင်းအတာ

ဆောက်လုပ်ရေး လုပ်ငန်းများ ၏ အမျိုးမျိုးသော အဆင့်များတွင် မျှော်မှန်းထားသော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်များကို အတိုင်းပင်ခံ ပညာရှင်များ မှ သဘာဝပတ်ဝန်းကျင်ထိခိုက် သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) လေ့လာရေး ရည်ရွယ်ချက်အတွက် ပြင်ဆင်ထားသော ယာယီ ဆောက်လုပ်ရေးလုပ်ငန်း အချိန်ဇယားပေါ်တွင် အခြေခံ ကာ ခွဲခြားဖော်ပြထားပါသည်။

ဇယား ၁.၇.၂

တည်ဆောက်ရေးကာလများအလိုက်ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများ

တည်ဆောက်ရေးလုပ်ငန်းများ	ကာလကြာချိန် (လ)	ထိခိုက်မှု
ကာလ ၁: အုတ်မြစ်ချခြင်းနှင့် တည်ဆောက်ခြင်း	၃	ဖုန်မှုန့်၊ ဆူညံမှု၊ လမ်းသွားလာရေး၊ လူမှုစီပွား
ကာလ ၂: ဓါတ်ငွေ့အင်ဂျင် နှင့် ကိရိယာများတပ်ဆင်ခြင်း	၁	လေထု၊ ဆူညံမှု၊ တုန်ခါမှု၊ လမ်းသွားလာရေး
ကာလ ၃: ဝန်စစ်ဆေးခြင်း နှင့် လွှဲပြောင်းပေးအပ် စစ်ဆေးခြင်း	၁	လေထု၊ ဆူညံမှု

မှတ်ချက် : တည်ဆောက်ရေးကာလများသည် အစီရင်ခံစာ အခန်း (၄) ၏ စီမံကိန်းတည်ဆောက်မှု အစီအစဉ်ပေါ်တွင် မူတည်နေပါသည်။

(၂) သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အစီအစဉ်ခွဲ

ဆောက်လုပ်ရေး လုပ်ငန်းများ ဆောင်ရွက်စဉ်ကာလ အတွင်း အောက်ပါ အရေးကိစ္စရပ်များကို စီမံခန့်ခွဲသွားပါမည်။ ယင်းတို့မှာ (၁) အထွေထွေ ဆောက်လုပ်ရေးလုပ်ငန်း (၂) ဆူညံမှု နှင့် တုန်ခါခြင်း (၃) စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှု (၄) လေထုအရည်အသွေး စီမံခန့်ခွဲမှု (၅) စွန့်ထုတ်အရည် စီမံခန့်ခွဲမှု (၆) မော်တော်ယာဉ်များ ကားလမ်းပိတ်မှုများ စီမံခန့်ခွဲမှု (၇) OSH စီမံခန့်ခွဲမှု (၈) အရင်းအမြစ် စီမံခန့်ခွဲမှု နှင့် (၉) လူမှုရေးဆိုင်ရာ ပတ်ဝန်းကျင် စသည်တို့ ဖြစ်ပါသည်။

အစီအစဉ်ခွဲ တစ်ခုချင်းဆီသည် ဦးတည်ချက်များ၊ ဆောင်ရွက်ချက်များ၊ ရည်ညွှန်းကိန်းများ၊ အရင်းအမြစ်များ၊ အသုံးချရမည့် စံနှုန်းများ၊ ထိခိုက်သက်ရောက်မှု လျှော့ချရေး အစီအစဉ်များ၊ စောင့်ကြည့်ရေး နှင့် စာတမ်းပြုလုပ်ခြင်း တို့ကိုတင်ပြထားပါသည်။ အစီအစဉ်ခွဲ တစ်ခုချင်းဆီသည် လုပ်ငန်းလုပ်ကိုင်ရန် စာတမ်းတစ်ခု ဖြစ်ပြီး ယင်းတို့မှ တစ်ခုချင်းဆီအား ဆောက်လုပ်ရေးလုပ်ငန်း အချိန်ဇယား အပြောင်းအလဲ နှင့် စီမံကိန်း ပြန်လည်သုံးသပ်ခြင်း အပြောင်းအလဲတို့အပေါ်တွင် မူတည်ကာ လိုအပ်သလို ပြန်လည်သုံးသပ်ခြင်း နှင့် ပြုပြင်ခြင်း (သို့) အဆင့်မြှင့်ခြင်းတို့ကို ဆောင်ရွက်သွားပါမည်။

အစီအစဉ်ခွဲ တစ်ခုခြင်းဆီ အတွက် စောင့်ကြည့်ရေး အစီအစဉ်တွင် အချိန်ဇယား သတ်မှတ် ထားသော သဘာဝပတ်ဝန်းကျင် ဆောင်ရွက်ချက်များ၊ တည်နေရာ စုံစမ်းစစ်ဆေးရေးနှင့်

သဘာဝ ပတ်ဝန်းကျင် ဆိုင်ရာ ရုတ်တရက် ကျရောက်လာသော အန္တရာယ်များ စသည်တို့ပါဝင်ပါသည်။

(၃) စောင့်ကြည့်ရေး စာတမ်း

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်ရေး နှင့် နေရာ စုံစမ်းစစ်ဆေးရေးသည် အောက်ပါစာတမ်းများကို ထုတ်လုပ်သွားပါမည်။ (၁) တည်နေရာစုံစမ်းစစ်ဆေးရေး စာတမ်းပါဝင်သည့် ဌာနတွင်း စောင့်ကြည့်ရေး စာတမ်း နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်ရေးစာတမ်း နှင့် (၂) ပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေး နှင့် သစ်တောရေးရာဝန်ကြီးဌာန သို့ နှစ်လတစ်ခါတင်သွင်းရမည့် စောင့်ကြည့်ရေး စာတမ်း။

(၄) ပြန်လည်အမှန်ပြင်ဆင်ရေး လုပ်ငန်းများ

CEMP ၏ ပိုင်ရှင်သည် အမျိုးမျိုးသော တရားရေးဆိုင်ရာ လိုအပ်ချက်များ အရ ဆန္ဒနှင့်ကိုက်ညီမှုမရှိသော လုပ်ငန်းရပ်များ၊ စီမံကိန်း၏ ဌာနတွင်းဆိုင်ရာလိုအပ်ချက်များနှင့် ကိုက်ညီမှုမရှိသော လုပ်ငန်းရပ်များ၊ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လုံလောက်မှုမရှိသော စွမ်းဆောင်ရည်များ၊ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ရုတ်တရက်ဖြစ်ပေါ်လာသော အန္တရာယ်များ၊ လူထုထံမှ ရရှိသော တိုင်ကြားမှုများ သို့မဟုတ် ဝမ်းနည်းကြောင်းများ စသည်တို့အား ဖြေရှင်းရန် အတွက် အမှန်ပြင်ဆင်ရေးလုပ်ငန်းရပ်များကို လုပ်ဆောင်ရေး အတွက် လုပ်ငန်းစဉ်များ ယန္တရားများ ကိုတင်သွင်းပါသည်။ ဆန္ဒနှင့်ကိုက်ညီမှုမရှိသော ပုံစံများကို ခွဲခြားရန်အတွက် သတင်းအချက်အလက်များကို ဖော်ပြထားပါသည်။

(၅) EMS ဆောင်ရွက်ရေးအတွက် အစီအစဉ်များ

EMS ဆောင်ရွက်ရေး အတွက် တင်သွင်းထားသော အစီအစဉ်များတွင် (၁) EPC ကန်ထရိုက်တာ၊ စီမံကိန်း စီမံခန့်ခွဲမှု အဖွဲ့၊ ကြီးကြပ်ရေးဆိုင်ရာ အတိုင်ပင်ခံ ပညာရှင်များ ၊ သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကာကွယ်ရေး နှင့် သစ်တောရေးရာ ဝန်ကြီး ဌာန (MOECAF) တို့အကြား တာဝန်များ ဖြန့်ကြက်ခြင်း၊ (၂) သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး အတွက် အဖွဲ့အစည်းပိုင်းဆိုင်ရာ တည်ဆောက်ပုံ ၊ (၃) စာရွက်စာတမ်းများ ပြုလုပ်ခြင်း (၄) ဆက်သွယ်ရေးဆိုင်ရာ အစီအစဉ်များ ၊ (၅)စီမံခန့်ခွဲမှုဆိုင်ရာ ပြန်လည်သုံးသပ်ခြင်း၊ (၆) လူထုအသိပေးဆွေးနွေးတိုင်ပင်ခြင်း နှင့် သတင်းအချက်ထုတ်လွှင့်ခြင်း (အဖွဲ့အစည်း၊ သတင်းအချက်အလက် ထုတ်လွှတ်ခြင်း နှင့် လူထုဝမ်းနည်းကြောင်း များကို ဖြေရှင်း ပြေလည်စေခြင်း) (၇) စာရင်းပိုင်းဆိုင်ရာ လိုအပ်ချက်များ စသည်တို့ ပါဝင်ပါသည်။

ပါတီ (၃)ခုဖြင့် ဖွဲ့စည်းထားသော ကော်မတီအား စီမံကိန်းမှ တည်ထောင်ရန်အတွက် ဒေသခံလူထုခေါင်းဆောင်များ၊ နိုင်ငံတော်အဆင့် ဒေသတွင်းအဆင့် နှင့် မြို့နယ်အုပ်ချုပ်ရေး အဆင့် တို့မှ ကိုယ်စားလှယ်များ နှင့် တိုင်ပင်ဆွေးနွေးထားပါသည်။ ယင်းကော်မတီအား စီမံကိန်းတင်သွင်းသူ၊ အစိုးရအာဏာပိုင်များ နှင့် ရပ်နီး ဒေသခံလူထုများမှ ကိုယ်စားပြုမည် ဖြစ်ပါသည်။ ယင်းတွင် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု နှင့် အတိုင်ပင်ခံ ဆွေးနွေးမှု ၏ စီမံကိန်းတွင် ပါဝင်ပက်သက်သူများ ပါဝင်မည် ဖြစ်ပါသည်။

၁.၇.၄ OEMP ၏ အကျဉ်းချုပ်ဖော်ပြချက်

(၁) သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေး၏ နယ်ပယ်အတိုင်းအတာ

ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံစီမံကိန်း အဖွဲ့အစည်းသည် ရှိရင်းသော EMS တစ်ခုအား လည်းကောင်း၏ O & M လုပ်ရှားမှုလုပ်ငန်းစဉ်များအတွက် တည်ထောင်သွားမည်ဖြစ်ပါသည်။ ယင်း EMS သည် (၇) ယောက်မှ (၁၂) ယောက်အတွင်း ရှိသော ဓါတ်အားထုတ်လုပ်ရေး အလုပ်သမားများ ၏ အန္တရယ်ကင်းရှင်းရေး နှင့် လုပ်ငန်းခွင်ဆိုင်ရာ ကျန်းမာရေး တို့ကို ပိုပြီး ရည်ရွယ်လုပ်ဆောင်သွားမည် ဖြစ်ပါသည်။

(၂) သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲရေး အစီအစဉ်ခွဲများ

ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံ၏ ပြုပြင်ထိန်းသိမ်းရေး နှင့် နေ့စဉ် စုံစမ်းစစ်ဆေးရေးတို့မှ လွဲပြီး အခြားသဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လျှော့ချရေး အစီအစဉ်များကို မလိုအပ်ပါ (အပိုင်း ၆.၃.၅ ကို ကြည့်ပါ)။ ဓါတ်အားထုတ်လုပ်ရေးစက်ရုံစီမံခန့်ခွဲရေး အဖွဲ့အစည်းသည် အပိုင်း (၂) အပိုချုပ် ၏ အစီအစဉ်ခွဲများ တွင် တင်ပြထားသည့် လူထုဖွံ့ဖြိုးတိုးတက်ရေး အစီအစဉ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်မည် ဖြစ်ပါသည်။

(၃) စောင့်ကြည့်ရေးစာတမ်း

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်ရေး နှင့် နေရာ စုံစမ်းစစ်ဆေးရေးသည် အောက်ပါစာတမ်းများကို ထုတ်လုပ်သွားပါမည်။ (၁) တည်နေရာစုံစမ်းစစ်ဆေးရေး စာတမ်းပါဝင်သည့် ဌာနတွင်း စောင့်ကြည့်ရေး စာတမ်း နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်ရေးစာတမ်း နှင့် (၂) ပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေး နှင့် သစ်တောရေးရာဝန်ကြီးဌာန သို့ ခြောက်လတစ်ခါတင်သွင်းရမည့် စောင့်ကြည့်ရေး စာတမ်း။ မီးခိုးခေါင်တိုင်မှ လေထုအရည်အသွေး တိုင်းတာခြင်းကို ခေါင်းတိုင်အတွင်း တိုင်းတာစက်ဖြင့်ချိတ်ဆက်ကာ ထုတ်လွှတ်မှု စဉ်ဆက်မပြတ် တိုင်းတာခြင်းစနစ်ဖြင့် (CEMS)ဖြင့်တိုင်းတာပါမည်။

(၄) ပြန်လည်အမှန်ပြင်ဆင်ရေး လုပ်ငန်းများ

လုပ်ငန်းလည်ပတ်စဉ် ကာလအတွင်း သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲရေး တွင် အမှန်ပြန်လည်ပြင်ဆင်ခြင်း ဆိုင်ရာ လုပ်ငန်းများ အတွက် လုပ်ငန်းဆောင်တာများ နှင့် ယန္တရားများ သည် ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံစီမံကိန်း ၏ အစိတ်အပိုင်း တစ်ခု ဖြစ်ပါသည်။ အမှန်ပြန်လည်ပြင်ဆင်ရေး လုပ်ငန်းရပ်ဆိုင်ရာ လိုအပ်ချက်များ ကို ဓါတ်အားထုတ်လုပ်ရေး စက်ရုံစီမံခန့်ခွဲရေး သတင်းအချက်အလက် စနစ် ၏ ခြေရာခံခြင်းစနစ် ၏ လိုအပ်ချက်အဖြစ် ထည့်သွင်းပါဝင်သွားပါမည်။

(၅) EMS လုပ်ငန်းလည်ပတ်ရေးအတွက် အစီအစဉ်များ

EMS ဆောင်ရွက်ရေး အတွက် တင်သွင်းထားသော အစီအစဉ်များတွင် (၁) EHS အဖွဲ့ နှင့် လုပ်ငန်းလည်ပတ်မှု ဆောင်ရွက်ရေး အဖွဲ့များ အကြား တာဝန်များ ဖြန့်ကြက်ခြင်း၊ (၂) EHS လုပ်ငန်း၏ အဖွဲ့ ့အစည်းပိုင်း တည်နေရာ (၃) စာရွက်စာတမ်းများ ပြုလုပ်ခြင်း (၄) ဆက်သွယ်ရေးဆိုင်ရာ အစီအစဉ်များ (၅)စီမံခန့်ခွဲမှုဆိုင်ရာ ပြန်လည်သုံးသပ်ခြင်း၊ (၆) လူထုအသိပေးဆွေးနွေးတိုင်ပင်ခြင်း နှင့် သတင်းအချက်ထုတ်လွှင့်ခြင်း (အဖွဲ့အစည်း၊ သတင်းအချက်အလက် ထုတ်လွှတ်ခြင်း နှင့် လူထုဝမ်းနည်းကြောင်း များကို ဖြေရှင်း ပြေလည်စေခြင်း) (၇) စာရင်းပိုင်းဆိုင်ရာ လိုအပ်ချက်များ စသည်တို့ ပါဝင်ပါသည်။

၁.၇.၅ DEMP အကျဉ်းချုပ်ဖော်ပြချက်

DEMP သည် CEMP ထက် လုပ်ဆောင်မှုများ နည်းပါးပြီး ပိုမိုရိုးရှင်းသော EMS တစ်ခုဖြစ်ပါသည်။ လုပ်ရိုးလုပ်စဉ် စစ်ဆေးခြင်းနှင့် စက်အားပေးစက်ရုံအား ထိန်းသိမ်းခြင်းအပြင် အခြားသော ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချခြင်း နည်းလမ်းများ ပြုလုပ်ရန် မလိုအပ်ပါ။ ဓါတ်အားပေးစက်ရုံ စီမံခန့်ခွဲမှု အဖွဲ့အစည်းမှ လေထုအရည်အသွေး၊ ဆူညံမှု၊ စွန့်ပြစ်ပစ္စည်း၊ လမ်းသွားလာရေး၊ OSH စီမံခန့်ခွဲမှုနှင့် ပတ်ဝန်းကျင်လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု အစီစဉ်ခွဲများကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ ၎င်း အစီအစဉ်ခွဲများကို စောင့်ကြပ်ကြည့်ရှုခြင်းကိုလည်း သင့်တော်သလို ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာသည် ရိုးရှင်းပြီး ရလဒ်များကို တိုက်ရိုက်ဖော်ပြရပါမည်။ စီမံကိန်းပိတ်သိမ်းမှုလုပ်ဆောင်ချက်များပြီးစီးသည့်အချိန်တွင် အစီရင်ခံစာကို MONREC သို့ တင်ပြမည် ဖြစ်ပါသည်။

အစီစဉ်ခွဲများ၏ စောင့်ကြပ်ကြည့်ရှုခြင်းလုပ်ဆောင်မှုများနှင့် အကောင်အထည်ဖော်မှုများကို အတွဲ ၂ နောက်ဆက်တွဲ ၇ ခ တွင်ဖော်ပြထားပါသည်။

ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက်များတွင် ဆုံးရှုံးနစ်နာမှုအတွက် ပြင်ဆင်ရန် ဖြေလျော့ခြင်း လုပ်ထုံးလုပ်နည်းကဲ့သို့ CPC ကိုလဲ စီမံကိန်းလည်ပတ်မှုကာလမှစ၍ ယခုစီမံကိန်း ပိတ်သိမ်းခြင်းကာလအထိ ဆက်လက်ဆောင်ရွက်ရမည် ဖြစ်ပါသည်။

၁.၈ လူထုအသိပေးဆွေးနွေးတိုင်ပင်ခြင်းနှင့် ပြည်သူလူထုထံ သတင်းထုတ်လွှတ်ခြင်း

၁.၈.၁ အတိုင်ပင်ခံအကြံပေးခြင်းနှင့် ပြည်သူလူထုထံ သတင်းထုတ်လွှတ်ခြင်း၏ ရည်ရွယ်ချက်

လူထုအတိုင်ပင်ခံ အသိပေးဆွေးနွေးခြင်း နှင့် သတင်းထုတ်လွှတ်ခြင်းတို့အား သဘာဝ ပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) စုံစမ်း စစ်ဆေးရေး ၏ အစိတ်အပိုင်း တစ်ခုအနေဖြင့် ဆောင်ရွက်ခဲ့ပါသည်။ ၎င်းတွင် ရည်ရွယ်ချက် (၃) ခုရှိပါသည်။ ယင်းတို့မှာ-

- စီမံကိန်းတွင် ပါဝင်ပက်သက်သူများ အား စီမံကိန်းအကြောင်း၊ စီမံကိန်းဆောက်လုပ်ရေး လုပ်ငန်းများ နှင့် လုပ်ငန်းလုပ်ကိုင်လည်ပတ်ခြင်းတို့ ၏ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာ ပြဿနာရပ်များ သက်ဆိုင်ရာ အကြောင်း နှင့် သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်သက်ရောက်မှု လျှော့ချရေး အစီအစဉ်တို့အား သတင်းပေးခြင်း
- စီမံကိန်း နှင့် လည်းကောင်း၏ ထိခိုက်သက်ရောက်မှုများ လျှော့ချရေး အစီအစဉ်များ အပေါ် စီမံကိန်းတွင်ပါဝင်ပက်သက်သူများ၏ အမြင်အား သိရှိရန်
- ပြဿနာရပ်များ နှင့် လိုအပ်ချက်များ အား အတူတကွ ဆွေးနွေးခြင်း နှင့် အကဲဖြတ်ခြင်းတို့တွင် ပူးပေါင်းပါဝင်ခြင်း နှင့် အတူတကွလက်တွဲရေး တို့ဖြစ်ပါသည်။

လူထုအသိပေးဆွေးနွေးတိုင်ပင်ခြင်း ၏ ရလာဒ်များသည် စီမံကိန်းအတွက် သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်များ အား ဖော်ထုတ်ရာ တွင် လွန်စွာအသုံးဝင်ခဲ့ပါသည်။

၁.၈.၂ နည်းလမ်းနှင့် ချဉ်းကပ်မှု

လူထုအကြံပြု ဆွေးနွေးတိုင်ပင်ခြင်းနှင့် ပြည်သူထံ သတင်းအချက်အလက်များ ထုတ်လွှင့်ပြသခြင်း တို့ အား အောက်ပါသက်ဆိုင်ရာ စီမံကိန်းနှင့် ပါဝင်ပက်သက်သူများ အဖွဲ့ များအား ဦးတည်ထားပါသည်။

- စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နှင့် လူမှုရေးဆိုင်ရာ သက်ရောက်မှု ကင်းရှင်းကြောင်း ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း (EIA) လုပ်ငန်းစဉ် အတွက် ကြီးကြပ်ကွပ်ကဲရေး အတွက် တိုက်ရိုက်တာဝန်ရှိသော နိုင်ငံတော် အဆင့် နှင့် ဒေသတွင်း အဆင့် ရှိ အစိုးရ ကိုယ်စားလှယ်များ
- ရေဖြူမြို့ နယ်အတွင်း ရှိ စီမံခန့်ခွဲရေး၊ ကျန်းမာရေး၊ လျှပ်စစ်မီး ရရှိရေး၊ မြေအသုံးချရေး နှင့် သဘာဝပတ်ဝန်းကျင် တို့အတွက် တာဝန်ရှိသည့် အမျိုးမျိုးသော ကိုယ်စားလှယ်အဖွဲ့အစည်းများ
- ဤအဖွဲ့ အစည်းများ ၏ စီမံကိန်းတွင် ပါဝင်ပက်သက်သူများ မှာ ရေဖြူမြို့နယ်အတွင်း လေ့လာရေးဒေသ အတွင်း ကျေးရွာ (၁၂) ရွာ အတွင်းမှ အသီးသီးသော ရွာသူရွာသားများ နှင့် ကျေးရွာ ကော်မတီတို့ ဖြစ်ပါသည်။ အမည်အားဖြင့် ကင်ရွာ၊ လိန်ဂရာရွာ၊ ဒေါက်လောက်ရွာ၊ ပုလဲဂူရွာ၊ မင်းတပ်၊ သပရာဖွန်း၊ ကျောက်ထွက်ကုန်း၊ သစ်တိုတောက်၊ ပဂေါ်ဖွန်း နှင့် ဝက်ချောင်းကျေးရွာတို့ ဖြစ်ပါသည်။

လူထုဆွေးနွေးတိုင်ပင်ခြင်းတွင် အဓိကကျင့်သုံးသောနည်းလမ်းမှာ လူထုအစည်းအဝေး ဖြစ်ပါသည်။ လူထုအစည်းအဝေးပြုလုပ်ခြင်း နည်းလမ်းအား ဒေသတွင်း စီမံကိန်းတည်နေရာတွင် မီဒီယာများနှင့် လူထုခေါ်ယူအသိပေးခြင်း တို့ဖြင့် စီမံကိန်းဆိုင်ရာသတင်းအချက်အလက်များ အားပြည်သူလူထု ထံ ထုတ်လွှတ်ပြသခြင်းဖြင့် အကောင်အထည်ဖော်ခဲ့ပါသည်။ ယင်းတို့မှာ သတင်းပေးရေးဆိုင်ရာ ရည်ရွယ်ချက်ဖြင့် ထမ်းဆောင်ခဲ့ပါသည်။

အစည်းအဝေး တစ်ခုချင်းဆီအား မြို့နယ် အုပ်ချုပ်ရေးဌာနရုံး ၏ အကူအညီဖြင့် ဖိတ်ကြားရမည့်သူများ ကိုရွေးချယ်ခြင်း၊ အစည်းအဝေးပြုလုပ်ရန် တည်နေရာအတွက် အစီအစဉ်များ ပြုလုပ်ခြင်း နှင့် ဖိတ်စာများ ရိုက်ကူး ဖြန့်ဝေခြင်းတို့ကို စီစဉ်ခဲ့ပါသည်။

စီမံကိန်းတင်သွင်းသူ ကိုယ်စားလှယ်များ နှင့် အတိုင်ပင်ခံ ပညာရှင်များ သည် စီမံကိန်း၏ အဖွဲ့အနေဖြင့် အတူတကွ ပါဝင်တက်ရောက်ခဲ့ပါသည်။ စီမံကိန်းတင်သွင်းသူ ကိုယ်စားလှယ်များသည် စီမံကိန်းဖွံ့ဖြိုးတိုးတက်မှု အစီအစဉ် နှင့်ယင်းနှင့်သက်ဆိုင်သော အစည်းအဝေး၌ မေးမြန်းလာသည့် မေးခွန်းများ ဖြေကြားခြင်း ၊ အကြောင်းအရာများ ကို ရှင်းလင်းခြင်း စသည့် စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များအား အကျဉ်းချုပ်ဖော်ပြရာတွင် တာဝန်ယူခဲ့ပါသည်။ အတိုင်ပင်ခံ ပညာရှင်များသည် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်သက်ရောက်မှုဆန်းစစ်ခြင်း (EIA) နှင့် ပက်သက်သည့် သတင်းအချက်အလက်များကို ပံ့ပိုးခြင်း နှင့် စီမံကိန်း၏ သက်ရောက်မှုများနှင့်သက်ဆိုင်သော ပြဿနာရပ်များအား ရှင်းလင်းခြင်းတို့အတွက် တာဝန်ယူခဲ့ပါသည်။

အစည်းအဝေးတစ်ခုချင်းဆီအား တာဝန်ရှိ အစိုးရအဖွဲ့အစည်းမှ ကြီးမှူးခဲ့ပါသည်။ အစည်းအဝေးအား တက်ရောက်သူများ ထံသို့ အစည်းအဝေး ရည်ရွယ်ချက်များ နှင့်

မျှော်လင့်ထားသော ရလာဒ်များအား ကြေညာအသိပေးခြင်း ဖြင့် စတင်ဖွင့်လှစ်ခဲ့ပါသည်။ ထို့နောက် စီမံကိန်း အဖွဲ့အစည်း သည် စီမံကိန်း နှင့် EIA ၏ သတင်းအချက်အလက်များပေးခဲ့ပါသည်။

ထို့နောက် အစည်းအဝေးသည် တက်ရောက်ပါဝင်သူများနှင့် စီမံကိန်းအဖွဲ့ အတွင်း အပြုသဘောဆောင်သော ဆီလျော်သော ဆွေးနွေးခြင်းအတွက် အဖွင့် ပွဲကို ပြုလုပ်ပေးခဲ့ပါသည်။

ဒေသတွင်း အဆင့် အစည်းအဝေးပွဲများအား သက်ဆိုင်ရာ အစိုးရအဖွဲ့အစည်းများ အထူးသဖြင့် ECD မှ အစဉ်တစိုက်တက်ရောက်ခဲ့ပါသည်။ သို့ သော်လည်း အစိုးရအဖွဲ့များ၏ တက်ရောက်ပါဝင်မှုသည် ရွာသူရွာသား ပါဝင်တက်ရောက်သူများ အား လည်းကောင်းတို့၏ သက်ဆိုင်မှုများ၊ တောင်းခံမှုများ နှင့် အကြံပေးမှုများအား အနှောင့်အတားဖြစ်စေခဲ့ခြင်း မရှိပါ။

၁.၈.၃ အဓိက အကြံပြုချက်များ၏ အကျဉ်းချုပ်ဖော်ပြချက်

ပထမပိုင်းကာလ နှင့် ဒုတိယပိုင်းကာလ နှစ်ခုစလုံးအတွင်း အစိုးရအာဏာပိုင်များ၊ အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ (NGO) နှင့် ဒေသခံလူထု တို့နှင့် ဆွေးနွေးတိုင်ပင် ခြင်း အား အောက်ပါ အတိုင်း ဖော်ပြထားပါသည်။

အဓိက အကြံပြုချက်များ ၏ အကျဉ်းချုပ်ဖော်ပြချက်

သက်ဆိုင်ရာ လူထုအဖွဲ့အစည်းများ အစု	ပြဿနာရပ်
ပထမပိုင်း ကာလ	
၁။ အစိုးရ အာဏာပိုင် အဖွဲ့ အစည်းများ	-သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း တွင် ပူးပေါင်း ပါဝင်ခြင်း -မြေယာ သိမ်းဆည်းခြင်း - သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်း ရလာဒ်များအား တင်သွင်းခြင်း
၂။ စိတ်ပါဝင်စားသော အဖွဲ့အစည်းများ	-စီမံကိန်း ၏ သတင်းအချက်အလက်များအား အမှန်ပြင်ဆင်ခြင်း -ဒေသခံလူထုအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများ -မျှတသော အလျော်အစားပေးမှု -သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု -အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ၏ EIA စာတမ်းအား အထောက်အကူပြုမှု -ဒေသခံများအတွက် လျှပ်စစ်မီး ရရှိရေး
၃။ ဒေသခံ ပြည်သူလူထု အဖွဲ့အစည်း	-ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်း မှ ညစ်ညမ်းခြင်း -ဆူညံခြင်း နှင့် တုန်ခါခြင်း အနှောက်အယှက်များ -ITD လမ်းမကြီးအား အသုံးချမှု -သဘာဝပတ်ဝန်းကျင် ကာကွယ်ရေး -မြေယာသိမ်းဆည်းမှု များ အတွက် မျှတသော လျော်ကြေးရရှိမှု -သီဟိုစေ့ အထွက်နှုန်း -အလုပ်အကိုင်အခွင့်အလမ်းများ -ရွာများသို့ လျှပ်စစ်မီးရရှိရေး

သက်ဆိုင်ရာ လူထုအဖွဲ့အစည်းများ အစု	ပြဿနာရပ်
ဒုတိယပိုင်း ကာလ	
၁။ အစိုးရ အာဏာပိုင်များ	- အာဏာဝါအရင်းအမြစ်များ အပေါ်တွင် ထိခိုက်သက် ရောက်မှု - ဆောက်လုပ်ရေးလုပ်ငန်းများ လုပ်ကိုင်ဆောင်ရွက်စဉ် ထိခိုက်သက်ရောက်မှု - အနီးအနားရှိ လူထုများထံ ပိုမိုသက်သာသောနှုန်း ဖြင့် လျှပ်စစ်မီး ထောက်ပံ့ရန် အကြံဉာဏ်ပေးခြင်း
၂။ ဒေသခံ လူထု အဖွဲ့အစည်းများ က) ဝက်ချောင်း ကျေးရွာ	-ITD လမ်းမကြီးမှ ရွာ၏ အဆုံးအထိ လမ်းပန်းဆက်သွယ်ရေး တိုးမြှင့်ပေးရေး
ခ) ပုလဲဖွန်း ကျေးရွာ	-ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်းမှ ကာဘွန်ဒိုင်အောက်ဆိုဒ် ဓါတ်ငွေ့ ညစ်ညမ်းမှု
ဂ) ပဂေါဖွန်း ကျေးရွာ	-လျှပ်စစ်မီး ရရှိရေး -မြေယာသိမ်းဆည်းမှုအပေါ်တွင် အလျော်ပေးခြင်း -မြို့ပြနှင့် လမ်းပန်းဆက်သွယ်ရေး
ဃ) ရလိုင် ကျေးရွာ	-စီမံကိန်း နှင့် သဘောတူညီချက်ရယူမှု -မြေယာ အလျော်အစားပေးမှု
၃။ အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ	-စီမံကိန်း နှင့် သဘောတူညီချက် ရယူမှု

လူထုအသိပေးဆွေးနွေးတိုင်ပင်ခြင်း အစည်းအဝေးများမှ ရရှိသော ရလာဒ်များကို စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေးရာ စီမံခန့်ခွဲမှု အစီအစဉ်တွင် လက်တွေ့အကောင်အထည်ဖော် အသုံးချ သွားမည်ဖြစ်ရုံသာမက လူမှုရေးရာ ပူးပေါင်းပါဝင်တာဝန်ယူလိုမှု (CSR) အပိုင်းတွင် စီမံကိန်း တင်သွင်းသည့် အဖွဲ့အစည်းမှ လုပ်ဆောင်သွားမည့် လူထုအထောက်အကူပြု ဖွံ့ဖြိုးရေး အစီအစဉ်များတွင် ပါ အသုံးချသွားပါမည်။

၁.၈.၄ စီမံကိန်း သတင်းအချက်အလက်များအား အသိပေးထုတ်လွှတ်ကြေငြာခြင်း

ပထမပိုင်းကာလ နှင့် ဒုတိယပိုင်း ကာလ များအတွက် လူထုဆွေးနွေးတိုင်ပင်ခြင်း နှင့် သတင်းအချက်အလက်များ ထုတ်လွှတ်ကြေညာခြင်းအား ကျေးရွာများ၏ဗဟို ရှိ လက်ဖက်ရည်ဆိုင်များ ကုန်စိမ်းဆိုင်များ အစရှိသည့် သိသာမြင်သာလွယ်သော နေရာများတွင် သတင်းအချက်အလက်များ ဖြန့်ဖြူးခြင်း နှင့်တကွ လူထုအစည်းအဝေးပုံစံဖြင့်ပါ ပြုလုပ်သွားပါမည်။ ပထမပိုင်း ကာလနှင့် ဒုတိယပိုင်းကာလ အစည်းအဝေးများတွင် ထုတ်လွှတ်ကြေညာမည့်သတင်းအချက်အလက်များတွင် EIA ၏ ရည်ရွယ်ချက်များ၊ သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာစစ်တမ်းကောက်ယူခြင်း နှင့်သက်ဆိုင်သော ကွင်းဆင်း လုပ်ငန်းများ၊ လူမှုရေးရာ စစ်တမ်းကောက်ယူမှုနှင့် သက်ဆိုင်သော ကွင်းဆင်းလုပ်ငန်း လုပ်ရှားမှုများ၊ လေ့လာမှု ၏ ယာယီအချိန်ဇယားများ နှင့် ဆက်သွယ်ရန် ပုဂ္ဂိုလ်များ စသည်တို့ပါဝင်ပါသည်။

၁.၈.၅ အနာဂတ် အတိုင်ပင်ခံလုပ်ငန်းများအတွက် ထောက်ခံအကြံဉာဏ်ပေးချက်

အတိုင်ပင်ခံများသည် ပါတီဝင် (၃) ဖွဲ့ပါ ကော်မတီ အား လူထုဆွေးနွေးတိုင်ပင် ခြင်း အတွက် တည်နေရာအဖြစ် တည်ထောင်ထားရှိရန် တင်သွင်းထားပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းများ ပြုလုပ်စဉ်ကာလ နှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလ တို့အတွက် ပါတီဝင် (၃) ခုပါ ကော်မတီ၏ အသေးစိတ်များကို CEMP နှင့် OEMP တို့တွင် ဖော်ပြထားပါသည်။

CHAPTER 1

EXECUTIVE SUMMARY

CHAPTER 1

EXECUTIVE SUMMARY

1.1 INTRODUCTION

Dawei Power Generating (DPG) Company Limited (Project Proponent) intends to develop a 15 MW Temporary Power Plant Project (Project) in Dawei Special Economic Zone (Dawei SEZ) in the Tanintharyi Region. The 15 MW Temporary Power Plant Project will construct a natural gas-engine generator power plant and gas distribution facilities in Dawei Special Economic Zone (DSEZ). The power plant will have a rated maximum capacity of 15 MW. The objective of the Project is to supply power for the construction period of DSEZ and will be removed after Boil-Off Gas Power Plant starts to operate. This Project will be critical to the success of the development of infrastructure in DSEZ. This would help establish confidence of investors in making decision to invest in DSEZ.

For environmental and social aspects of the Project, the Project Proponent engaged TEAM Consulting Engineering and Management Co., Ltd. in association with a local firm, Total Business Solutions (Consultant) to conduct an ESIA study from January to February 2015. The ESIA study was carried out in two stages, the scoping stage and the final stage, following requirements of the Ministry of Natural Resource and Environmental Conservation (MONREC) prescribed in the Environmental Impact Assessment Procedure (ESIA Procedure) dated December, 29, 2015. The Scoping Report received comments from MONREC in November 2015. Subsequently, the ESIA study was continued and the results are presented in the main text of this Final ESIA Report. Key results of the ESIA study are summarized in this Executive Summary part with cross reference to the main text as considered necessary.

1.2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

1.2.1 Corporative Environment and Social Policies

The Project Proponent will formulate an environmental and social management policy to guide its environmental and social management during the construction phase and the operation phase of the Project. The Project Proponent will manage environmental aspects of the Project in accordance with the Project Proponent Safeguard Policy. Consequently, the Project Proponent will establish an environmental management system (EMS) for the project and will operate the EMS to meet the requirements of Safeguard Policy. The Project Proponent will establish and activate the EHS Management System starting from the commencement of construction.

1.2.2 Policy and Legal Framework

National policy and legal framework relevant to environmental management of this Project can be divided into four categories: (i) Policy and legal framework which provide the foundation for environmental management; (ii) Regulations which govern the EIA process, the processing of EIA documents for the issuance of environmental clearance certificate, and implementation of the environmental management plans; (iii) Laws and regulations related to environmental protection, environmental quality standards and social management requirements; and (iv) Laws specific to the project site.

Various laws and regulations of each of the four categories were reviewed and major findings and conclusions are as follows:

(1) The Foundation for Environmental Management

The National Environmental Policy (1994) establishes the foundation for environmental management in socio-economic development by advocating the principle of sustainable development through integrating environmental management with economic development. Implicitly, the Policy covers not only the physical environment but also the biological environment, the socio-economic environment, and cultures and heritage. The Policy supports Articles 37, 42 and 390 of the new Constitution (2008) and is translated into actions by the Environmental Conservation Law (2012). The Environmental Conservation Law and the associated Environmental Conservation Rules are comprehensive legal document which provide the legal framework for environmental management of the country. The Special Economic Zone ("SEZ") Law was promulgated on 2014. This will facilitate in developing export oriented industries. The Dawei Special Economic Zone (DSEZ) Law was enacted on 2011. This Law contains the stipulations in order to facilitate in developing export oriented industries and additional needed supply chin industries

(2) Regulations Related to Environmental Impact Assessment and Management

Requirements related to environmental and social impact management for development projects are described in two related documents-EIA Procedure and EIA Guidelines. The EIA Procedure is comprehensive and covers the preparation and review of EIA documents including environmental management plans (EMP). The Environmental Impact Assessment Guidelines (2015), objectives of the EIA Guidelines are to provide a common framework for EIA reporting, to present project proponents and their environmental consultants. Project proponents and their environmental study teams need to consider the Instruction in their preparation of environmental report documents, including scoping reports, IEE reports, EIA reports, and environmental management plans to be submitted to the Ministry.

(3) Laws and Regulations Related to Environmental Protection and Social Impact Management

Environmental protection and social impact management are mostly prescribed in various sector laws and regulations. The issuance and enforcement of environmental quality standards are normally based on specific national environmental law. It also include law and regulations related on ecological concern consists The Forestry Law (1992), The Freshwater Fisheries Law (1991), The Protection of Wildlife and Conservation of Natural Areas Law (1994), and The Conservation of Water Resources and River Law (2006). The law related on cultural issue included The Protection and Preservation of Cultural Heritage Regions Law (1998), The Protection and Preservation of Antique Objects Law (2015) and The Protection and Preservation of Ancient Monuments Law (2015). The laws related to social impact management comprise: Public Health Law (1972), The Prevention and Control of Communicable Disease Law (1995), The Control of Smoking and Consumption of Tobacco Product Law (2006), Factories Act (1951), The Protection of National Races Law (2015), The Social Security Law (2012). The law related to labour affair included The Labour Organization Law (2011), The Settlement of Labour Dispute Law (2012), Employment and Skill Development Law (2013), The Minimum Wage Law (2013), The Leave and Holidays Act (1951) and The Payment of Wages Act (2016). Laws related to safeguard consists Petroleum Act (1934), The Petroleum Rules (1937), The Explosive Act (1987) and The Explosive Substance Act (1908) and The Myanmar Fire Brigade Law (2015).

(4) Law Specific to the Project Site

The Project will be located in Dawei Special Economic Zone (DSEZ). DSEZ was established under the Dawei Special Economic Zone Law (2011). This law was specifically promulgated for the development and operations of DSEZ.

1.2.3 International Conventions, Treaties and Agreements

Myanmar has signed several international conventions, treaties and agreements related to the environment. Some of them are Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome, 1956, United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC), Convention on Biological Diversity, Rio de Janeiro, 1992, The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972, ASEAN Agreement on the Conservation of Nature and Natural Resources, Kuala Lumpur, 1985, Catagena Protocol on Biosafety, Cartagena, 2000, Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997, Convention on the International Maritime Organization, 1948, MARPOL 73/78, 1978, United Nations Convention on the Law of the Sea, 1982.

1.2.4 Myanmar Government Institutional Framework

(1) Arrangement at the National and Sector Level

At the national level, the Environmental Conservation Committee (ENCC) serves as mechanism for inter-ministerial coordination. The main functions of ENCC related to this Project is to oversee the management of the EIA process by MONREC through ECD. The EIA process for this Project will be administered by the central ECD in coordination with the regional ECD and various government organizations at the regional, township, and district levels.

(2) Arrangements at the Project Area

The DSEZ Management Committee (DSEZMC) is essentially responsible for facilitating resolving issues between the Government, the Central Body and developers/investors. The relevant government agencies and organizations from respective ministries involved in development activities of the Supporting Working Body (SWB) in the project area such as Department of General Administration, Department of Human Settlement and Housing, and Department of Immigration and National Registration, etc.

1.2.5 International Policies, Guidelines and Standard

International policies, guidelines and standards relevant to environmental and social impacts of projects that are referred to by most countries are those issued by the World Health Organization (WHO), the U.S. Environmental Protection Agency (EPA), the World Bank, and the International Finance Corporation (IFC).

(1) IFC's Standards and Guidelines

IFC prescribes Performance Standards to which its clients will need to comply throughout the investment life of IFC, it's consist Assessment and Management of Environmental and Social Risks and Impacts; Labor and Working Conditions; Resource Efficiency and Pollution Prevention; Community Health, Safety, and Security; Land Acquisition and Involuntary Resettlement; Biodiversity Conservation and Sustainable Management of Living Natural Resources; Indigenous Peoples; and Cultural Heritage. IFC Standards and Guidelines is Environmental, Health, and Safety-General Guidelines (2007) and Environmental, Health, and Safety Guidelines for Thermal Power Plants (2008).

(2) World Bank's Pollution Prevention and Abatement Handbook 1998 Toward Cleaner Production

The World Bank's Pollution Prevention and Abatement Handbook (PPAH) is a comprehensive document providing guidelines for industrial pollution control and recommends emission and ambient standards to be applied in environmental management. There are two specific sections of "Thermal Power: Guidelines for New Plants and "Thermal Power: Rehabilitation of Existing Plant which are relevant to the Project.

1.2.6 Guidelines and Standard Applicable to the Project

Environmental management of the Project during construction and operation will comply with the national or international environmental guidelines and standards as appropriate. The international guidelines and standards will be adopted only when the national guidelines and standards do not exist.

1.3 PROJECT DESCRIPTION AND ALTERNATIVES

1.3.1 Project and Description of Alternatives

(1) Project Description

Project Size

The Project will be comprised of power generation facility and gas distribution facility. The power generation facility will consist of a number, up to 15, of containerized 1 MW gas engine-generator, each gas engine generator has a generation capacity of 1,120 kilowatts (KW). The project facilities will be constructed on a land plot in DSEZ. The site is located approximately at KM.17 of the existing main road connecting DSEZ to Thai border. The size is 25,000 m^2 or 6.25 acres excluding 30 m. clearance on all sides of the perimeters. The site is relatively flat and is at an average elevation of about 25 m above mean sea level (+25.0 m MSL). Eleven (11) villages exist within a 5 kilometre radius from the Project site (***See Section 5.4***).

Facilities and Infrastructure

The Project will construct a natural gas-engine generator power plant and gas distribution facilities, excluding a transmission line that will be constructed under another project.

Time Schedule

The power plant is anticipated to operate from year 2017 to 2018 in order to support the construction period and will be removed after Boil-Off Gas Power Plant starts to operate.

Pre-Construction Phase

Activities in the pre-construction phase will include:

- Land clearing of vegetation and soft top soil; and
- Land leveling, filling and compaction to raise the site to design level.

Construction Phase

(a) Construction Works

As the Project will use a number of containerized package generation units, the construction activities will be mainly related to foundation works and concrete

floors to support the containerized power generation units. Subsequently, the construction activities will be installation and erection of the power plant. After the construction is completed, the power plant will be tested and commissioned unit by unit and the entire system.

(b) Inputs for the Construction

The construction will require the following inputs:

- Personnel: about 50 persons at peak of construction
- Power: supply by mobile generator.
- Freshwater from newly bored groundwater well in project area

(c) Construction Material and Storage Area

All civil works will be constructed by the ITD construction team. Therefore, construction materials will be kept in storage areas in the ITD camp site. Mechanical and electrical works will be carried out by the power plant supplier. All tools and equipment for mechanical and electrical works will be stored in a worker camp to be set up at the power plant construction site.

The mechanical and electrical works related to the installation and erection of the power plant and the gas distribution station will require about 17 persons, including two supervisors.

Operation Phase

The power plant's operation and maintenance will require not more than 12 persons working on a 24 hours, 7 days basis. All maintenance will be performed by experienced and well-trained staff.

(a) Inputs

The operations will regularly require the following inputs:

- Personnel: not more than 12 persons
- LNG: depend on the electricity demand and scheduled generation
- Freshwater: about 1.44 m^3/day (for domestic consumption: 120 litre/person/day)

(b) Organization for Power Plant Operation and Management

An experienced team of professionals will be responsible for day-to-day operations, troubleshooting, scheduled and unscheduled maintenances, and coordination with the Original Equipment Manufacturer (OEM) under the Long Term Service Agreement (LTSA) which maybe entered into before the commercial operation date.

The O&M team will be led by a president and will be organized into 3 main divisions-operation, maintenance and administration division. The operation division will have positions dedicated for environmental, social, safety and occupational health aspects of the power plant operation.

(c) Environmental Management during Operations

The Project will be designed to include the following equipment or facilities for environmental management during operations:

- Continuous Emissions Monitoring System (CEMS) in the stack for monitoring stack emission of sulfur oxides, nitrogen oxides, oxygen, carbon monoxide, opacity, particulates, and flow velocity and temperature of flue gas.
- Wastewater treatment facilities for domestic sewage.

The Project facilities will be designed to fully meet occupational health and safety (OHS) requirements. In addition, architectural designs of all buildings and landscape designs will consider compatibility with the natural features of the site and the surrounding areas. Need for the ambient air quality monitoring stations (ASMS) will be determined.

Decommissioning Phase

At the end of the working life, the power plant would be dismantled and the site cleared for a new use. As the Project is different in nature from a nuclear power plant or a mine, its decommissioning and closure will have minimum environmental impacts.

(2) Description of Project Alternatives

In planning the Project, the Project Proponent considered alternatives in the following two subjects: (i) Alternative on power generator-between reciprocating gas engine generator and gas turbine generator; and (ii) Fuel alternatives-between liquefied natural gas (LNG) and diesel fuel.

1.3.2 Comparison and Selection of the Project Alternatives

(1) Reciprocating Gas Engine Alternative

The reciprocating gas engine is selected considering its compact-size, ease for transportation and installation, and modular configuration. It can be moved to operate at other sites after it is no longer need at the designated site. The gas engine generator model Cummins QSK60 is selected considering its advantages over comparators in terms of efficiency, environmental performance and unit cost of output. At this 1 MW level, gas turbine generators are not competitive compared to the reciprocating gas engine generators.

(2) LNG Alternative

LNG is natural gas (predominantly methane, CH_4) that has been converted to liquid form for ease of storage or transport. It takes up about 1/600th the volume of natural gas in the gaseous state. LNG achieves a higher reduction in volume than compressed natural gas (CNG) so that the (volumetric) energy density of LNG is 2.4 times greater than that of CNG or 60 percent of that of diesel fuel. This makes LNG cost efficient to transport over long distances where pipelines do not exist. It is odorless, colorless, non-toxic and non-corrosive. It could be considered the most environmentally friendly fossil fuel, because it has the lowest CO_2 emissions per unit.

Diesel fuel is ruled out considering its emissions and cost disadvantages compared with LNG.

1.4 DESCRIPTION OF THE ENVIRONMENTAL AND SOCIAL CONDITION

1.4.1 Study Area and Scope of the Environment

The ESIA study area is defined as an area within a 5 km radius of the Project site. The study area covers 11 villages in Yebyu Township.

To establish a basis for environmental impact assessment, baseline information on environmental conditions of the study area was collected through field surveys and review of secondary information. The "Environment", as defined in the ESIA Procedure, encompasses physical, biological, socio-economic, cultural, and visual components.

1.4.2 Physical Components

The following physical characteristics of the study area which have environmental implications are noted:

- The regional climate is significantly influenced by the south-west and north-east monsoons. The summer season follows the winter season, normally from March to April and rainy season normally begins in April and lasts until the end of November.
- Regarding to the physical characteristics of study area (5 km. radius), its elevations from north to south range between 0-20 meters. There is the Dawei River, about 8 km. long flowing pass the study area (eastern side). Within the study area, there are the eastern mountain ranges, extends from the north to south direction.
- Soils in the study area are classified into Gley swampy soil or Gleysol in FAO classification system.
- Ambient air in two surveyed stations. The ambient air quality at all two stations was good as all pollutant were in low concentration, it's including PM-10, TSP, NO_2 and SO_2.
- Ambient noise were set in the same location for air quality sampling. The results of ambient noise were still low and under standard.
- The data clearly indicates that surface water quality at both stations was good quality with suitable for supporting aquatic ecosystem.
- The ground water quality data indicated water in both well of survey are not suitable for drinking due to its slightly acid.

Detailed discussions and data are presented in **Chapter 5** of the main text.

1.4.3 Biological Components

The following key features of the terrestrial resources and aquatic ecosystem in the Project area are observed:

- The surrounding of project site composed of wilderness site and palm plantation only whereas sites of five kilometres radius from project site consisted as wilderness site, agriculture land as paddy rice, Mango orchard, Cashew Nut orchard, Palm plantation and Para rubber plantation, and two types of natural forests were mixed deciduous forest and dry evergreen forest.

- There were 48 species found in this site and the radius zone is habitats of 77 plant species.

- In the project site, 22 fauna species were found in the project site, consisting of 13 bird species, 6 mammal species, and 3 reptile species. In the radium zone of 5 kilometers form project site, 29 fauna species were found in the project site, consisting of 25 bird species, 1 mammal species, and 3 reptile species.

- An aquatic ecological study consists of survey on plankton and benthos.

- A total of 16 species of phytoplankton and 9 taxa of zooplankton were found. In total, 3 species of benthos were identified in the benthic samples collected at sampling station.

1.4.4 Socio-Economic Components

Information on socio-economic setting of the study area was collected from field surveys supplemented by secondary information sources. The primary information was at the village level and was obtained through interviewing village headmen and key informants in the nine villages in the study area. They are Kin Ywar, Pale Gu, Wet Chaung, Pagaw Zun, Min Dut, The Prae Zun, Kyauk Hwet Kone, Yalai, and Thit toh Taut in Yebyu Township. The following key features of the socio-economic setting relevant to social aspect of the Project are noted:

- The total population was 9,989 living in 2,231 households. The population in the study area accounted for about 8% of the total population of the Yebyu Township. The population had a female to male ratio of 1.0375 to 1. The majority of people are Burmese, practicing Buddhism, and speaking Burmese language. Vulnerable groups are small in number. Their number was estimated at about 3% of the total village population.

- All villages in study area has no hospital. Only two rural health sub-centre are existed at Pagaw Zun and Thi toh Tuat villages.

- Agriculture is main economic activities. Cash is generated by perennial crops, mainly cashew nut, betel nut, rubber and fruits. Paddy is cultivated in every village as well, but in a smaller area than Orchards.

- Most people received only primary education.

- The study area comprises of build-up and village agricultural land, agricultural land, forest area, and miscellaneous area. There are 3.06%, 83%, 1.29%, and 12.22% of the study area, respectively.

- Roads connect among all villages in the study area are unpaved laterite road about 4-6 m wide. The main road within the study area is two traffic lanes unpaved laterite road with approximately 10 m wide.

- The results of traffic counting are presented in four tables in ***Appendix 5J***. The data show traffic volume of 10 categories of vehicles as follows: (i) passenger car; (ii) light bus; (iii) medium bus; (iv) crane and grader; (v) light truck: (vi) six-wheeled truck; (vii) ten-wheeled truck; (viii) heavy truck including trailer; (ix) bicycle and tricycle; and (x) motorcycle. Motor cycles were the majority of vehicles followed by passenger car.

- All villages in the study area have no public electricity supply. The electricity is provided by a small privately owned diesel generator of each village.

- The villagers use groundwater (bored and shallow wells) and rain water.

- Rudimentary methods of on-site disposal of excreta, wastewater, and solid wastes are used in the villages.

1.4.5 Cultural and Visual Components

All villages in the study area are old settlement communities, over 200 years. This evidences by over 200 year old temple of Yalai. It also has no sites of natural beauties.

1.5 IMPACT AND RISK ASSESSMENT MITIGATION MEASURES

1.5.1 Impact and Risk Assessment and Mitigation Measures

The impact and risk assessment and mitigation measures for the construction phase, the operation phase of the power plant and its associated facilities, and the decommissioning phase, it's focused on relevant environmental and social issues.

1.5.2 Impact Assessment Methodology

(1) Scope of Assessment

Environmental social impact assessment (ESIA) of a proposed development project is now recognized that it is essentially environmental management planning. In this regard, impact and risk assessment and formulation of mitigation measures are the first stage of environmental management planning. The impact area of each issue and the assessment of impacts of each ES issue see in the main text ***Table 6.2.1-1*** and ***Table 6.2.1-2***, respectively.

(2) Methodology for the Impact Assessment of Each Environmental Issue

The assessment of impacts will cover (i) impacts on the ambient environment; and (ii) impacts on the receptors.

- **Impact on Ambient Environment:** The impacts on the relevant ambient environment will be predicted, if possible, using an appropriate mathematical model.
- **Impacts on Receptors:** Each environmental issue will have an impact area. Receptors in the impact area could be people, ecosystem, and properties depending on the nature of the issue. Impacts on the receptors are consequences of the impacts on ambient environment.

(3) The Methodology

The impact assessment methodology for the impact assessment of each environmental issue shows a diagram of the methodology in the main text ***Figure 6.2.1-3***.

(4) Methodology for the Determination of Significance

The impact of an environmental issue is divided into 5 levels based on six criteria or considerations. The impact assessment will be made for the impact without control and the impact with control or residual impact. The five impact levels are:

- Level 5-Critical-the impact is irreversible with extensive and severe ecological damages or socio-economic damages.The issue cannot be resolved. The project plan will need to be changed, relocated or abandoned.

- Level 4-Major-the impact will be substantial but it can be effectively reduced using both engineering and management measures.The residual impact will be minor.

- Level 3-Moderate-the impact is moderate in terms of extent and severity and it can be effectively reduced using simple measures. The residual impact will be insignificant.

- Level 2-Minor-the impact is small in magnitude and confined to a small area. It can be easily managed through good construction practices. The residual impact will be negligible.

- Level 1-Insignificant-the impact is very small compared to Level 2 impact and can be easily mitigated through good construction practices. The residual impact will be negligible.

Valued Environmental Components (VECs) for the Project are those environmental and social attributes associated with the development of the proposed Project which have been identified to be of concern by the public, government or professional community.

1.5.3 Risk Assessment

Based on the concept and principle of project risk management, an environmental risk in the context of this Project is considered as: *"an event which may or may not occur, but if it occurs it will have negative consequences on the achievement of the Project's environmental management objectives, i.e. compliance with environmental performance requirements prescribed by MONREC and other authorities, and as agreed or committed with the stakeholders, particularly the surrounding communities."*

Environmental risk management planning involves: (i) identify uncertain events (risk events) which may occur with consequences on environmental compliance of the Project; (ii) for each identified event, assess its likelihood of occurrence and the level of its consequences on environmental compliance; (iii) identify underlying causes of the risk event; (iv) devise risk mitigation measures to address the identified causes of the risk; (v) classifying the risk into major, moderate and minor risks based on its likelihood of occurrence and significance of its consequences; and (v) propose arrangements for implementing the risk mitigation measures. The results of risk classification for the entire project could be presented in a simple risk matrix (see ***Figure 6.2.2-1*** in the main text).

1.5.4 Pre-Construction Phase Impact Identification Assessment and Mitigation

(1) Pre-Construction Phase Activities

There will be only a small number of activities during this phase. The Project will require about 6.25 acres of land for constructing the power plant. Pre-construction activities will include site clearance, site filling and compaction, and transporting filling materials.

(2) Impact Assessment

A. Impact on Ecosystem

(1) Impact Identification: The site clearance and filling of project site will permanently eliminate the existing palm tree plantation and some wildlife living in this area.

(2) Impact Assessment: The Project will eliminate 6.25 acres of palm tree plantation. This loss of forest area is small. The issue deserves low priority during the pre-construction period.

(3) Impact Mitigation Measures: Survey and record flora and fauna species in the Project site before land clearing. Green buffer zones should be created around the boundaries of the Project site. Tree cutting will be avoided and cannot be done without prior permission from the Project Proponent's Project Manager.

B. Biomass Waste Disposal

(1) Impact Identification: The clearance of vegetation cover could generate as much as 11.94 tons of biomass waste for project site.

(2) Impact Assessment: The Contractor will need to conduct a detailed site survey to make a more accurate estimate of the biomass waste in the project site. The impact of biomass disposal is considered low.

(3) Impact Mitigation Measures: The biomass wastes will consist of trunks, stems, branches, and leaves. The components that could be used for construction, charcoal making, and firewood should be sorted out. The remaining unusable components should be reduced in size and disposed of in the Project site by land fill.

C. Impacts on Livelihood of Villagers

(1) Impact Identification: For project site, villagers in Yebyu Township will be adverse affected due to loss of some part of palm tree plantation area.

(2) Impact Assessment: Pagaw Zoon village has a total population of 2,212 of which about all of villagers would be adversely affected by the Project. The evaluation is small impact magnitude.

(3) Impact Mitigation Measures: The Project Proponent should design and implement a long term of livelihood restoration program (LRP) for the affected people in consultation with them and the concerned authorities.

D. Environmental Disturbances Caused by Fugitive Dust

(1) Sources: Potential sources of fugitive dust in this Project include: site clearing, excavation work, handling and transportation of construction materials, movement of heavy vehicles. The largest source of fugitive dust would be at the 15 MW temporary power plant soil considering the areas of construction.

(2) Sensitivity of Receptors: The receptors of fugitive dust will be workers on site and communities near the project site, is Pagaw Zoon village.

(3) Magnitude of Fugitive Dust Emission at Sources: The amount of fugitive dust generated in the construction will depend primarily on the nature of construction works. The main construction area of the power plant and its facilities of about 6.25 acres, the total amount of fugitive dust is estimated at 7.50 metric tons/ month. Assuming 8 working hours per day and 30 days per month, the emission rate will be 0.03125 metric tons per hour or about 8.681 grams per sec (g/s).

(4) Proposed Mitigation Measures at Sources: the measures should be implemented to reduce fugitive dust emission. The most common measures are spray water, enforce a speed limit for vehicles and trucks, resurface the disturbed areas as soon as practicable after completion of construction, and prohibit the open burning of waste.

(5) Fugitive Dust Control Targets: This standard prescribes the concentration of TSP not exceeding 230 $\mu g/m^3$. The TSP level at the receptors will not exceed this limit.

(6) Predicted TSP Levels at the Receptors from main construction site: The dispersion of fugitive dust can be calculated using the Box Model (Handbook on Atmospheric Diffusion, 1987). This background TSP was 24-hr average TSP measured at Pagaw Zoon primary school. The results of total TSP in No Control Case and Control Case are 235.56 $\mu g/m^3$ and 192.81 $\mu g/m^3$, respectively. The result from Box Model indicated that total TSP is not compile with the standard (230 $\mu g/m^3$), Although the receptors in Pagaw Zoon village is about 1.1 km away to the south of the construction site and the impact of fugitive dust would be smaller than the level at the perimeter of the construction site

(7) Recommended Mitigation Measures: No additional mitigation measures would be required at the construction site considering the small magnitude of the emission. Measures to be implemented by the EPC contractor should include enforce speed limit for trucks, and cover construction materials by canvas during transportation.

(8) Evaluation of the Significance of Fugitive Dust Impact: The fugitive dust issue should receive high control priority.

(9) Proposed Monitoring: Levels of fugitive dust should be monitored daily during the construction.

E. Environmental Disturbances Caused by Noise

(1) Sources: Typical noise levels of Bulldozers, excavators and graders are around 85 dB(A) measures at 15 m from the source.

(2) Sensitivity of Receptors: The closest receptor to the power plant construction site is Pagaw Zoon village which located about 1.10 km south of the power plant site.

(3) Mitigation Measures to Reduce Noise at Sources: It is difficult to design practicable noise retrofit kits to endure the environment of the construction sites. Therefore, the EPC contractor and his subcontractors should be required to use equipment that has best noise performance

(5) Noise Control Targets: The construction noise will not increase the ambient noise level at the designated receptors higher than 70 dB(A) Leq-24 hour (USEPA Standard). The increase in the ambient noise level is not more than 3 dB(A) Leq-1 hour (IFC Standard).

(6) Predicted Noise Levels at the Receptors: The calculations of the net effect of construction noise on the ambient noise levels were made in two cases-No Control Case and Control Case show in the main text ***Table 6.3.2.5-1***.

(7) Recommended Mitigation Measures: The noise reduction using an acoustic wall or a sound barrier at least 3 m high and provide ear plugs or ear muffs to workers operating. Major construction activities should be limited to only during the day time. Speeds of vehicles in the construction site will not be more than 40 km/hr. The EPC contractor will be required to regularly monitor ambient noise levels at the receptors.

(8) Evaluation of the Significance of Noise Impact: The construction noise issue deserves high control priority.

1.5.5 Construction Phase Impact Identification Assessment and Mitigation

(1) Construction Phase Activities

Construction activities of the onsite facilities will concentrate in the Project site. All of works will be largest in scope and magnitude in the construction of power plant and its facilities. Construction activities will be specific for each project component. They could be grouped into two categories: (i) civil works (CW); and (ii) mechanical and electrical works (MEW).

(2) Relevant Environmental Issues

Based on the nature and magnitude of construction works, the Consultant identified in the main text ***Table 6.4.2-1*** environmental issues and related construction works that will need to be managed during the construction.

A. Gaseous Emissions

(1) **Sources:** Diesel-powered heavy construction equipment, vehicles and generator sets are the major sources of gaseous emissions. The emissions will include typical pollutants such as NO_x, SO_2, and CO.

(2) **Sensitivity of Receptors:** The receptors will be construction personnel.

(3) **Estimates of Emission Loads:** Emission loads of various pollutants could be estimated from information on the number and type of diesel- engine construction equipment and their hours of operation. The pollution load would not be large.

(4) **Mitigation Measures for Emission Reduction at Sources:** The gaseous emissions at sources through the following management measures are maintain all construction equipment in proper working, provide adequate training to the equipment operators, use the proper size of equipment, use the equipment fitted engines with latest low emission technologies, encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes, and take measures to manage the movement of construction vehicles entering and leaving the construction sites.

(5) **Emission Control Targets:** Ambient air quality at the construction site will comply with the applicable ambient air quality standards.

(6) **Predicted Impacts on Receptors:** Considering the low emission loads, the impact of gaseous emission during the construction phase.

(7) **Evaluation of the Significance of Impacts:** Gaseous emissions during construction will not create significant air pollution problem.

(8) **Proposed Monitoring:** Ambient air quality at the main construction site should be measured monthly starting when the construction becomes intensive.

B. Noise

(1) Sources: Noise will be mostly generated in civil works construction. The construction noise levels will affect construction workers and could also affect the nearby receptors.

(2) Sensitivity of Receptors: The closest receptor to the power plant construction site is Pagaw Zoon village which located about 1.10 km south of the power plant site.

(3) Magnitude of Noise Levels at Sources: The data on noise levels of various construction equipment relevant to the construction of this Project show in the main text ***Table 6.4.3-2***.

(4) Mitigation Measures to Reduce Noise at Sources: It is difficult to design practicable noise retrofit kits to endure the environment of the construction sites. Therefore, the EPC contractor and his subcontractors should be required to use equipment that has best noise performance

(5) Noise Control Targets: The construction noise will not increase the ambient noise level at the designated receptors higher than 70 dB(A) Leq-24 hour (USEPA Standard). The increase in the ambient noise level is not more than 3 dB(A) Leq-1 hour (IFC Standard).

(6) Predicted Noise Levels at the Receptors: The calculations of the net effect of construction noise on the ambient noise levels were made in two cases-No Control Case and Control Case show in the main text ***Table 6.4.3.2-2***.

(7) Recommended Mitigation Measures: The noise reduction using an acoustic wall or a sound barrier at least 3 m high and provide ear plugs or ear muffs to workers operating. Major construction activities should be limited to only during the day time. Speeds of vehicles in the construction site will not be more than 40 km/hr. The EPC contractor will be required to regularly monitor ambient noise levels at the receptors.

(8) Evaluation of the Significance of Noise Impact: The construction noise issue deserves high control priority.

C. Wastewaters

(1) Sources: The wastewaters will be generated by domestic sewage, wash waters in the construction site, and surface runoff. These wastewaters will need proper management to minimize their environmental impacts when they are discharged from the construction site into receiving waters.

(2) Sensitivity of Receptors: The remaining volume will be collected in ditch and holding pond of the temporary power plant construction site with no discharge to nearby natural water courses.

(3) Estimates of Wastewater Volume: The domestic wastewater was estimated at about 3.2 m^3/day. The volume of wash waters-concrete produced per week could be about 2,000 liters (2.0 m^3). The EPC contractor would use the flooded basin for truck wheel washing. Flooded basin is 4 m wide, 10 m long and 0.5 m water depth. The daily volume of wheel wash water will be 20 m^3/day. The total volume of surface runoff will be 1,047.5 m^3

(4) Mitigation Measures for Waste Water Reduction at Sources: Domestic sewage and wash water will be appropriately treated by on-site septic tank and soak away pit. Wastewater in the septic tank must be collected and treated outside the construction area by authorized contractor.

(5) Wastewater Control Target: The quality of the treated effluent will comply with the applicable effluent quality standards.

(6) Anticipated Impacts on Receptors: The water from domestic sewage would cause no impact to natural water cause nearby to the project site. The concrete wash water will have a high pH and contain high suspended solids. . However, it will be treated to remove suspended solids and adjust the pH as necessary. The impact of surface runoff from the construction site on the surface water quality of nearby natural water courses would be insignificant because the construction site will surrounded by sedimentation ditch which will collected storm water to the retention pond. Consequently, the receptors-the nearby watercourses-would not be sensitive to the wastewater from the construction site.

(7) Impact Mitigation Measures: The wastewater management system will consist of a collection system and a simple treatment system. The proposed design concept is based on the principle of wastewater segregation, treatment and reuse as briefly described below:

(8) Evaluation of the Significance of Impact: The wastewater management issue deserves medium priority during the construction period.

D. Construction Wastes

(1) Sources: The following waste materials will be generated by vegetation from site clearance, spoils and excavated materials from earth works, construction material debris, hazardous waste, and domestic wastes. These waste materials will need to be adequately managed to minimize their environmental impacts.

(2) Sensitivity of Receptors: The receptors in this case will be soil and ground water at the disposal sites.

(3) Estimates of Waste Quantities:

Construction Wastes: The Project will use 6.25 acres (25,000 m^3) of land for the power plant and its associated facilities. The total amount of construction wastes to be generated in the construction was estimated at 500 tons. For the construction period of about 3 months, the average daily amount of waste would be about 6.67 tons/day based on 25 construction days per month.

Non-construction Wastes: Non-construction wastes will be generated in daily living of construction workers about 50 people will be working on the Project site. The total amount of non-construction wastes was estimated at about 40 kg/day at peak, which is much lower than the construction wastes.

Hazardous Wastes: A waste may be considered hazardous if it exhibits of the characteristics are ignitability, corrosivity, reactivity, and toxicity.

Hazardous wastes generated in construction include are used oil, hydraulic fluid, or diesel fuel; waste paints, varnish solvents, sealers, thinners, resins, roofing cement, adhesives, machinery lubricants, and caulk; and clean up materials.

(4) Mitigation Measures for Waste Reduction at Sources:

Design and Planning: There are four key principles that design teams can use during the design process to reduce waste, it's including design for reuse and recover, design for materials optimization, design for waste efficient procurement, and design for deconstruction and flexibility.

Best Practices in Construction Management: The construction will adopt the following practices to minimize waste quantities at sources: waste segregation, waste collection and storage, waste reuse and recycling, waste disposal, and on-site record keeping.

(5) Waste Control Targets: The performance of construction waste management will be evaluated by the following qualitative indicators: no wastes are haphazardly dumped inside or outside the construction site, and No public complaints related to the management of construction wastes.

(6) Predicted Impacts on Receptors: It is not possible to predict the impacts considering the small quantities of wastes that could cause pollution, insignificant impacts are most likely.

(7) Impact Mitigation Measures: The remaining wastes that cannot be reused or recycled will have to be properly disposed of properly to minimize environmental impacts.

(8) Evaluation of the Significance of Impacts: The issue is considered medium control priority.

E. Road Traffic

(1) Sources: The construction of temporary power plant and its facilities will necessitate the need for transportation of construction wastes, construction materials, and plant equipment. Traffic related impacts during the construction phase would be congestion of local roads and increased risk of accidents.

(2) Sensitivity of Receptors: ITD main road is the main road linking the Dawei SEZ to Thailand border.

(3) Estimates of Traffic Loads: A traffic load is expressed as the number of truck trips per hour. It will depend on the total quantity of materials that will need to be transported into and out of the construction site. The number of truck trip for site filling materials has to be calculated in terms of inbound and outbound. Therefore, the number of truck trips will be about 182 trips/day or 20 trips/hr. If the concrete works will take 30 days, the number of truck trips would be around 3 trips/hour on average. Including steel bars for concrete works and power plant building, the number of truck trips would be not over than 10 trips/hour.

(4) Mitigation Measures for Reduction of Traffic Loads: Due to the site is slightly slope, land filling by material from the project site is possibly, the number of truck trip will be reduce.

(5) Traffic Management Targets: There will be no accidents related to construction traffic in the identified impact areas.

(6) Predicted Impacts: The transportation of fill material will increase the existing traffic loads by about 38.2 PCU/hr.

(7) Management Guidelines and Impact Mitigation Measures:

Management Guidelines shall be applied as follows: take reasonable and practicable measures to avoid, or mitigate and manage the potential construction traffic; minimize as far as reasonably practicable and potential traffic; maintain safe access near all project work areas for road users; implement traffic management measures near worksites and other project works; and monitor traffic flows near construction works.

Impact Mitigation Measures shall be applied as follows: truck routes and construction site access, construction traffic Hazards, local Traffic, traffic management at the intersection of ITD main road, and pedestrians and cyclists

(8) Evaluation of the Significance of Impacts: The traffic management deserves high priority during the construction period.

F. Impact on Local Communities

The construction activities could have some impacts on local communities, mainly on the following aspects: (i) local economy; (ii) infrastructure and services; (iii) culture and tradition; and (iv) community health, safety and security.

(1) Local Economy

Impacts: The Project construction will require about 50 workers at construction peak. These workers will require local services, particularly foods and sundries. Therefore, there will be a cash injection into the local economy, thereby creating livelihoods related to services.

Enhancement Measures: Priority should be given to local employment. The recruitment process should be fair and transparent and wage rates are commensurate with experiences and qualifications. The employment conditions will need to comply with the requirements in the national labor law, the social security law and standard wage rate, and other applicable laws and regulations.

(2) Infrastructure and Services: The Project construction could compete with the communities in using limited local infrastructure and services. This competing use could put an extra demand pressure on the already inadequate infrastructure and services. Two areas of concern will be roads and medical services.

Mitigation Measures: Transportation of construction materials must avoid peak traffic hours. Speed limits should be imposed on heavy vehicles traveling in the public road. Services including water supply, waste disposal, sewage treatment and health services should be provided within the construction site. Establish safety rules and regulations, first aid service and practice accordingly.

(3) Culture and Tradition

Impacts: There are no known sites of cultural or archaeological significance in the construction sites. The construction will therefore have no direct impacts on the local cultural and archaeological heritages.

Mitigation Measure: All project personnel should be made aware of local cultures, traditions and norms. During the construction, the concerned authorities will be immediately informed if archaeological artifacts are found.

(4) Community Health, Safety and Security

Impacts: The construction may have some impacts on community health, safety and security. Without proper management, the influx of construction workers could pose health risks to the communities. The influx of workers could also pose security risks to the communities in terms of crimes and drug abuses.

Mitigation Measure: All recruited workers should receive health examinations for screening of major communicable diseases before employment. Subsequently, annual check-ups should be provided. All workers should be cleared with the local security authorities regarding criminal records before employment.

(3) Environmental Risk Management-Construction Phase

A. Environmental Risk Management Context

The EPC contractor would be contractually responsible for: (i) preparation of detailed designs and specifications of all equipment and facilities; (ii) procurement and construction; and (iii) testing and commissioning the power plant and associated facilities before handling over to the Project Proponent. All environmental mitigation measures recommended in this Final ESIA Report and accepted by the Project Proponent and MOE. Monitoring of the environmental performance of the EPC contractor will be carried out by the project management team of the Project Proponent.

B. Risk Identification

The construction phase, two uncertain events or two environmental risks would be of concern to the Project Proponent.

- The Project may not be able to comply with environmental requirements prescribed by MONREC or other concerned authorities.
- The Project may be opposed to by stakeholders, especially the nearby communities.

C. Risk Analysis

Risk 1-Failure to comply with the environmental requirements

Potential causes:

- the EPC contractor and subcontractor have inadequate understanding of the environmental performance requirements of the Project
- inadequate supervision and monitoring of environmental mitigation activities
- changes in designs or construction methods without mitigation measures
- changes in the environmental requirements during the construction without the revision mitigation measures

Risk 2-Public opposition to the Project

Potential causes:

- misunderstanding of the nature, severity and extent of impacts of the Project
- rough relationship between the Project and the surrounding communities

D. Risk Classification

Risk 1 is considered medium risk as it would have a high level of likelihood of occurrence and significant of impacts.

Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a significant of impacts.

E. Risk Mitigation Measures

Risk mitigation measures need to address the identified causes of the risk. Mitigation measures for the two identified risks correspond to the identified causes are presented in ***Table 6.6-1(Chapter 6)***

F. Implementation Arrangements

Responsible Persons and Organization: The organization for environmental management proposed in the CEMP will also implement the environmental risk mitigation measures in cooperation with the construction supervision manager.

Risk Monitoring and Evaluation: Risk monitoring involves periodic monitoring of risk triggers. Risk monitoring and evaluation in environmental risk management will be carried out as part of the environmental monitoring program for environmental management.

Reporting and Corrective Actions: The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management.

1.5.6 Operation Phase Impact and Risk Identification Assessment and Mitigation

(1) Natural of Project Operation

The following features of temporary power plant operation which have environmental implications are natural gas fuel will be supply from PTT LNG (Thailand), no provision for diesel firing of the gas turbines-they will be operating on natural gas only, and low NO_x burners will be used.

(2) Relevant Environmental Issues

Based on information on the Project operation and Project area, and on established knowledge of environmental aspects of temporary power plants, during the operational phase of this Project. The environmental (and social) issues have to be adequately managed to minimize their impacts to fulfill legal and social obligations. Visual pollution caused by the temporary power plant and the transmission line will not be an issue as the Project area is flat and has no places of natural beauties. Similarly to issues of culture or archaeology which are no known of significance sites in the study area.

A. Gaseous Emissions

(1) Sources: During the operational phase of the Project, the temporary power plant will continuously emit air pollutants generated by combustion of natural gas in the gas engine generators. For typical natural gas-fired power plants, the main air pollutant in the flue gas is nitrogen oxides (NOx). Sulfur dioxide (SO_2) is normally not significant due to LNG contain low proportion of sulfur. CO_2 is not an air pollutant but it receives attention due to its global warming effect.

(2) Receptors: Within this study area, about 34 receptors were identified, including the air quality sampling stations A1 at Pale Gu Village and A2 at Pagaw Zoon Village.

(3) Mitigation Measures for Pollutant Reduction at Sources: The selection of gas generator by the Project is lean-burn designed engine which can employ higher compression ratios and thus provide better performance, efficient fuel use and low exhaust hydrocarbon emissions, the low NOx burner technology is also consider to minimize NOx emission for gas generator.

(4) Control Targets: The gaseous emission control will aim at complying with IFC's EHS Guidelines for Thermal Power Plants relevant to: (i) emission standards; and (ii) ambient air quality standards. In addition, the Consultant also checked and prepared follow WHO ambient air quality standard adopted by IFC.

(5) Prediction of Impacts of the Gaseous Emissions: The ground level concentrations (GLCs) of NOx within the study area related to the emission of NOx from the power plant were predicted using the AERMOD model and the basic data. The following conclusions may be drawn from the calculation results:

The maximum ambient concentrations of NO_2-1 hr including the background level concentration, found at the project site. The NO_2-1 hr concentrations was 50.81 μg/m^3 (25.41% of AAQS). For the concentrations of NO_2-1 hr at the sensitive receptors, the values were between 34.04-34.56 μg/m^3 (17.02-17.28% of AAQS) which are below the permissible maximum of 200 μg/m^3.

The maximum ambient concentrations of NO_2-24 hr including background level concentration, found at the project site. The NO_2-24 hr concentration was 19.58 μg/m^3 (13.05% of AAQS). For the concentrations of NO_2-24 hr at sensitive receptors, the values were between 18.002-18.043 μg/m^3 (12.00-12.03% of AAQS) which are below the permissible maximum of 150 μg/m^3.

The maximum ambient concentrations of annual NO_2 from stack emission (not including background concentration of annual NO_2 due to the data are not available), found the project site. The annual NO_2 concentration was 0.57 μg/m^3 (1.43% of AAQS). For the concentrations of annual NO_2 at sensitive receptors, the values were between 0.0002-0.0089 μg/m^3 (0.0004-0.0223% of AAQS) which are below the permissible maximum of 40 μg/m^3.

Concerned the Green House Gas (GHG), It is estimated that the overall quality of three greenhouse gases emitted during operation period of two years would be 64.6 tonne of CO_2e. This contribution is very small, accounting for less than 0.000065% of GHG emissions generated in Myanmar as a whole in 2012.

(6) Impact Mitigation Measures: There will be no need for further reduction of NO_2 in stack gas using such technology as SCR.

(7) Evaluation of the Significance of Impacts: The impact would not be significant, the issue deserves high priority in the design and operation of the power plant considering the public attention.

B. Ambient Noise

(1) Sources: The major noise sources will be from Gas Engine Generators.

(2) Sensitivity of Receptors: The closest receptor to the temporary power plant construction site is Pagaw Zoon Primary School and Pagaw Zoon Monastry.

(3) Magnitude of Noise Levels at Sources: The data on noise levels of major process equipment and facilities similar to those of this Project shown in the main text ***Table 6.5-7***.

(4) Noise Control Targets: The noise control targets is not exceeding 70 dB(A) both during day time (07.00-22.00) and night time (22.00-07.00). Ambient noise level outside the temporary power plant building not exceeding 85 dB(A).

(5) Mitigation Measures to Reduce Noise at Sources: The EPC contractor will be required to achieve the noise level outside the temporary power plant building not exceeding 85 dB(A) as indicated in the above stated control targets. This could be achieved though: (i) plant layout and siting of process equipment with consideration of distances from the receptors; and (ii) incorporating the most noise control techniques in the designs.

(6) Predicted Impacts on the Receptors: The noise levels at the nearest receptor, Pagaw Zoon village, were calculated using the same method as that used in the study of noise impacts during the construction phase. The calculation results for various noise levels at the boundary are presented in ***Table 6.5-8***. The calculation results for various noise levels at the give the following conclusions:

1) At the control level of 75 dB(A) at the boundary, the power plant would increase the noise level at the receptor by about 45.3 dB(A). With the background noise level of 61.5 dB(A), the impact of the power plant would result in the total noise level of 61.6 dB(A) compared with the control target of 70 dB(A) for 24 hours noise exposure.

2) At the control level of 75 dB(A), the power plant would increase the background hourly noise level at the receptors by not more than 0.63 dB(A), thus meeting the noise control target of less than 3 dB(A).

3) The standards can still be met at the level of 80 dB(A). Therefore, setting the control level at 75 dB(A) will give a safety margin of about 5 dB(A).

(7) Mitigation Measures: No additional measures would be required.

(8) Evaluation of the Significance of Impacts: The noise control deserves high priority in the design and operation of the temporary power plant

C. Waste Waters

(1) Sources: Waste waters in operation phase of the power plant will be from domestic sewage and plant wash water.

(2) Sensitivity of Receptors: Wastewater from consumption of staff will be treated on-site by septic tank. It does not have the receptor in this project.

(3) Estimated Wastewater Volume: The total BOD load of the domestic sewage from 12 persons would be about 0.6 kg/day. The contribution of the domestic sewage will be very small.

(4) Mitigation Measures for Waste Water Reduction at Sources: The possible minimum volume. It is not technically feasible to reduce the volume of these wastewaters at sources.

(5) Control Target: The treated effluent will meet standard limits, the effluent quality is tested over six consecutive months (IFC/WB Environmental, Health, and Safety Guidelines).

(6) **Predicted Impacts on the Receptors:** The domestic sewage, even without treatment, will not have any impact.

(7) **Wastewater Management Measures:** The EPC contractor will prepare detailed design of wastewater treatment facilities based on the following design concept; the wash water contaminated with oil will be segregated for oil removal in an oil separator. Domestic sewage will be treated in aerated septic tank. A drainage system will be provided to collect surface runoff and discharged into the holding pond.

(8) **Evaluation of the Significance of Impacts:** The wastewater management issue deserves medium priority during the operational phase.

D. Road Traffic

(1) **Sources:** The operation of temporary power plant will necessitate the need for transportation of LNG fuel. Consequently, traffic loads will be increased especially on ITD Main Road from Border to the power plant.

(2) **Sensitivity of Receptors:** This road is mainly used by ITD in purpose of transport fuel from Thailand to project area.

(3) **Estimates of Traffic Loads:** This quantity of LNG could be transported by 11 heavy truck, each truck capacity in transportation of LNG is 40 m^3. In addition, the number of truck trips have to be calculated in terms of inbound and outbound. Therefore, the number of truck trips will be about 22 trips/day.

(4) **Mitigation Measures for Reduction of Traffic Loads:** The number of truck trips per day can only be reduced to 1 trip if LNG fuel have enough.

(5) **Traffic Management Targets:** There will be no accidents related to operation traffic in the identified impact areas.

(6) **Predicted Impacts:** The transportation of LNG fuel will increase the existing traffic loads by about 2.2 PCU/hr. The V/C ratio at TC1 will be increased as shown in the main text ***Table 6.5-9***.

(7) **Management Guidelines and Impact Mitigation Measures:** Take reasonable and practicable measures to avoid, or mitigate and manage the potential operation traffic impacts. Maintain safe access near all project work areas for road users. Implement traffic management measures near worksites and other project works. Monitor traffic flows near operation works and take corrective action in response. Provide a traffic police or relevant officer to control traffic at the intersection during the transport period

(8) **Evaluation of the Significance of Impacts:** The traffic management deserves high priority during the operation period.

E. Occupational Safety and Health

(1) **Areas of Concern:** They are issues of concern common to operational personnel in all types of industries but their natures depend on types of industries. The OSH management system and procedures to be established will need to cover the following issues: heat, noise, confined spaces, and electrical hazards

(2) Management Measures:

Plant Design and Equipment Selection

- Incorporate in the EPC contract, all OSH requirements that the EPC contractor will in the design of the temporary power plant and associated facilities.

- The EPC contractor will be required to prepare for consideration of the Project Proponent an OHS management plan and implementation procedures specific to the temporary power plant of this Project and in line with the Owner's OSH policy and procedures.

During Plant Commissioning: During plant commissioning, the EPC contractor will be required to conduct necessary orientation and training to the Owner's power plant operational team.

During Operations: The EHS Manager will monitor the implementation of OSH procedures to comply with relevant requirements.

F. Community Health, Safety and Security

(1) Issue: For community health and safety, Performance Standard 4 identifies the following five areas that could be related to community health and safety.

(1) Infrastructure and Equipment Design and Safety

(2) Hazardous Materials Management and Safety

(3) Ecosystem Services

(4) Community Exposure to Disease

(5) Emergency Preparedness and Response

(2) Assessment:

Infrastructure and Equipment Design and Safety: The major concern is fire and explosion risks related to the gas supply system and gas turbine operations.

Hazardous Materials Management and Safety: Considering the nature of their use, chemicals and oils would not be stored in large quantities. The possibility of the communities being exposed to these hazardous materials will be very low.

Ecosystem Services: As the impact on water quality will be negligible, the ecosystem services will not be an issue.

Community Exposure to Diseases: This small number of staff will not pose any health risks to the local communities.

Emergency Preparedness and Response: It can be concluded that fire and gas explosion are major risk events of the temporary power plant operations and that emergency preparedness and response will be one of the major risk management measures that will need to be established and ready to operate when the need arises.

G. Groundwater Abstraction

(1) Issue: The operational phase, the temporary power plant will require about 1.8 m^3/d of clean water for domestic use.

(2) Recommended Actions: Considering the small volume of groundwater abstraction by the temporary power plant, it is unlikely that the nearby wells would be affected. However, the Project Proponent should commission a groundwater investigation including pumping test of the test well.

H. Community Development Supports

(1) Issue: During the operational phase, the impacts of the temporary power plant both positive and negative on the nearby communities will be much less than those during the construction. Therefore, the only positive impacts of the Project during the operational phase will have to come from the provision of community development supports under a corporate social responsibility (CSR) program of the Project Proponent.

(2) Recommended Action: In the public consultation meetings, several participants requested supports for electricity supply, water supply, road, and education. The Project Proponent should consider a CSR program to provide community assistance in line with these needs.

(3) Environmental Risk Management-Operational Phase

A. Environmental Risk Management Context

The environmental risk management during the operational phase will be carried out by the EHS unit as part of the overall temporary power plant risk management. The environmental risk mitigation measures will be implemented by the temporary power plant management team within the scope of and procedures for the temporary power plant risk management.

B. Risk Identification

During the commissioning and operational phases, the major concerns are on possible hazardous events which, if occur, would seriously damage the temporary power plant and could cause injuries and fatalities to operational personnel and people in the nearest communities.

Gas Leakage: The gas leakage often occurs as a result of mechanical failures, errors in operation and maintenance, natural events, and explosion or fire from other parts of the temporary power plant

Internal Explosion: Internal explosion is a recognized risk event for thermal power plants, the sources of internal explosion could be within flare systems, gas generator and in due to incorrect start-up procedures.

Other risks would include the concerns on non-compliance with environmental requirements related to: (i) gaseous emission control, and (ii) wastewater management.

C. Risk Analysis

Operational Risks: If a serious accident occurs, the damages would be contained within the temporary power plant site as the nearest community is about 1,100 m away. Several studies of failures of chemical and temporary power plants traced the incidents to the following root causes or underlying causes: (i) faulty designs; (ii) defective equipment and improper equipment installation and construction; (iii) inadequate and/or improper operation and maintenance procedures; and (iv) human error in the operations and maintenance. The likelihood of occurrence of the operational risks would be low if: (i) technical specifications and performance requirements are clearly prescribed in the contract; (ii) equipment suppliers have good track records in safety; (iii) close supervision and quality control of the installation and construction; (iv) rigorous training of operators; (v) clear and adequate operational procedures for all operations and maintenance; and (vi) efficient plant safety management.

Gaseous Emission Control Risks: The Project's power plant will generate only small amounts of NOx and very small for SO_2. The likelihood of occurrence of the non-compliance with the gaseous emission control requirements would be low.

Wastewater Control Risk: The wastewater generated in the temporary power plant operation, even without treatment, will contribute only insignificant amounts of non-toxic pollutants into nearby natural watercourses. The likelihood of occurrence of the non-compliance with wastewater control requirements would be low.

D. Risk Classification

Operational Risks: The operational risks could have serious consequences on the temporary power plant, their likelihood of occurrence is low. Therefore, they are classified as moderate risks.

Gaseous Emission Control: The risk related to the compliance with the gaseous emission control requirements is rated as minor or insignificant risk.

Wastewater Control: The risk events related to the wastewater control requirements could also be rated as minor risk.

E. Risk Mitigation Measures

Operational Risks: Measures for managing the operational risks will be divided into two groups. The first group will aim at minimizing the possibility of faulty design and defects in the equipment, equipment installation, and construction. The second group will aim at minimizing inadequacies in the operation and maintenance procedures, and human error in the operations and maintenance. The first group of measures will be mainly related to the EPC contractor and his design consultant and subcontractors. The second group of measures will be related to both the EPC contractor and the temporary power plant operational team.

Pollution Control Risks: No special risk mitigation measures will be required. Careful selection of the low NOx burner will be adequate to minimize the risk.

F. Implementation Arrangements

Responsible Persons and Organization: the organization for environmental management proposed in the CEMP will also be responsible for environmental risk management. The proposed measures for managing the operational risks will need to be implemented by project management team. The temporary power plant management organization should have a risk management committee to be chaired by the temporary power plant manager and participated by the operational manager and the EHS manager.

Risk Monitoring and Evaluation:

Operational Risks: The risk triggers should be considered for routine monitoring and evaluation consists number of reported incidents of gas leakage, response time to address the reported leakage, and number of reported incidents of non-conformance with the work procedures.

Pollution Control Risks: The monitoring and evaluation should cover number of CEMS malfunction incidents, number of non-compliance of the effluent standards, and number of non-compliance with the effluent quality standards of the treated effluent.

Reporting and Corrective Actions: The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management.

1.5.7 Decommissioning Phase

Decommissioning of the project will be carried out at the end of its working life. The decommissioning will be the reverse of construction process and will have to be carried out in accordance with prevailing legislation available at that time. The concrete floor would be used for other purposes.

(1) Decommissioning Phase Activities

In case of, the power plant is decommissioned, i.e. taken out of operation, it would need to be demolished and dismantled. During the decommission phase, major activities will be include

- Removal of generator set facility (maximum of 15 units, and associated electrical equipment);
- Removal of gas distribution station facility, air evaporizer and other facilities.

The main environmental issues are fugitive dust and gas emission caused by heavy machines and equipment, noise, disposal of waste and hazardous waste. The potentially affected environmental components to be considered during decommission phase are air quality, noise, residue and unused waste

(2) Impact Assessment

A. Environmental Disturbances Caused by Dust and Noise

1) Impact Identification and Assessment

As Pagaw Zoon village which is located at distance of 1.1 km on the south from the project site, the effects of dust diffusion and noise during the decommission period will not reach the village if control during dismantle and land reclamation activities.

Result from calculations of fugitive dust dispersion and noise propagation indicated that such environmental disturbances will be confined mostly within the decommission site.

The impacts of these environmental disturbances are considered significant and their control priority should be high in order to protect the workers.

2) Impact Mitigation Measures

Fugitive dust will be generated most during the land reclamation. Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust (US.EPA (2006), AP42, chapter 13.2.2).

Noise of mobile equipment is difficult to control at source. A practical measure is to provide ear muff to workers working in the excessive noise environment. In addition, temporary sound barrier should be setting during dismantle and land reclamation of temporary power plant area to reduce noise impact to Pagaw Zoon village.

B. Waste Management

1) Impact Identification and Assessment

The increase of solid wastes generated during the decommission phase included solid waste from worker, residue such as wood scrap, steel, cement and hazardous waste such as used lubricant, chemicals agent and its container etc.

Even through the decommission phase are short period (approx. 2 months) with low quantity of waste, unsuitable management on waste may generate source of habitat for vector such as mosquito, fly, and rat. This situation can affect locals at nearby villages. With suitable management on waste and implementation of impact mitigation measures, the level of impact would be low.

2) Impact Mitigation Measures

- The Contractor will design and implement a waste segregation system and procedure and communicate it to all worker to strictly adhere to the segregation procedure;
- An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories.

C. Land Reclamation

1) Impact Identification and Assessment

During decommission phase, the land use will be change from power plant area to open area after demolition complete. Therefore, developer, in consultation with concerned authority and local communities, should prepare a plan to manage this land.

2) Impact Mitigation Measures

Developer should brainstorm with concerned authority and local villagers in order to design and manage the use of open land after completion of dismantle process. Typical utilization on these type of area, in the industrial zone is included recreational park, museum or demonstration of clean energy area, or factory for light industrial.

1.6 CUMULATIVE IMPACT ASSESSMENT

The CIA, on construction phase will focus on the impact on fugitive dust and traffic safety. For operation phase, impact on NO_2 concentrations in ambient air will be focused as NO_2 is the only major pollutants for natural gas-fired power plant.

1.6.1 Construction Phase

The cumulative impacts on fugitive dust were predicted in two cases-No Control Case and Control Case. The predicted concentrations of fugitive in the study area are given in ***Table 1.6-1.***

The cumulative impacts on traffic safety were predicted at pre-construction phase in order to transport the size filling material. The total number of truck trip for transportation of filling material for the 15 MW power plat and the new township will increase the existing traffic loads by about 43 trips/hr. However, the traffic on ITD main road is still in good condition as satisfactorily traffic flow.

TABLE 1.6-1

PREDICTED IMPACT FROM CONSTRUCTION OF THE 15 MW POWER PLANT AND THE NEW TOWNSHIP ON FUGITIVE DUST

Condition	TSP (Power Plant), µg/m^3	TSP (Township), µg/m^3	Total TSP µg/m^3	Standard TSP[1] µg/m^3
No Control	57.00	144.68	380.24	230
Control 75% suppression	14.15	36.17	228.98	

[1] WHO Ambient Air Quality Guideline stated on Environmental, Health and Safety Guidelines : Air Emission and Ambient Air Quality of International Finance Corporation-IFC (April 30, 2007)

1.6.2 Operation Phase

The cumulative impact on NO_2 concentration in the ambient air was predicted at the stack height of 5 m. The predicted concentration of NO_2 at various location in the study area are given in ***Table 1.6-2*** shows the maximum concentration of NO_2 and the locations.

TABLE 1.6-2

PREDICTED IMPACTS OF THE OPERATION OF 30 UNITS OF 1 MW GAS GENERATOR ON NO_2 CONCENTRATION IN AMBIENT AIR IN THE STUDY AREA

Results	30 Units		
	NO_2 (μg/m^3)		
	1-hr	24-hr	1-yr
In the entire study area			
-maximum incremental increase in concentration	33.62	3.15	1.13
-location of the maximum value	Project site	Project site	Project site
-Coordinate (UTM(WGS84))	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	67.62	21.15	1.13
-% of ambient air quality standard	33.81	14.10	2.83
In only sensitive areas			
-ranges of concentrations	0.08-1.11	0.005-0.087	0.0003-0.0178
-net maximum concentration including background level	34.08-35.11	18.005-18.087	0.0003-0.0178
-% of ambient air quality standard	17.04-17.56	12.00-12.06	0.0008-0.0446
Standard	**200**[1/]	**150**[2/]	**40**[1/]

Remark : [1/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

1.7 ENVIRONMENTAL MANAGEMENT PLANS

1.7.1 The Conceptual Framework

As prescribed in the ESIA Procedure, the ESIA investigation prepares two environmental management plans (EMPs)-one for the construction phase (CEMP) and one for the operational phase (OEMP). The two EMPs have considerable details compared to brief EMPs in most ESIA reports. Nevertheless, at this Project planning stage, the two EMPs are invariably framework or conceptual plans providing principles and guidelines for environmental management of the Project during construction and operation. The two EMPs presented in the main text are considered and referred to as the Project Proponent or Owner EMPs. The EPC contractor will be required to elaborate the Owner-CEMP to prepare a detailed Contractor-CEMP based on the final designs and construction plan to be prepared by the EPC contractor. The EPC contractor will also have to elaborate the Owner-OEMP to prepare a detailed Contractor OEMP in due course before the commercial operation based on the actual construction, results of plant commissioning, and final operational procedures.

During construction, the EPC contractor will implement the Contractor-CEMP under the supervision of the Project Manager. The Owner's power plant operation team will review and revise the Contractor-OEMP as appropriate to prepare its own final OEMP for implementation during the operational phase. Environmental management during the construction and operational phases of the Project is based on the same basic principle of management in each project phase thus consists of four related tasks: plan, do, check and act.

1.7.2 Project's EHS Policy and Commitments, and Legal Requirements

Environmental management of the Project during construction and operation will be guided by the EHS policy of the Project Proponent to be established in line with the EHS policy of the DPG, and by applicable legal requirements.

The Project Proponent will be committed to: (i) establish an environmental management system (EMS) to support environmental management during Project construction and operation; (ii) ensure that the EPC contractor and subcontractors will implement all impact mitigation measures including OHS requirements prescribed in the Owner-CEMP and confirmed in the Contractor-CEMP; and (iii) endeavour to minimize environmental impacts and meet all OSH requirements of the power plant's operation.

Environmental management of the Project will comply with legal requirements pertinent to the EMP prescribed in the Electricity Law 2013, the draft Environmental Conservation Rule 2013, and the ESIA Procedure 2015. The requirements prescribed in the ESIA Procedure cover all issues of environmental management as summarized in ***Table 1.7-1***.

TABLE 1.7-1

CONTENT OF THE EIA PROCEDURE RELEVANT TO THE EMPS

Subject	Relevant Articles
Content of the EMPs	63
Project Approval Requirements	
- Issuance of an ECC	70
- Conditions of the ECC	87-101
- Submission of an CEMP and OEMP	91, 92, 94, 100
Revision and updating the EMPs	94-99, 101
Implementing the EMPs	102-105
Monitoring and Reporting	
- Responsibility for Monitoring	106-107
- Content of Monitoring Report	109
- Submission of Monitoring Report	108
- Disclosure of Monitoring Report	110
- Inspection by MONREC	111-122

1.7.3 Summary of CEMP

(1) Scope of Environmental Management

Environmental issues expected at various stages of construction were identified based on a tentative construction schedule prepared by the Consultant for the ESIA study purpose (see ***Table 1.7-2***).

TABLE 1.7-2

ANTICIPATED IMPACTS AT VARIOUS MONTHS OF THE CONSTRUCTION

Construction Activities	Duration (Months)	Impacts
Phase 1: Foundation work and Building Structures	3	Dust, Noise, Road traffic, Social
Phase 2: Installation of Gas Engines and equipment	1	Air, Noise, Vibration, Road traffic
Phase 3: Load Test and Commission Test	1	Air, Noise

Note: Duration of activities based on project construction schedule in ***Chapter 4***.

(2) Environmental Management Sub Plans

The following issues will be managed during the construction phase: (i) general construction, (ii) noise and vibration; (iii) waste management; (iv) air quality management, (v) wastewater management; (vi) traffic management, (vii) OSH management, (viii) resource management and (ix) social environment.

Each subplan presents objectives, performance indicators, sources, applicable standards, mitigation measures, monitoring, and reporting. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in construction schedule and management review changes.

The monitoring program for each sub plan covers scheduled monitoring of environmental performance, site inspections, and environmental incidents.

(3) Monitoring Reports

The environmental monitoring and site inspections will generate the following reports: (i) internal monitoring reports consisting of site inspection reports and environmental monitoring reports; and (ii) monitoring reports for submission to MONREC every two months.

(4) Corrective Actions

The Owner CEMP proposes a process and mechanism for taking corrective actions to address various forms of non-compliances, including non-compliance with legal

requirements, non-conformance with internal requirements of the Project, inadequate environmental performance, environmental incident, and complaints or grievances received from the public. Sources of information which could be used to identify non-compliances are given.

(5) Arrangements for Operation the EMS

The proposed arrangements for operating the EMS cover: (i) distribution of responsibilities among the EPC contractor, the project management team, the supervision consultants, and MONREC; (ii) organizational structure for environmental management; (iii) documentation; (iv) communication plan; (v) management review; (vi) public consultation and disclosure (organization, information disclosure, and grievance redress); and (vii) audit requirements.

A tripartite committee is proposed to be set up by the Project in consultation with the community heads and representatives of the national, regional, and township administrations. The committee will be represented by the Project Proponent, government authorities, and nearby communities. It will involve stakeholders in environmental management and consultation.

1.7.4 Summary of OEMP

(1) Scope of Environmental Management

The power plant management organization will set up a simple EMS for its O&M activities. This EMS will focus more on occupational health and safety of power plant workers which are around 7-12 persons.

(2) Environmental Management Sub Plans

No environmental impact mitigation measures will be required apart from routine inspection and maintenance of power plant (see *Section 6.5.3*). The power plant management organization will implement a community development plan presented in the sub-plans in ***Appendix of Volume II***.

(3) Monitoring Reports

The environmental monitoring and site inspections will generate the following reports: (i) internal monitoring reports consisting of site inspection reports and environmental monitoring reports; and (ii) monitoring reports for submission to MONREC every six months. The monitoring report will include scheduled monitoring of air quality, and noise. Air monitoring at each of the exhaust stacks will be fitted with in-stack monitoring equipment linked to the continuous emissions monitoring system (CEMS).

(4) Corrective Actions

The process and mechanisms for taking corrective actions in environmental management during the operational phase will be part of power plant management. The corrective action requirements will be included in the requirement tracking system of the power plant management information system.

(5) Arrangements for Operation the EMS

The proposed arrangements for operating the EMS cover: (i) distribution of responsibilities among the EHS unit and the operational units; (ii) organizational location of the EHS function; (iii) documentation; (iv) communication plan; (v) management review; (vi) public consultation and disclosure (organization, information disclosure, and grievance redress); and (vii) audit requirements.

1.7.5 Summary of DEMP

The DEMP will require much less activities and a much simpler EMS compared to those of the CEMP. No environmental impact mitigation measures will be required apart from routine inspection and maintenance of power plant. The power plant management organization will implement sub-plans of air quality, noise, waste, traffic, OSH management and social environmental management. Monitoring on these sub-plans will be carried out accordingly. The monitoring report will be simple and straight forward to the results. Report to MONREC will be submitted when completion of decommissioning operation.

Appendix 7B of Volume II presents implementation and monitoring activities of these sub-plans.

Function of environmental management, CPC as well as a grievance redress process will be continued from operation phase to this phase.

1.8 PUBLIC CONSULTATION AND DISCLOSURE

1.8.1 Purpose of the Consultation and Disclosure

Public consultation and disclosure was carried out as part of the ESIA investigation. It has three purposes:

- informing the stakeholders about the Project, environmental and social issues related to Project construction and operation, and mitigation measures to minimize environmental and social impacts;
- seeking views of the stakeholders on the Project and mitigation measures; and
- participation and partnership where issues and needs are jointly discussed and assessed.

Results of the public consultation were useful to the formulation of environmental and social management plans for the Project.

1.8.2 Methodology and Approach

The public consultation and disclosure was focused on the following groups of Project stakeholders:

- Government agencies at the national and regional levels with direct responsibilities for the administration of the ESIA process for environmental and social clearance of the Project.
- Various agencies in Yebyu Townships responsible for planning, health, electricity supply, land use, and environment.
- The Project's stakeholders in this category are village committees and individual villagers in the twelve villages in the study area in Yebyu Townships; namely: Kin Ywar, Lain Gra Ywar, Dauk Lauk, Pale Gu, Min Dut, Tha Prae Zoon, Kyauk Hwet Kone, Thit To Taut, Yalai, Pagaw Zoon and Wet Chaung.

The main method used in public consultation was public meetings. The public meeting method was complemented by disclosure of project information through local media and public notification at the project site. This served the informing purpose.

Each meeting was organized with assistance of Township Administration Department in identifying participants to be invited, and in making arrangements for the meeting venue and issuing invitations.

Representatives of the Project Proponent and the Consultant jointly participated in the meeting as the Project team. The Project Proponent's representatives were responsible for briefing on Project information including Project development plan, and answering questions from the meeting or clarifying points raised in the meeting regarding the Project development plan. The Consultant was responsible for providing information on the ESIA, and clarifications on issues related to impacts of the Project.

Each meeting was chaired by a responsible government official. The meeting began by informing the participants of the objectives of the meeting and expected outcome. After that the Project team gave information on the Project and the ESIA.

The meeting then provided an open forum for constructive and relevant discussions between the Project team and the participants.

The meetings at the community level were always attended by officials of relevant government agencies, especially ECD. However, the presence of government officials did not restrain the village participants from airing their concerns, requests, and suggestions.

1.8.3 Summary of Main Comments

Public consultations with relevant government authorities, NGO and local communities were summarized into two period show in ***Table 1.8-1***.

Results of all the public consultation meetings will be utilized for implementation of environmental and social management plans of the Project as well as community support development programs to be implemented by the Project Proponent in the CSR context.

TABLE 1.8-1

SUMMARY OF MAIN COMMENTS

Group of Stakeholders	Issues
First Period	
1. Government Authorities	- Participation in the ESIA - Land acquisition - Submitting the ESIA results
2. Interested Parties	- Correct project information - Employment opportunities to the local - Fair compensation - Environmental management - The NGO to contribute ESIA report - Electricity supply to locals
3. Local Community Groups	- Pollution from emission - Disturbances from noise and vibration - Use of ITD road - Environmental protection - Fair compensation for land acquisition - Yield of cashew nut - Employment opportunities - Electricity supply to villages
Second Period	
1. Government Authorities	- Impact on the marine resources - Impact during construction - Suggest to provide electricity to nearby community, at the lower rate of fee
2. Local Community Groups a) Wetchaung Village	- Improve the road from ITD main road to the end of village
b) Pale Gu Village	- CO_2 pollution from emission
c) Pa Gaw Zoon Village	- Electricity supply - Land compensation - Road connection into the city
d) Yalai Village	- Agree with the project - Land compensation
3. NGO	- Agree with the project

1.8.4 Project Information Disclosure

Public consultation and information disclosure for the first and second consultation periods were in form of public meetings together with posting information at the well-known visible places in the communities such as at the tea shop and grocery shop in the village center. The information disclosed in the first and second meetings included: objectives of ESIA, project location, project layout, generation capacity, main project components, and field activities related to environmental survey, field activities related to social survey. Tentative schedule of the study, and contact persons

1.8.5 Recommendation for Future Consultations

The Consultant proposes that a tripartite committee be set up to serve as venue for public consultation. Details of the tripartite committee for the construction phase and the operational phase are given in CEMP and OEMP.

CHAPTER 2

INTRODUCTION

CHAPTER 2

INTRODUCTION

2.1 BACKGROUND

Dawei Power Generating Company Limited (the Project Proponent) planned to establish a temporary power plant on "*15 MW Temporary Power Plant Project*" (the Project) to support construction activities in the Initial Phase Development of Dawei Special Economic Zone (DSEZ) over the period from 2016-2018. The temporary power plant will be taken out of service when the proposed boil-off gas power plant starts to operate. Information on the initial phase development of Dawei SEZ is detail ED in ***Appendix 2A.***

Dawei Power Generating Company Limited (DPG) will be comprised of power generation facility and gas distribution facility. The power generation facility will consist of a number, up to 15, of containerized 1 MW gas engine-generators, model Cummins QSK60 or model GE JGS 320 GS. The gas distribution facility will include a 45 m^3 LNG storage tank, LNG transfer pump, ambient air vaporizer and control and safety system. The power plant will be disassembled for shipping in containers from oversea to the project site for installation on the provided concrete floor. The fuel will be liquefied natural gas (LNG) to be supplied by PTT LNG, Thailand, via land transport to the Project site. Each gas engine generator has a generation capacity of 1,120 kilowatts (KW).

In the construction period of the Initial Phase Development of DSEZ, electricity supply is critically needed to support construction activities. As DSEZ is not served by the national grid and a power plant for DSEZ will take time to develop, a temporary source of supply is necessary as it can be established in a short period using commercially available engine-generators. The Project is therefore justified as it will meet the power demand during the construction period.

According to the ESIA Procedure issued by MONREC, an IEE study will be required for power projects with generating capacities of less than 50 MW. As the generating capacity of this Project will be up to only 15 MW, an IEE study will be required. However, the Concession Agreement (CA) signed between the Government of the Republic of the Union of Myanmar and DPG specifies that the project proponent should prepare an ESIA study for each individual proposed development project in DSEZ.

Therefore, an ESIA study will be prepared for the Project for submitting to Environmental Conservation Department (ECD) for approval as a condition for the issuance of Environmental Certificate. For an ESIA study, the ESIA Procedure requires a scoping report be submitted first based on preliminary investigation before conducting further detailed studies. The purpose of scoping is to identify key environmental and social impact issues that warrant further detailed investigation. The issues will be clearly indicated in the terms of reference (TOR) for the ESIA to be presented as part of the scoping report. The Consultant submitted a scoping report to the ECD in November 2015.

The draft Final ESIA report submitted by the Consultant on behalf of the Project Proponent to ECD for review and approval in December 2015. This document is Final ESIA report presents results of the ESIA investigation based on the approved TOR. Its contents are in line with the requirements prescribed in the ESIA Procedure and are presented in the sequential order prescribed in the ESIA Procedure.

2.2 PRESENTATION OF THE PROJECT PROPONENT

The project proponent is Dawei Power Generating Company Limited (DPG), a company incorporated in Myanmar. DPG has a registered capital of $150,000 USD, which is 99.99% held by LNG Plus International (Singapore) Private Limited.

DPG has been in discussion with a reputable international ‘energy solution’ provider to set up a joint venture to provide ‘energy solution’ solutions to meet the needs of our large and small industrial and commercial customers in Thailand and Myanmar. This includes but not limited to power generation by LNG, onsite co-generation of heat and power and onsite tri-generation of heat, cold, and power using LNG as fuel.

Under the CA, DPG is granted the right by the DSEZ Management Committee (DSEZMC) to plan, develop, own and operate the Project facilities and infrastructure to be located in a designated area inside DSEZ. DPG will employ qualified and experienced personnel to operate and manage the temporary power plant in the most efficient manner.

The representative and address of the Project Proponent are given below:

6th Floor, Salomon Business Center,

224/A, U Wisara Road, Bahan Township, Yangon,

Republic of the Union of Myanmar

2.3 PRESENTATION OF THE ENVIRONMENTAL AND SOCIAL EXPERTS

The Environmental and Social Experts are professionals provided by TEAM Consulting Engineering and Management Co., Ltd., Thailand (TEAM), and Total Business Solution Co., Ltd., Myanmar (TBS).

2.3.1 Background Information on TEAM and TBS

TEAM

TEAM is one of the key subsidiaries of TEAM Group of Companies (TGC). Through its subsidiaries, TGC provides a wide range of consulting services from project conception through project planning and feasibility study, detailed design, construction supervision, and project management. The services cover various physical and utility infrastructures including urban mass transit system, water resources management, water supply, wastewater, ports, power plants, housing, urban planning, environmental

management, regional development planning, public event design and organizing, and management planning. Consequently, TGC can provide comprehensive services covering all aspects of development projects and business management. TGC has completed assignments not only in Thailand but also in neighboring countries, particularly Lao PDR, Viet Nam, Cambodia, and Myanmar.

TBS

Total Business Solution Co. Ltd., (TBS) is registered and located in Yangon. Since its inception in 2012, TBS, in collaboration with TGC, has been providing consulting services to the private and public sectors in Myanmar. The two partners with their combined strengths provide one-stop service to assist investors in project development or setting up and operating businesses in Myanmar. Their services have gained recognition from Myanmar and foreign investors involved in development projects including port, industrial estate, power transmission, flood control, drainage and sewerage system, environmental and social management, and business establishment.

2.3.2 The ESIA Team

The ESIA study for this Project is conducted by a multidisciplinary professional team consisting of a core study and planning group and a technical support group. The Team Leader manages technical aspect of the ESIA study. The Team Coordinator assists the Team Leader in coordination among members of the ESIA team, Project Proponent, Environmental Conservation Department, and other concerned government agencies, especially agencies in the concerned townships of Yebyu.

The core study and planning group of the ESIA study team consists of qualified and experienced professionals in various technical areas relevant to major environmental and social impacts of the Project identified in the Scoping Report and the TOR, including: (i) air pollution; (ii) social impact assessment; (iii) public participation; (iv) waste management; (v) occupational health and safety; and (vi) environmental management planning. The environmental management planning expert will assist the Team Leader in ensuring that the Scoping Report and the final ESIA report will meet all requirements prescribed in the ESIA Procedure and the ESIA Guidelines, and that proposed environmental management plans will be practical and implementable.

The core study and planning group will be supported by a technical support group consisting of professionals in various disciplines relevant to the environmental and social contexts of the Project, including: (a) environmental sciences; (b) socio-economics; (c) public health; (d) terrestrial ecology; (e) civil engineering; and (f) mechanical engineering.

Names of members of the ESIA study team are given in ***Appendix 2B***.

A simple organizational structure for conducting and managing the ESIA study is shown in ***Figure 2.3-1***.

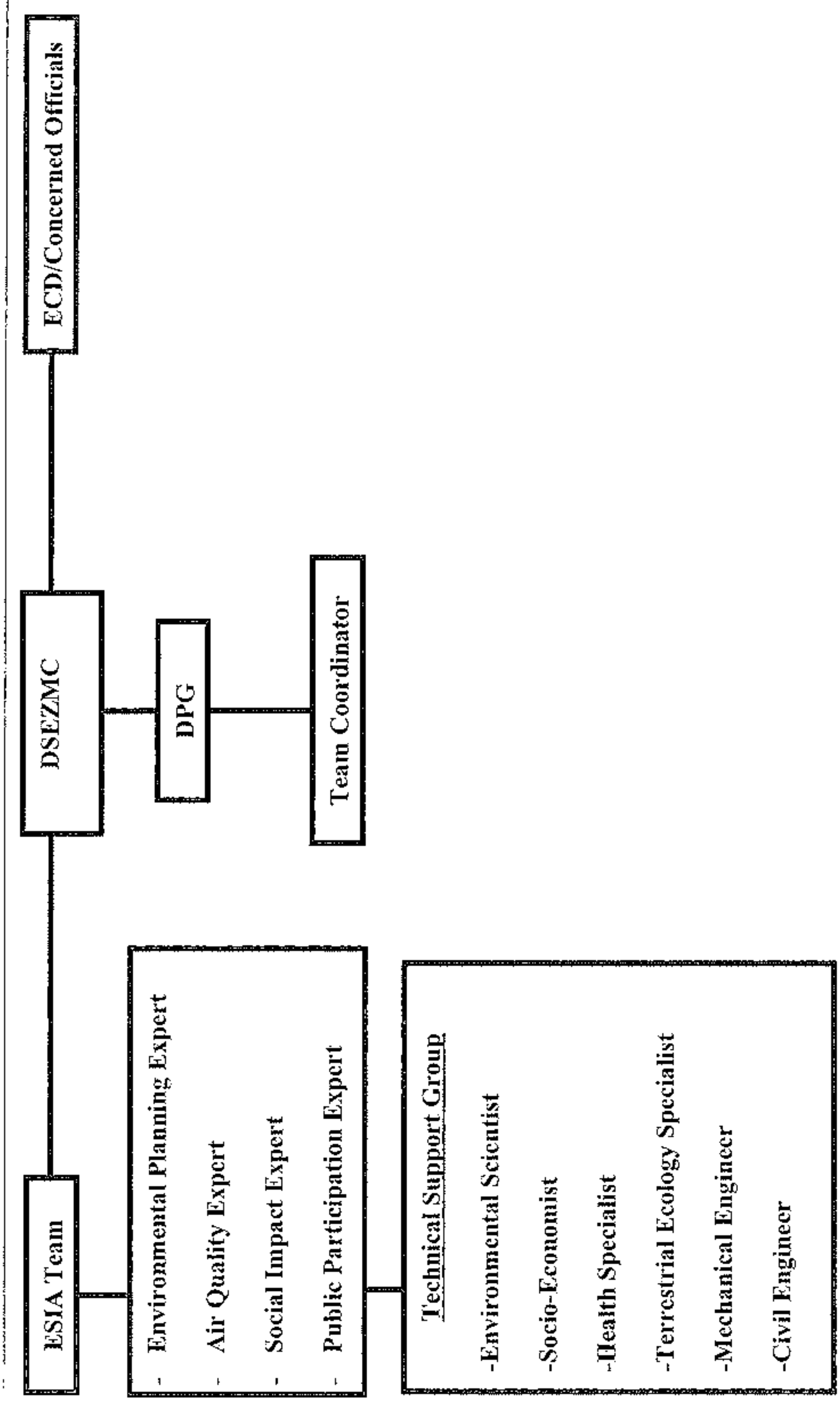


FIGURE 2.3-1 : ORGANIZATIONAL STRUCTURE OF THE ESIA STUDY TEAM

2.4 PROJECT DEVELOPMENT ENDORSEMENT OF THE ESIA REPORT

DPG on behalf of the project consortium gives full endorsement of this ESIA Report and is fully committed to the implementation of all measures, including the provision of the necessary funds and human resources.

2.5 STRUCTURE OF THE ESIA REPORT

This ESIA Report is structured as recommended in ***Appendix 2C***-ESIA Table of Contents in the ESIA Guidelines. It consists of two Volumes-Volume 1-Main Report and Volume 2-Environmental Management Plan.

After the introductory chapter, the text in the main report is presented in 9 chapters.

Chapter 3-Overview of the Policy, Legal and Institutional Framework. This chapter presents policy, legal and institutional framework, environmental and social standards and guidelines that are applicable to this Project. It also presents corporate policies on environmental and social management that the Project Developer is committed to implement during the construction and operational phases of the Project.

Chapter 4-Project Description and Alternatives. This chapter presents technical information on project plan, layout, design, construction approach and plan, and operating plan that are derived based on comparative analysis of various alternatives. The information in this chapter is the basis for identification of environmental and social changes that could have impacts on the environment during the construction and operation.

Chapter 5-Description of Existing Environmental and Social Condition. This chapter defines the study area and limits of the study, and describes various environmental components of the study area, including physical, biological, socio-economic, cultural and visual components. The information is the basis for assessing the magnitude and significance of environmental and social impacts of the identified environmental and social changes in Chapter 4.

Chapter 6-Impact and Risk Assessment and Mitigation Measures. This chapter proposes appropriate management and physical measures for mitigating the impacts identified in Chapter 6. Environmental and social compliance risk will be identified and measures will be proposed to manage the risks.

Chapter 7-Cumulative Impact Assessment. This chapter presents an assessment of cumulative impacts, i.e. combined impacts of the Project and other projects, existing and planned projects.

Chapter 8-Environmental Management Plans. This chapter summarizes the conceptual framework and principles of environmental management to be applied in the project construction and operation. The mitigation measures proposed in Chapter 6 will be consolidated into two environmental management plans-Construction Phase EMP and Operational Phase EMP.

Chapter 9-Public Consultations and Disclosure. This chapter presents results of public consultation and disclosure conducted as part of the scoping study and as part of the ESIA study. The presentation is focused on salient findings relevant to the design of mitigation measures proposed in Chapter 6 and development plans proposed in Chapter 10.

Chapter 10-Conclusions and Recommendations. This chapter presents the main conclusions of the ESIA report, and recommendations of future actions to be taken.

Appendixes: The main report has appendix in each chapter containing detailed information to support the presented findings in various chapters in the main text.

CHAPTER 3

OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

CHAPTER 3

OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 OVERVIEW OF CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES

The Project Proponent is committed to the sustainable development principle. In this regard, the Project Proponent will manage environmental aspects of the Project in accordance with the Project Proponent Safeguard Policy. Consequently, the Project Proponent will establish an environmental management system (EMS) for the project and will operate the EMS to meet the requirements of Safeguard Policy.

As the first step towards meeting the requirements of Safeguard Policy, the Project Proponent will formulate an environmental and social management policy to guide its environmental and social management during the construction phase and the operation phase of the Project. Such a policy will support the following activities:

- Develop a comprehensive Environmental, Health, and Safety (EHS) Management System for implementing the environmental management plan (EMP) to be prepared as part of the EIA of the Project;
- Implement the EMP and as part of project and operational management with due diligence audit to be conducted at appropriate interval during the construction and operational phases of the Project;
- In implementing the EMP during the project construction, the nominated EPC contractors will be required to prepare and implement contract specific EHS measures for the construction of the 15 MW Temporary power plant;
- During the operational phase, EHS management will be an integral part of the operational management of the 15 MW Temporary power plant;
- Establish adequate environmental and social safeguards capabilities;
- Encourage public participation in the EHS management as related to the surrounding communities; and
- Maintain information generated in the EHS management and prepare EHS performance reports as required by the corporate management and the concerned authorities of the Government.

The Project Proponent will establish and activate the EHS Management System starting from the commencement of construction.

3.2 OVERVIEW OF POLICY AND LEGAL FRAMEWORK IN MYANMAR

National policy and legal framework relevant to environmental management of this Project can be divided into four categories:

(1) Policy and legal framework which provide the foundation for environmental management;

(2) Regulations which govern the EIA process, the processing of EIA documents for the issuance of environmental clearance certificate, and implementation of the environmental management plans;

(3) Laws and regulations related to environmental protection, environmental quality standards and social management requirements; and

(4) Laws specific to the project site.

The national policy and legal framework will need to agree with international treaties and agreements which Myanmar is a signatory. In addition, they should be in line with international standards and guidelines.

3.2.1 The Foundation for Environmental Management

3.2.1.1 The National Environmental Policy (1994)

The National Environmental Policy was promulgated by the Government on 5 December 1994 marking the beginning of the country's endeavor in environmental management. The National Environment Policy is a one-paragraph statement, which proclaims the government's commitment to the principle of sustainable development. It states:

" *To establish sound environment policies, utilization of water, land, forests, mineral, marine resources and other natural resources in order to conserve the environment and prevent its degradation, the Government of the Union of Myanmar hereby adopts the following policy. The wealth of a nation is its people, its cultural heritage, its environment and its natural resources. The objective of Myanmar's environment policy is aimed at achieving harmony and balance between these through the integration of environmental considerations into the development process to enhance the quality of life of all its citizens. Every nation has the sovereign right to utilize its natural resources in accordance with its environmental policies; but great care must be taken not to exceed its jurisdiction or infringe upon the interests of other nations. It is the responsibility of the State and every citizen to preserve its natural resources in the interests of present and future generations. Environmental protection should always be the primary objective in seeking development*".

In essence, the National Environmental Policy calls for the integration of environment and development to achieve sustainable development in the country and to give environmental protection a priority in promoting economic development. Implicitly, the Policy covers not only the physical environment but also the biological environment,

the socio-economic environment, and cultures and heritage. The Policy has established the basis of Myanmar's environmental statutory framework.

The Project Proponent has to follow the National Environmental Policy in order to conserve the environment and prevent its degradation.

3.2.1.2 The Environmental Conservation Law (2012)

The Environmental Conservation Law (2012) was enacted by the national assembly on 30th March, 2012 to establish a legal basis for environmental management of the country. Environmental Conservation Law is to enable to implement the Myanmar National Environmental Policy, and lay down the basic principles and give guidance for systematic integration of the matters of environmental conservation in the sustainable development process. Then, forms the environmental conservation committee, and determines the duties and powers of Minister. The Law specifies environmental emergency, environmental quality standards, environmental conservation, management of urban environment, conservation of natural resources and cultural heritage, prior permission, insurance, prohibitions, offences and penalties, and miscellaneous with the Environmental Conservation Committee (ECC), the Ministry of Natural Resource and Environmental Conservation (MONREC), and environmental quality standards issued by the Ministry.

The project proponent has to pay the compensation for damages if the project will causes injuries to environment under **Section 7 (o)** of said law

The project proponent has to purify, emit, dispose and keep the polluted materials in line with the stipulated standards, under **Section 14** of said law

The project proponent has to install or use the apparatus which can control or help to reduce, manage, control or monitor the impacts on the environment, under **Section 15** of said law.

The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition included in prior permission, stipulated by the ministry, or not, under **Section 24** of said law.

The project proponent has to comply with the terms and conditions included in prior permission, under **Section 25** of said law.

The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification and procedure issued by said law, under **Section 29.**

3.2.1.3 The Environmental Conservation Rules (2014)

The Environmental Conservation Rules was prepared by MONREC for implementing the Environmental Conservation Law. The available document in English has issued on 5 June 2014 pending approval of the Government. In essence, the Project Proponent has to follow the Environmental Conservation Rules prescribed:

1) Functions, duties, activities, and authorities of MONREC and the Environmental Conservation Department of MONREC related to the various work areas indicated in the titles of Chapters 2 to 14;

2) Responsibility of investors to have an EIA prepared for submission to MONREC;

3) Composition, functions and responsibility of the EIA Report Review Body which consists of experts from various relevant government organizations;

4) The need for investors to apply for a prior permission before executing investment plans; and

5) Institutional arrangements for cooperation and coordination between ECD and other government organizations at the national, region and state levels.

It is noted that the contents related to various aspects of the EIA are already prescribed in the EIA Procedure.

The project proponent has to avoid emit, discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public, under **Rule 68 (a)**.

The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem, under **Rule 68 (b)**.

3.2.2 Regulations Related to Environmental Impact Assessment and Management

3.2.2.1 Environmental Impact Assessment Procedure (2015)

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

The project proponent has to support, after consultation with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under **Paragraph 102 (b)**.

The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under **Paragraph 103**.

The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under **Rule 104**.

The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under **Paragraph 105**.

The project proponent has to continuously monitor all adverse impacts in the pre-construction phrase, construction phrase, operation phrase, suspension phrase, closure phrase and post-closure phrase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under **Paragraph 106**.

The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under **Paragraph 107**.

The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under **Paragraph 108**.

The project proponent has to prepare the monitoring report in accord with the **Rule 109**.

The project proponent has to show this monitoring report in public place such as library, hall and website and office of project for the purpose to know this report by public within 10 days from the date which the report is submitted to the Ministry. Moreover has to give the copy of this report, by email or other way which way agreed with the asked person, to any asked person or organization, under **Paragraph 110**.

The project proponent has to allow inspector to enter and inspect in working time and if it is needed by Ministry has to allow inspector to enter and inspect in the office and work-place of project and other work-place related to this project in any time, under **Paragraph 113**.

The project proponent has to allow inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under **Paragraph 115**.

The project proponent has to allow inspector to inspect the contractor and sub-contractor who implement on behalf of project, under **Paragraph 117**.

3.2.2.2 National Environmental Quality (Emission) Guidelines (2015)

MONREC issued the National Environmental Quality (Emission) Guidelines on 29th December 2015. The objectives are 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.

These Guidelines have been primarily excerpted from the International Finance Corporation (IFC) Environmental Health and Safety (EHS) Guidelines, which provide technical guidance on good international industry pollution prevention practice. The

Guidelines are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of these Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them.

The Project Proponent has to follow the National Environmental Quality (Emission) Guidelines to prevent pollution that might affect from the project activities.

3.2.3 Laws and Regulations Related to Environmental Protection and Social Impact Management

Requirements for environmental protection and social impact management are mostly prescribed in various sector laws and regulations. For example, the Factory Act 1951 makes it mandatory for every factory to have adequate facilities for waste and effluent disposal. However, the issuance and enforcement of environmental quality standards are normally based on specific national environmental law.

3.2.3.1 The Conservation of Water Resources and Rivers Law (2006)

The Project Proponent has to ensure that no person carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks, under **Section 8 (a)** of said law

The Project Proponent has to avoid the violation of the conditions prescribed by the directorate for prevention of water pollution and change of watercourse in rivers and creeks, under **Section 24 (b)** of said law.

3.2.3.2 The Freshwater Fisheries Law (1991)

The Project Proponent has to ensure that no one cause harassment of fish and other aquatic organisms or pollution of the water in a freshwater fisheries waters, under **Section 40** of this law.

3.2.3.3 The Protection and Preservation of Cultural Heritage Regions Law (1998)

This law aims to minimize impacts of development projects on the local heritage and cultural settings. The purposes of this law are to implement the protection and preservation policy with respect to perpetuation of cultural heritage that has existed for many years, promote public awareness and participation in the protection and preservation of cultural heritage regions, and carry out protection and preservation of the cultural heritage regions in conformity with international conventions committed to by the State.

The Ministry of Culture has the duty under this law to scrutinize applications of permission for construction and assess whether;

- It can cause obstruction of the view of the cultural heritage region.
- It is clear of the ancient monument or ancient site.
- It can obstruct the surrounding natural landscape.
- It can undermine the grandeur of the ancient monument
- It can affect the security of the cultural heritage
- It can cause environmental pollution

The Project Proponent has to apply to get the prior permission of Directorate of Ancient-Research to build the road, bridge or dam in the culture heritage area, under **Section 13** of said law.

The Project Proponent has to not build the building which is not in line with the stipulations prescribed by the Ministry of Culture in the cultural heritage area, under **Section 22** of said law.

3.2.3.4 The Protection and Preservation of Antique Objects Law (2015)

The Project Proponent has to follow this law that the person who finds an 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 under **Section 12** of said law.

3.2.3.5 The Protection and Preservation of Ancient Monuments Law (2015)

The Project Proponent has to follow, 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, under **Section 12** of said law.

The Project Proponent has to obtain the prior permission of Department of Archaeology and National Museum if the project is in the prescribed area of Ancient monument, under **Section 15** of said law.

The Project Proponent has to obtain the prior permission, by written, of Department of Ancient Research and National Museum if the Project Proponent dispose the chemical and solid waste in the Ancient Monument area, under **Section 20 (f)** of said law.

3.2.3.6 The Forest Law (1992)

The Project Proponent has to ensure that whoever, within a forest land and forest covered land at the disposal Government is desirous of carrying out any development work or economic scheme shall obtain the prior approval of the Forestry Ministry, and who is desirous of carrying out educational or research work or conducting a training course or a study tour shall obtain the prior sanction of the Director-General or the Forest Officer empowered by him, under **Section 12** of said law.

3.2.3.7 The Protection of Wildlife and Conservation of Natural Areas Law (1994)

The Project Proponent has to (i) protect wildlife, wild plants and conserve natural areas; (ii) contribute to natural scientific research; and (iii) establish zoological and botanical gardens. This law therefore covers protection and conservation of wildlife, ecosystems and migratory birds, including the protection of endangered species of wildlife and their natural habitats.

3.2.3.8 The Public Health Law (1972)

The purpose of this law is to ensure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department. The Project Proponent will cooperate with the authorized person or organization in line with the Section 3 and 5 of said law as follows:

Section 3: The Project Proponent has to abide by any instruction or stipulation for public health.

Section 5: The Project Proponent has to allow any inspection, anytime, anywhere if it is needed.

3.2.3.9 The Prevention and Control of Communicable Disease Law (1995)

The Project Proponent has to ensure the healthy work environment and prevention the communicable disease by the cooperation with the relevant health department. This law focuses as follows:

The project proponent has to build the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage & sewage, under clause (9) of **Section 3 (a)** of said law.

The project proponent has to abide by any instruction or stipulation by Department of health and Ministry of Health, under **Section 4** of said law.

The project proponent has to inform promptly to the nearest health department or hospital if the following are occurred: (**Section 9**)

(a) Mass death of animals included in birds or chicken;

(b) Mass death of mouse;

(c) Suspense of occurring of communicable disease or occurring of communicable disease;

(d) Occurring of communicable disease which must be informed.

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

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

The Project Proponent has to ensure that the person in charge shall do the following: under **Section 9 (a) (b) (c) (d)** of said law:

(a) keep the captain and mark referring that it is a non-smoking area at the place mentioned in section.

(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

(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

3.2.3.11 The Labour Organization Law (2011)

This law aims to protect the rights of the worker, to have good relations among the workers between employers, enable to form and carry out the labour organizations systematically and independently. The followings describe in the Labour Organization Law which is related with the Project, that the Project Proponent has to follow:

Section 17: The Labour organizations have the right to carry out freely in drawing up their constitution and rules, in electing their representatives, in organizing their administration and activities or in formulating their programmes. The Labour organizations have the right to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labour laws and the submit demand to the employer and claim in accord with the relevant law if the agreement cannot be reached.

Section 18: The labour organization has the right to demand the relevant employer to re-appoint a worker of such worker is dismissed by the employer and if there is cause to believe that the reasons of such dismissal were based on labour organization membership or activities, or were not in conformity with the labour laws.

Section 19: The labour organization have the right to send representative to the Conciliation Body in settling a dispute between the employer and the worker. Similarly, they have the right to send representatives to the Conciliation Tribunals formed with the representatives from the various levels of labour organizations.

Section 20: The employer and the complaining workers in respect of worker's rights or interests contained in the labour laws, the representatives of the labour organization also have the right to participate and discuss.

Section 21: The labour organizations have the right to participate in solving the collective bargains of the workers in accord with the labour laws.

Section 22: The labour organizations shall carry out peacefully in carrying out holding of meetings, going on strike and carrying out other collective activities in accord with their procedure, regulations, by-laws and any directives prescribed by the relevant Labour Federation.

3.2.3.12 The Settlement of Labour Dispute Law (2012)

The Project Proponent has to negotiate and coordinate in respect of the compliant within the prescribed period without sufficient cause for employee under **Section 38** of said law.

The Project Proponent has to alter the conditions of service relating to employee concerned in such dispute at the consecutive period before commencing the dispute during construction phase under **Section 39** of said law.

The Project Proponent has to not lock-out or strike without accepting negotiation, conciliation and arbitration by Arbitration Body in accord with this law in respect of a dispute under **Section 40** of said law.

The Project Proponent has to pay the compensation in the amount determined by the Arbitration Body or Tribunal if any act or omission to reduce the worker's benefits under **Section 51** of said law.

3.2.3.13 Employment and Skill Development Law (2013)

The Project Proponent has to appoint employees with the contract in line with the provision of **Section 5** of said law.

The Project Proponent has to carry out the training program in accord with the work requirement in line with the policy of the skill development team to develop skill relating to the employment for the workers who are proposed to appoint and working at present under **Section 14** of said law.

The Project Proponent has to put the fund monthly as put in fees without fail for to total wages not less than 0.5% under **Section 30 (a)** of said law.

The Project Proponent has to put money not to deduct from the wage and salary of the employees under **Section 30 (b)** of said law.

3.2.3.14 The Minimum Wage Law (2013)

The Project Proponent has to follow the duties of the employer which specified that the minimum wages should to pay for the worker who works for the Project during pre-construction and construction phases in **Section 13 and 18** of said law as follows:

Section 13 (a) (b) (c) (d) (e) (f) (g): The employer shall inform the rates of minimum wage relating to the business and advertise it at the workplace to enable to be seen by the relevant worker. Prepare and maintain the list, schedule, documents and wages of the workers correctly, then report them to the relevant department. Accept the inspection and allow them entry to the commercial, production and service business, agricultural and livestock breeding workplaces and give necessary assistance. If the workers cannot work due to sickness, shall give them holiday for medical treatment, and if the funeral matter of the member of the family of worker or his parent occurs shall give holiday without deducting from the minimum wage, in accord with the stipulations under this law.

Section 18 (d) (e): The inspection officer has the right to enter and inspect the relevant commercial, production and service workplaces, agricultural and livestock breeding workplaces with the rules, notifications, orders, directives and procedures, then report to the Department. If there are outside workers at employer, has the right to inspect information relating to such outside workers, in accord with the stipulations of this law.

3.2.3.15 The Payment of Wages Act (2016)

The Project Proponent has to pay the wage in local currency or foreign currency recognized by the Central Bank of Myanmar. An employee will receive the payment for 60 days when he/she is in Alternative Civil Service, under **Section 3** of said law.

The Project Proponent has to coordinate with the payment of Wages Act (2016), the employer must pay for part-time, daily, weekly, other part-time, temporary, or piecework when the work is done OR at the agreed time, and the time frame not exceed one month. Wages for the permanent work must pay per monthly basis, upon termination, within 2 days. If a resignation letter is submitted, wages must be paid at the ending day of the payment period. Wages must be paid to the legally recognized heir within 2 working days after the day he/she has died, under **Section 4** of said law.

The Project Proponent has to submit with the agreements of employees and reasonable ground to department if it is difficult to pay because of force majeure included in natural disaster, under **Section 5** of said law.

The Project Proponent has to understand that the employer can deduct from wages for absences except when such absence is during a public holiday or entitled leave, accommodation charges and transportation charges, meal allowances, charges for water and electricity, taxes and errors in payment shall be allowed for deduction. The employer can deduct from pre-issued, expensed and saved (or) contributed amount according to the law upon the employee contract, and deduct with the judgment of the Court of Arbitrator Jury Council, under **Section 7** of said law.

The Project Proponent has to follow that the employer cannot deduct except the deduction in accordance with section 7 and section 11, under **Section 8** of said law.

The Project Proponent has to ensure that the total amount of other deductions, except when the employee fails to perform their duties, shall not be more than 50% of the employee's wages, under **Section 9** of said law.

The Project Proponent has to states clearly that the employer must get the permission prior to making deductions from wages and publicly posted. Fines must not exceed the value of damage caused by the action or cost of performance failure of the employee, do not deduct without allowing an appeal from the employee and deduct more than 5%. No deduction is allowed from a worker under 16 years old. The time frame for deductions shall be set upon an agreement from both sides, deductions shall be carried out within the limited time frame upon the agreement of the Township Arbitration Council. Every deduction must be well documented, and submit a monthly report to the Department concerning deductions, under **Section 10** of said law.

The Project Proponent has to specify that fine for performance failure by the employees; direct damage which is either international or due to negligence, and a breach of the employment contract or any rules for which a fine had been previously set, under **Section 11** of said law.

The Project Proponent has to ensure that take action if a worker encounters any unreasonable deduction from wages or payment is not made by the due date, under **Section 12** of said law.

The Project Proponent has 30 days to appeal to the Director General, Department of Factory and Labour Law Inspection if employees are not satisfied with the orders. The Director General, Department of Factory and Labour Law Inspection's decision will be the final decision, under **Section 13** of said law.

The Project Proponent has to pay the overtime wages if an employee carries out overtime work as set by the law, under **Section 14** of said law.

3.2.3.16 The Workmen's Compensation Act (1923)

The Project Proponent has to pay the compensation in respect of any injury caused under circumstances in line with the provision of **Section 13** of said law.

3.2.3.17 The Leave and Holidays Act (1951)

The Project Proponent has to allow the leave and holidays in line with the law. This law specifies that every employee can leave and have a holidays which described under this Act. They shall be granted by his employer that public holidays with full wages or pay, and who has completed a period of 12 months' continuous. The Project Proponent has to make any agreement or contract of service whereby an employee agrees to take leave or holidays on terms less favourable than those provided in this Act shall be null and void in so far as it purports to reduce the liability of an employer. Any change in ownership of any trade, industry or establishment shall not affect the employee's rights under this Act.

3.2.3.18 The Protection of National Races Law (2015)

The Project Proponent has explain the detail of project and cooperate with the national races who resided in the project area, under **Section 5** of said law.

3.2.3.19 The Social Security Law (2012)

The Project Proponent has to register to the respected social security office, under **Section 11 (a)** of said law.

The Project Proponent has to pay the social security fund for four types of social security including (i) health and social care fund, (ii) family assistance fund, (iii) invalidity benefit, superannuation benefit, and survivors' benefit fund, (iv) unemployment benefit fund, under **Section 15 (a)** of said law.

The Project Proponent has to deduct contributions to pay by employee from their wages together with contribution to be paid employee, and pay to the social security fund during construction phase of project. The employer has to incur the expense for such contribution under **Section 18 (b)** of said law.

The Project Proponent has to pay the fund for employment injury. This fund is not related to workmen compensation, under **Section 48** of said law.

The Project Proponent has to prepare and keep records and lists correctly of worker's daily attendance, appointment of new workers, employing worker by changing of work, termination, dismissal and resignation, promotion and paying remuneration and has to inform the relevant township social security office if changes in number of workers and establishment, change of employer, change of business, suspension of work, and close-down of work, and employment injury, decease and contracting diseases during construction phase under **Section 75** of said law.

3.2.3.20 Petroleum Act (1934)

The Project Proponent has to follow the control over petroleum about import, transport and storage of petroleum, under **Section 3 (1) (2)** of said law, as follows:

Section 3 (1): No one shall import, transport or store any petroleum save in accordance with the rules made under section 4

Section 3 (2): Save in accordance with the conditions of any license for the purpose which he may be required to obtain by rules made under section 4, no one shall import 11 (petroleum Class A) and no one shall transport or store any petroleum.

3.2.3.21 The Petroleum Rules (1937)

This rule states clearly that the Project Proponent has to follow the transport petroleum rules, included transportation by ship, vehicle and pipeline.

The Project Proponent has to follow the transport petroleum rules in **Chapter III**, which describes about the prevention of accidents that all due precaution shall be taken at all times to prevent accident by fire or explosion, prevention of escape of petroleum during transport especially into any drain, sewer, harbour, river or water course. Empty receptacles, receptacle for class I Petroleum, and receptacle for class II Petroleum be kept securely closed unless they have been thoroughly cleaned and freed from petroleum vapor. The Project Proponent has to ensure that no person shall deliver any petroleum to any one in Bangladesh other than the holder of storage license or his authorised agent or a Port Authority or railway administration. Transport by water, petroleum in bulk shall not be carried by water except in ship or other vessel licensed under these rules, and the petroleum shall be stored in such part of the ship or other vessel and in such manner as may be approved by the Chief Inspector. No ship or other vessel shall carry petroleum in bulk if it is carrying passengers, or any inflammable cargo other than petroleum or coal. Before any petroleum is discharged from a ship or vessel the holds of such vessel shall be thoroughly ventilated, on the master of vessel responsibility. Loading and discharge of petroleum in bulk shall be by armoured hose and metal pipe. Smoking, fire and lights prohibited during loading and unloading. Whereas the transport on land vehicles, the Project Proponent has to ensure that no fire or other artificial light capable of igniting inflammable vapour shall be allowed on any vehicle containing petroleum in bulk, and necessary to approve vehicle for transport in bulk.

The Project Proponent has to follow the transportation of petroleum by pipelines in **Chapter IV**, which operations for the winning of natural petroleum or natural gas or both are carried on or within the limits of refineries and installations. Prevention of excessive pressure in the pipeline, an automatic by pass relief valve and a reliable pressure gauge shall be placed on the common discharge pipe at pumping stations. Provided that this rule shall not apply to a pipeline connecting railway siding with installations if the length of such pipeline does not exceed 1.6 kilometers.

3.2.3.22 The Explosives Act (1887)

Fine of punishment for explosive manufacturing, processing or importing described under **Section 6 (3)**.

The Project Proponent has to follow the explosive act for the transportation and import of explosive with any carriage or vessel, major hazard of static electricity sparks, gas leakage and internal explosions during construction phase which related with **Section 7 (1), 8** and **13**.

3.2.3.23 The Explosive Substances Act (1908)

The Project Proponent has to follow the Act which stated that any person who unlawfully and maliciously causes, by any explosive substance, an explosion of a nature likely to endanger life or to cause serious injury to property shall, whether any injury to person or property has been actually caused or not, be punished with transportation for life or any shorter term, to which a fine may be added, or with imprisonment for a term which may extend to ten years, to which a fine may be added, under **Section 3** of this Act.

3.2.3.24 The Myanmar Fire Brigade Law (2015)

The Project Proponent has to follow the directive of the Department of Fire Brigade to reserve fire bridge, and provide fire safety equipment to protect the emergency and accident plan for public who resided in the project area, under **Section 25 (a) (b)** of said law.

3.2.3.25 Motor Vehicle Law (2015) and Rules (1987)

The Project Proponent has to follow the detail section of motor vehicle rules to avoid the negative impact of air and noise pollution, occupation health and safety, and socio-safety for who lived near the project area, under this law.

The Project Proponent should announces local community to follow the law for road safety and should explain to workers, vehicle drives should follow the law of motor vehicle to avoid road accident, air and noise pollution during pre-construction and construction phases of said law.

3.2.3.26 Myanmar Investment Law (2016)

The Project Proponent has to follow the details management of land or building owned by Union and land registration contract that: (a) the investor who obtains permit or endorsement has the right to obtain a long-term lease of land or building from the owner (private, the relevant government organization, or the Union) in order to do investment. Citizen investors may invest in their own land or building in accordance with relevant laws. (d) the investor shall register the land lease contract at the Office of Registry of Deeds, under **Section 50 (a) (d)** of said law.

The Project Proponent has to follow: (b) the investor may appoint of any citizen who is a qualified person as senior manager, technical and operational expert, and advisor in his investment within the Union, (c) the investor shall appoint only citizens for works which does not require skill, (d) the investor shall appoint skilled citizen and foreign workers, technicians, and staff by signing an employment contract between employer and employee, in accordance with the labor laws and rules, under **Section 51 (b) (c) (d)** of said law.

The Project Proponent has to follow the duties and responsibilities of investor that shall to do and comply with the customs, traditions and traditional culture of the ethnic groups in the Union, under labour law in order to investment, under **Section 65 (g) (i) (j) (k) (l) (m) (o) (p)** and **(q)** as follows:

(g) The investor shall abide by 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.

(i) The investor 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, sale and transfer of investment, dis continuation of investment, or reduction of workforce.

(j) The investor shall pay wages and salaries to employees during the period of suspension of investment for a credible reason.

(k) The investor shall pay compensation and indemnification to the relevant employee or his successor for injury, disability, disease and death due to the work.

(l) The investor shall supervise foreign experts, supervisors and their families who employ in their investment to abide by the applicable laws, rules, orders and directives, and the culture and traditions of Myanmar.

(m) The investor shall respect and comply with the labour laws.

(o) The investor shall pay effective compensation for loss incurred to the victim, if there are damage to the natural environment and socioeconomic losses caused by logging or extraction of natural resources which are not related to scope of the permissible investment, except from carrying out the activities required to conduct investment in a permit or an endorsement.

(p) The investor shall allow the Commission to inspect in any places, when the Commission informs the prior notice to inspect the investment.

(q) The investor shall take in advance permit or endorsement of the Commission may administer the investments which need to obtain prior approval under the Environmental Conservation Law, and the procedures of environmental impact assessment, and shall submit the situation of environmental and social impact assessment to the Commission along the period of activities of the investments which obtained permit or endorsement of the Commission.

The Project Proponent has to 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, under **Section 73** of said law.

3.2.3.27 Electricity Law (2014)

This law states which related to the Project are described in **Section 10 (b)**, **18**, **21 (a)**, **22 (a)**, **26**, **27**, **40**, and **68** as follows:

The Project Proponent has to carry out an environmental impact assessment in order to minimize the impact on the environment and has to pay compensation for the impact and contribute to the environmental conservation fund, under **Section 10 (b)** of said law.

The Project Proponent has to ensure that the license holder can engage in electric power generation and distribution only after having received the electrical hazards safety certificate from the chief inspector, under **Section 18** of said law.

The Project Proponent has to be liable for damage to any person or enterprise by failure to abide by the law, rules, regulations, procedures, orders and direction or the specified quality, standards and norms, under **Section 21 (a)** of said law.

The Project Proponent has to be liable for damage to any person or enterprise by negligence of project owner, under **Section 22 (a)** of said law.

The Project Proponent has to ensure that the license holder must comply with the following: under **Section 26** of said law.

(a) Electrical power must be generated as specified in the license

(b) In electric power generation, transmission and distribution; electrical power must be generated as specified in the license and instruments for measuring electric power and protective equipment must be systematically used and maintained in accordance with the stipulations.

The project has to ensure that the license holder and the authorized person must inform the chief inspector and the relevant department in charge immediately if an electrical hazard has accidentally occurred when generating, transmitting, distributing or consuming electric power, under **Section 27** of said law.

The Project Proponent has to ensure that the license holder comply with the rules, norms and procedures issued by the ministry and accept necessary inspections by the relevant government departments and organizations, under **Section 40** of said law.

The Project Proponent has to ensure that, if the license holder negligent or irresponsible of persons who assigned by him has caused injury, disability or death by electrocution or fire, these aggrieved person has the right to request compensation from the license holder as follows: under **Section 68** of said law.

(a) If the aggrieved person is entitled to compensation according to the existing labour compensation law, the compensation specified in this law.

(b) If the aggrieved person is not entitled to compensation according to the existing labour compensation law, the compensation specified in the rules, issued under this law.

3.2.3.28 The Factories Act (1951)

The Factories Act (1951) is relevant to the OHS issue of this Project. This Act describes about health, safety, welfare, special applications and extensions, working hours of adults, employment of young persons, punishments and procedure which related the project during construction and operation phase.

The Project Proponent has to ensure the safety and cleaning of workplace, drinking water, creation of nursing rooms and other needs. The Project Proponent has to abide by all provision of this law, under **Section 5** and **7** of said law.

3.2.3.29 Myanmar Engineering Council Law (2013)

This law describes about the engineering as specified by the council. The Project Proponent has to follow, if 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, directive enacted under 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, and (d) canceling the registration certificate, under **Section 34** of said law.

The Project Proponent has to follow that no one shall perform any engineering 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, under **Section 37** of said law.

3.2.3.30 The Myanmar Insurance Law (1993)

This law describes how to overcome financial difficulties by effecting mutual agreement of insurance against social and economic losses.

The Project Proponent use the owned vehicle the project owners has to insure the insurance for injured person, under **Section 15** of said law.

The Project Proponent has follows as 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 pollution to the environment shall effect compulsory General Liability Insurance with the Myanmar Insurance, under **Section 16** of said law.

3.2.3.31 The Export and Import Law (2012)

The Project Proponent has to ensure that a person who obtained any license shall not violate the conditions contained in the license, under **Section 7** of said law.

3.2.4 Law Specific to the Project Site

Within the project site, there are 2 key laws related to Boil-Off Gas Power Plant Project, including:

The two laws relevant to the Project Site are:

3.2.4.1 Myanmar Special Economic Zone Law (2014)

The Special Economic Zone (SEZ) Law was initially promulgated on 27th January 2011, and then the law was further amended and enacted in January 2014. This facilitates in developing export oriented industries, by providing incentives and additional needed supply chain industries.

The Project Proponent has to follow the functions and duties of management committees as follows: (f) specifying in notifications, orders, directives and procedures, particulars to be followed by the investors, (p) supervising environmental conservation and protection in special economic zone in accordance with the existing laws, scrutinizing the system to dispose industrial waste from the factories, requesting developers and investors to comply with the stipulations, under **Section 11 (f) (p)** of said law.

The Project Proponent has to appoint the 100% citizen-owned, 100% foreign-owned, or owned by a joint venture between citizens and foreigners for normal work, under **Section 27** of said law.

The Project Proponent has to follow the standards and norms contained in the Myanmar Environmental Conservation Law and International Standards and norms, and must prevent social and health impacts in accordance with the existing laws, under **Section 35** of said law.

The Project Proponent has to ensure that expertise is not required, the investor shall hire citizens only for work, under **Section 74** of said law.

The Project Proponent has to provide amongst skilled workers, technicians and staff, at least 25% must be citizens during the first two years from the commencement of commercial operations, at least 50% must be citizens during the second two years, and at least 75% must be citizens during the third two years, under **Section 75** of said law.

The Project Proponent has to ensure that the relevant management committee negotiate and mediate in the disputes arising between the employer and the employees, technicians or staff. If no settlement has been reached following negotiations and mediation by such committee, the parties shall accept the decision under the Trade Dispute Act of the Union of Myanmar, under **Section 76** of said law.

The Project Proponent has to follow the work permits for foreign employees who are working in the special economic zone shall be issued by the labour department representative office at the one stop service department in the special economic zone, under **Section 77** of said law.

The Project Proponent has to follow, if an investor wishes to employ foreign employees for technology and management work in addition to the specific numbers, he may employ them with the approval of the relevant management committee, under **Section 78** of said law.

The Project Proponent has to (a) pay the agreed expenditures for transfer, resettlement and compensation if houses, buildings, gardens, paddy fields, fruit bearing plants and plantations on the land are required to be cleared or transferred, (b) negotiate with the management committee in order to ensure that the persons who have to leave the land do not fall below their previous standard of living, their fundamental needs are fulfilled and the transfer is easy and smooth, (c) use the permitted land in accordance with the prescribed regulations, (d) not modify or alter the topography or contour of the permitted land without the permission of the management committee, (e) report immediately to the management committee if natural mineral resources, antiques or treasures unrelated to the permitted business and not included in the original agreement are found above or under the land. If the management committee so permits, the developer or investor may continue to operate on the land. Otherwise, the developer or investor shall transfer to a substituted area, under **Section 80 (a) (b) (c) (d) (e)** of said law.

3.2.4.2 The Dawei Special Economic Zone Law (2011)

The Dawei Special Economic Zone Law (DSEZ) Law was enacted on 27th January 2011; the official name is "The State Peace and Development Council Law No.17". This Law contains the stipulations in order to facilitate in developing export oriented industries and additional needed supply chain industries.

The Project will be located in Dawei Special Economic Zone (DSEZ). DSEZ was established under the Dawei Special Economic Zone Law (2011). This law was specifically promulgated for the development and operations of DSEZ. Although the law has no specific requirements for EIA, it has several clauses which clearly indicate that the Government acknowledges the importance of environmental and social aspects of development in DSEZ. Environmentally related clauses in the law are quoted below:

The Project Proponent has to operate the following works in priority, businesses for conservation and protection of natural environment, under **Section 8 (g)** of said law.

The Project Proponent has to follow the functions and duties of the Management Committee of the Dawei Special Economic Zone under **Section 10 (a) (c) (j)** of said law are as follows:

(a) submitting the Dawei Special Economic Zone development plan to the Central Body and Central Working Bodies and obtaining approval for enabling to implement and operate the Dawei Special Economic Zone successfully.

(c) supervising and inspecting the matters on implementation of investment and establishment plans, land-use, environmental conservation, wastes control, health, education, finance and taxation, development, transport, communication, security, electricity, energy and water supply, etc., and coordinating with the relevant Government departments and organizations.

(j) supervising for the natural environmental conservation and protection in the Dawei Special Economic Zone in accord with the existing Laws, scrutinizing the disposal system of industrial wastes and if it is not in conformity with the stipulations, causing the developer or investor to perform in line with them.

The Project Proponent has to take responsibility in order not to cause environmental pollution and air pollution in respect of his enterprise in the Dawei Special Economic Zone, under **Section 31** of said law.

The Project Proponent has to follow the Central Body: under **Section 33 (a) (e)** of this law;

(a) may with the approval of the Government, permit the developer or investor land lease or land use after causing payment of fees to be made for land lease or land use in the Dawei Special Economic Zone, for at least 30 years.

(e) may scrutinize and permit the term of period for land lease or land use which the developer or investor actually needs depending on the type of investment business and the amount of investment.

The Project Proponent has to bear the expenses of transferring and paying compensation of houses, buildings, farms and gardens, orchards/fields, plantation and land within the Dawei Economic Zone permitted by the Central Body if these are required to be transferred. Moreover, the developer or investor shall carry out to fulfill fundamental needs of persons who transfer so as not to lower their original standard. The relevant Management Committee shall coordinate as may be necessary for the convenience of such works, under **Section 34** of said law.

3.3 INTERNATIONAL CONVENTIONS, TREATIES AND AGREEMENTS

Myanmar has signed several international conventions, treaties and agreements related to the environment. Some of them are shown in ***Table 3.3-1***.

TABLE 3.3-1

RELEVANT INTERNATIONAL TREATIES SIGNED BY MYANMAR

No.	International Environmental Conventions/ Protocols/ Agreements	Date of Signature	Date of Ratification	Date of Member	Cabinet Approval Date
1	Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome, 1956		4-11-1959 (Adherence)	4/11/1959	
2	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)	11/6/1992	25-11-1994 (Ratification)		41/94 9-11-94
3	Convention on Biological Diversity, Rio de Janeiro, 1992	11/6/1992	25-11-1994 (Ratification)		41/94 9-11-94
4	The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972		29-4-1994 (Acceptance)		6/94 9-2-94
5	ASEAN Agreement on the Conservation of Nature and Natural Resources, Kuala Lumpur, 1985	16/10/1997			
6	Catagena Protocol on Biosafety, Cartagena, 2000	11/5/2001			13/2001 22-3-01
7	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997		13-8-2003 (Accession)		26/2003 16-7-03
8	Convention on the International Maritime Organization, 1948	6/7/1951	25-11-1994 (Ratification)		
9	MARPOL 73/78, 1978	4/8/1988			
10	United Nations Convention on the Law of the Sea, 1982	21/8/1996			

3.4 MYANMAR GOVERNMENT INSTITUTIONAL FRAMEWORK

3.4.1 Arrangement at the National and Sector Level

At the national level, the Environmental Conservation Committee (ENCC) serves as mechanism for inter-ministerial coordination. Authorities and functions of ENCC are prescribed in Articles 7 to 13 of the EC Rules environment of the Republic of the Union of Myanmar.

One of ENCC's main functions related to this Project is to oversee the management of the EIA process by MONREC through ECD. ECD will serve as coordinator among various concerned sector departments to ensure that the EIA and implementation of EMP will address environmental and social issues of concerns of relevant sector departments.

The EIA process for this Project will be administered by the central ECD in coordination with the regional ECD and various government organizations at the regional, township, and district levels.

3.4.2 Arrangements at the Project Area

A. Institutional Framework of Myanmar Government

Myanmar's Subnational Administrative Structure

The Republic of the Union of Myanmar is composed of seven (7) regions, named in the 2008 Constitution. There are 6 self-administered zones or divisions and 1 union territory. In detail, there are 325 townships and 67 districts in Myanmar's states and regions, according to Myanmar Information Management Unit (2011), Myanmar Statistical Year book (2011), and Ministry of National Planning and Economic Development. The smallest formal administrative unit is called "village", with various groups (towns, village, and urban) can be grouped into townships. Collections of townships are organized as districts and can be turned the form into regions or state (collections of districts).

State and region governments comprise of an unicameral, partially elected state or region Hluttaw, an executive led by a Chief Minister and a cabinet of state/region ministers, and state or region judicial institutions.

The ***Figure 3.4-1*** below illustrates organization structure of state and region government. In detail, there are nine (9) ministries and twelve (12) union ministries.

TABLE 3.4-1

ROLES AND RESPONSIBILITIES OF RELEVANT DEPARTMENTS FUNCTIONING IN DSEZ

No.	Department	Roles and Responsibilities
1	Department of General Administration	Management and monitoring to cooperate and negotiate with local peoples
2	Department of Human Settlement and Housing	The Department of Human Settlement & Housing Development is upgrading the living standard of the people by promoting the urban and regional development, by establishing industrial zones at the new satellite towns.
3	Department of Immigration and National Registration	Responsible for checking and permission for immigrant staffs, workers and visitors to the project area
4	Myanmar Port Authority	Responsibility to regulate and administer the coastal ports of Myanmar.
5	Myanmar Police force	Establish civil jurisdictions in the project area
6	Department of Labour	- Workers' legal rights and privileges and encourage fair labour practices with a view to establishing cordial relations between employers and workers according to the existing Laws in Myanmar - Registering foreign workers in Myanmar according to directive of the Myanmar Foreign Investment Commission.
7	Directorate of Trade	Responsible for the formulation of trade policies and plans with the aim to regulate the smooth flow of internal and external trade.
8	Department of Development Affairs	Responsible for the urban development.
9	Department of Road Transportation	Passenger transportation service for inter-city transportation and intra-city transportation, to carry out the transportation services of local goods and export items. The Directorate of Road Transport carries out registration of motor vehicles and driving licenses.
10	Department of Investment and Company Administration	Responsible for register the incorporation and administration of companies, in accordance with the provisions of the Myanmar Companies Act, 1914.
11	Department of Custom	Responsible for levy duty on imported goods in accordance with the existing laws, rules and regulations, to oversee the imports and exports whether they are complied with the existing laws and regulations or not and to investigate and prevent illegal imports and exports.
12	Department of Law, Court and Justice	For giving legal advice on matters relating to international conventions and regional agreements, and also on matters of bilateral or multilateral treaties, memorandums of understanding, memorandums of agreement, local and foreign investments and other instruments that are to be ratified by the Union of Myanmar.
13	Department of Municipality	Dealing with locally affairs, to the close contact with the daily life of the citizens.
14	Representative from Tanintharyi Division	To communicate with Local Government.

3.5 INTERNATIONAL POLICIES, GUIDELINES AND STANDARDS

International policies, guidelines and standards relevant to environmental and social impacts of projects that are referred to by most countries are those issued by the World Health Organization (WHO), the U.S. Environmental Protection Agency (EPA), the World Bank, and the International Finance Corporation (IFC). The policies, guidelines and standards of the World Bank and IFC are cross referenced and complementary as the IFC is an organization of the World Bank Group. They are also adopted by most development organizations such as the Asian Development Bank. It should be noted that the guidelines and standards recommended by the World Bank and IFC, especially those related to environmental pollution, also gave due consideration to the guidelines and standards of the EPA and WHO.

Only those international policies, guidelines and standards relevant to this Project are discussed herein.

3.5.1 IFC's Standards and Guidelines

IFC's standards and guidelines relevant to this Project are described in two documents:

- Performance Standards on Environmental and Social Sustainability, January 1, 2012; and
- Environmental, Health, and Safety-General Guidelines, April 30, 2007; and
- Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008).

The first document describes eight performance standards on environmental and social sustainability which IFC requires its clients to apply throughout the project life cycle.

The second document provides general guidelines for environmental, health and safety (EHS) for development projects.

The third document provides EHS guidelines specific to thermal power plant projects.

Essential requirements in the three IFC documents pertaining to this Project are summarized below.

A. Performance Standards on Environmental and Social Sustainability, January 1, 2012

IFC prescribes eight Performance Standards to which its clients will need to comply throughout the investment life of IFC. The eight performance standards (PS) are:

Performance Standard 1:	Assessment and Management of Environmental and Social Risks and Impacts
Performance Standard 2:	Labor and Working Conditions
Performance Standard 3:	Resource Efficiency and Pollution Prevention
Performance Standard 4:	Community Health, Safety, and Security
Performance Standard 5:	Land Acquisition and Involuntary Resettlement
Performance Standard 6:	Biodiversity Conservation and Sustainable Management of Living Natural Resources
Performance Standard 7:	Indigenous Peoples
Performance Standard 8:	Cultural Heritage

The eight PSs cover all environmental and social aspects of development projects.

Major requirements of each PS are summarized as follows:

PS1-Asessment and Management of Environmental and Social Risks and Impacts

PS1 requires the client, in coordination with other responsible government agencies and third parties as appropriate, to conduct a process of environmental and social assessment, and establish and maintain an environmental and social management system (ESMS) *appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts*. The ESMS will incorporate the following elements: (i) policy; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement; and (vii) monitoring and review. These requirements are explained in details in the PS document and associated guidelines.

PS2-Labor and Working Conditions

PS2 requires the client to: (i) formulate and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this Performance Standard and national law; (ii) provide reasonable working conditions and terms of employment; (iii) treat migrant workers on substantially equivalent terms and conditions to non-migrant workers carrying out similar work; (iv) establish grievance mechanism; (v) refrain from using child labor and forced labor; and (v) provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. These requirements will also be applied to workers of the contractors through effective contractual arrangements between the client and the contractors.

PS3-Resource Efficiency and Pollution Prevention

PS3 requires the client's project to: (i) efficiently use energy and water; and (ii) use best available techniques (BAT) in pollution control.

PS4-Community Health, Safety, and Security

This PS requires the client to: (i) evaluate the risks and impacts to the health and safety of the Affected Communities during the project life-cycle; and (ii) establish preventive and control measures consistent with good international industry practice (GIIP), such as in the World Bank Group Environmental, Environmental, Health and Safety Guidelines (EHS Guidelines) or other internationally recognized sources. The requirements are elaborated in the PS document. Some of the requirements, such as hazardous materials management, are similar to those in PS3. In essence, safety aspects to the communities and operators will need to be fully considered in engineering design, construction and operations of all Project facilities, including support facilities or infrastructure. Health risks will also be included.

PS5-Land Acquisition and Involuntary Resettlement

This PS requires the client to avoid land expropriation, physical displacement, and adverse impacts on livelihoods and ways of life of people in the project area. The process of land acquisition has to ensure community engagement, fair compensation for loss of land, properties, and livelihood; grievance mechanism, and appropriate resettlement and livelihood restoration planning and implementation.

PS6-Biodiversity Conservation and Sustainable Management of Living Natural Resources

PS6 requires the EIA to consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts. As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services should be implemented. Given the complexity in predicting project impacts on biodiversity and ecosystem services over the long term, the client should adopt a practice of adaptive management in which the implementation of mitigation and management measures are responsive to changing conditions and the results of monitoring throughout the project's lifecycle.

PS7-Indigenous Peoples

PS7 requires the EIA to identify all communities of Indigenous Peoples within the project area of influence who may be affected by the project, as well as the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage), and environmental impacts on them. Adverse impacts on Affected Communities of Indigenous Peoples should be avoided where possible. Where alternatives have been explored and adverse impacts are unavoidable, the client will minimize, restore, and/or compensate for these impacts in a culturally appropriate manner commensurate with the nature and scale of such impacts and the vulnerability of the Affected Communities of Indigenous Peoples.

PS8-Cultural Heritage

PS8 requires the client to: (i) protect cultural heritage from the adverse impacts of project activities and support its preservation; and (ii) promote the equitable sharing of benefits from the use of cultural heritage. The EIA will need to identify sites of cultural heritage and assess their value or importance at the community, provincial and national levels.

It should be noted that all the eight PSs are in line with the Government's policy and regulations. For this Project, PS5, PS7 and PS8 are not relevant as pointed out in Chapters 5 and 6.

B. Environmental, Health, and Safety-General Guidelines, April 30, 2007

This publication provides general EHS guidelines covering the following subjects:

Environment covering: (i) air emissions and ambient air quality; (ii) energy conservation; (iii) wastewater and ambient water quality; (iv) water conservation; (v) hazardous materials management; (vi) waste management; (vii) noise; and (viii) contaminated land.

Occupational Health and Safety covering: (i) general facility design and operation; (ii) communication and training; (iii) physical hazards; (iv) chemical hazards; (v) biological hazards; (vi) radiological hazards; (vii) personal protective equipment; (viii) special hazard environments; and (ix) monitoring.

Community Health and Safety covering: (i) water quality and availability; (ii) structural safety of project infrastructure; (iii) life and fire safety (L&FS); (iv) traffic safety; (v) transport of hazardous materials; (vi) disease prevention; and (vii) emergency preparedness and response.

Construction and Decommissioning covering: (i) environment; (ii) occupational health and safety; and (iii) community health and safety.

C. Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)

This publication provides EHS guidelines and standards specific to thermal power plant projects. It covers the following subjects:

- Environment covering: (i) air emissions; (ii) energy efficiency and greenhouse gas emissions; (iii) water consumption and aquatic habitat alteration; (iv) effluents; (v) solid wastes; (vi) hazardous materials and oil; and (vii) noise.
- Occupational Health and Safety covering issues described in the General EHS Guidelines and additional issues specific to thermal power plants, including: (i) non-ionizing radiation; (ii) heat; (iii) noise; (iv) confined spaces; (v) electrical hazards; (vi) fire and explosion hazards; (vii) chemical hazards; and (viii) dust.
- Community Health and Safety covering issues described in the General EHS Guideline and additional issues specific to thermal power plants, including: (i) water consumption; (ii) traffic safety.
- Performance Indicators and Monitoring Guidelines for Environment and Occupational Health and Safety.

3.5.2 World Bank's Pollution Prevention and Abatement Handbook 1998 Toward Cleaner Production

The World Bank's Pollution Prevention and Abatement Handbook (PPAH) is a comprehensive document providing guidelines for industrial pollution control and recommends emission and ambient standards to be applied in environmental management. The recommended standards have taken into account the standards enforced by the EPA and recommended by WHO. They are referred to in the IFC's EHS Guidelines.

The PPAH has several sector-specific guidelines. There are two specific sections of "Thermal Power: Guidelines for New Plants", pages 413 to 426, and "Thermal Power: Rehabilitation of Existing Plant", pages 427 to 429 which are relevant to the Project.

3.5.3 Safety for Gas Explosion

Safety for gas explosion has to be established for the project related to gas, flammable or explosive substance and implemented emergency plan. This project associates with power generation (electricity) by using Liquefied Natural Gas (LNG) as the main resource. In general, natural gas explosions could be taken place within the project site, and a LNG leak from a valve, pipeline or tank due to a various factors, during installation, electricity generating process, and inspection to maintenance and repair. Thus, the Project shall be legislatively and complied with safety standards or regulations within the project site and adjacent areas.

The followings are standards and regulations, issued by Department of Labour, USA., 2012, which are globally applied for heavy and light industrial activities in area of gas explosion (Source: https://www.osha.gov/dts/tib/tib_data/tib20001106a.html).

- NFPA 8502, "Standard for the Prevention of Furnace Explosions/ Implosions in Multiple Burner Boilers;"
- NFPA 8503, "Standard for Pulverized Fuel Systems;"
- ASME, BPVC Section VII, "Recommended Guidelines for the Care of Power Boilers;" and
- ASME B31.1, "Power Piping."

3.6 GUIDELINES AND STANDARDS APPLICABLE TO THIS PROJECT

Environmental management of the Project during construction and operation will comply with the national or international environmental guidelines and standards as appropriate. The international guidelines and standards will be adopted only when the national guidelines and standards do not exist. In addition, the Project will control stack emissions following the standards which are specifically agreed in the drafted concession agreement of the Project.

Table 3.6-1 presents international ambient environmental quality standards to be adopted as the national ambient environmental quality standards have not yet been issued. ***Table 3.6-2*** presents national emission standards to be adopted for stack gas emissions.

TABLE 3.6-1

RELEVANT INTERNATIONAL ENVIRONMENTAL GUIDELINES AND STANDARDS

Subjects	Parameters	Values	References
Ambient Air Quality (24 hour average)	TSP average 24 hour PM10 average 24 hour NO_x as NO_2 average 1 hour NO_x as NO_2 average 24 hour SO_2 average 24 hour	230 mg/m^3 150 mg/m^3 200 mg/m^3 150 mg/m^3 125 mg/m^3	- Thermal Power: Guidelines for New Plant, Pollution Prevention and Abatement Handbook WORLD BANK GROUP, 1998 - WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environment Air Emissions and Ambient Air Quality of International Finance Corporation, 2007
Ambient Noise Levels - Industrial and commercial area - Residential areas	Leq (24 hrs) Leq (1 hr) L_{max}	70 dB(A) 55 dB(A)daytime 45 dB(A) nighttime 115 dB(A)	Environmental, Health, and Safety (EHS) Guidelines: General EHS Guide GUIDELINES:ENVIRONMENTAL NOISE MANAGEMENT, IFC, 2007
Groundwater Quality	pH at 25°C Nitrate-Nitrogen Nitrite-Nitrogen Cadmium Lead Arsenic Copper Mercury	6.5-8.5 ≤ 11 mg/L ≤ 0.9 mg/L ≤ 0.003 mg/L ≤ 0.01 mg/L ≤ 0.01 mg/L ≤ 2 mg/L ≤ 0.006 mg/L	WHO's Guidelines for Drinking Water Quality, 2011
Thermal Heat Flux	Safe level of exposure at the property line of LNG storage facility	5 kW/m^2 (1,600 Btu/hr ft^2)	NFPA 59A (standards for the production facility)

TABLE 3.6-2

NATIONAL EMISSION STANDARDS

Parameter	Standard	Note
Particulate matter, PM_{10}	-	Not specified for natural gas power plant
SO_2	-	Not specified for natural gas power plant
NO_X	50 mg/Nm^3	For natural gas power plant 15-50 MW

Source : National Environmental Quality (Emission) Guidelines 2015, Myanmar.

However, the gaseous emission standards as specified in the draft concession agreement of the Project are more stringent than the national standards, except NO_x, as shown in ***Table 3.6-3***. The Project will adopt the national standard for NO_x.

TABLE 3.6-3

EMISSION STANDARDS FOR THE PROJECT

Parameter	Standard
Particulate matter, PM_{10}	60 mg/Nm^3
SO_2	20 ppm (20 mg/Nm^3)
NO_X	120 ppm (120 mg/Nm^3)

Sources: As specified by the draft concession agreement of the Project.

Regarding to the policies, legal and institutional framework, it is conditioned and committed that developers/investors/associated sectors must strictly follow the obligations continuously, during pre-construction, construction and operation phases.

In addition to that, the national policy and legal framework, such as IFC, will be complied, which Myanmar is a signatory. Also, they should be in line with international standards and guidelines.

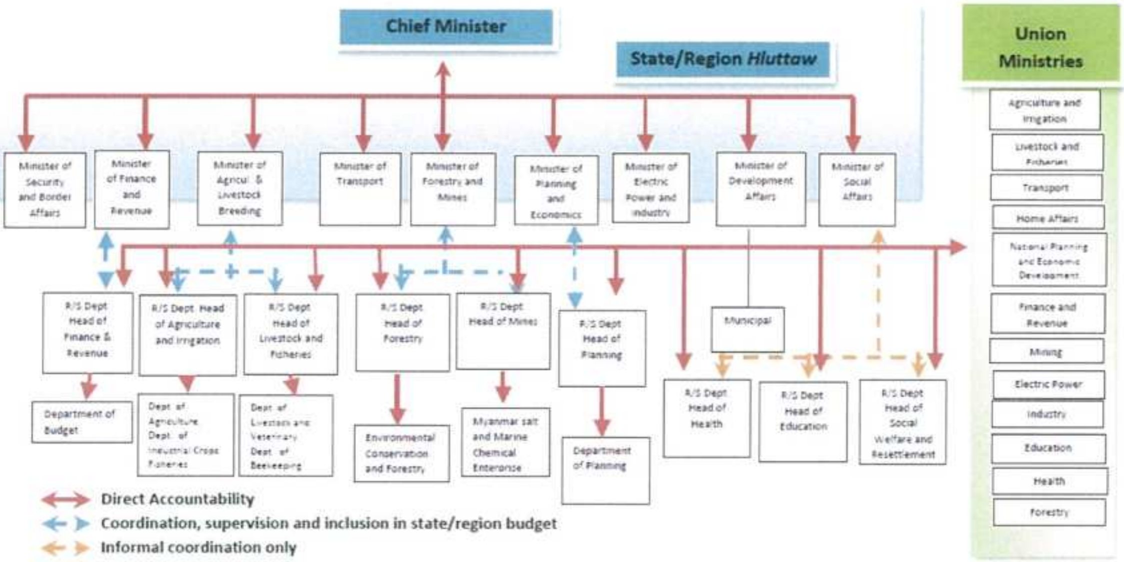


FIGURE 3.4-1 : ORGANIZATIONAL STRUCTURE OF STATE AND REGION GOVERNMENT

B. Institutional Framework of Management Government of the DSEZ

Dawei Special Economic Zone Management Committee

This Project will be implemented as a public - private participation (PPP) project under a concessional arrangement between the Project Proponent and the Dawei Special Economic Zone Management Committee. ***Figure 3.4-2*** shows an organizational structure for the development of DSEZ which is organized as prescribed by the Special Economic Zone Law (2011). The development of the Dawei Special Economic Zone (DSEZ) is carried out under the framework set by the Dawei Special Economic Zone Law. Under this law, two bodies were established-the Dawei Special Economic Zone Management Committee and the Dawei Special Economic Zone (DSEZ) Working Body-to take charge of DSEZ management and general administration affairs.

The DSEZ Management Committee (DSEZMC) is essentially responsible for facilitating resolving issues between the Government, the Central Body and developers/ investors. The Committee's wide-ranging and important responsibilities include, but are not limited to: supervising and inspecting matters regarding implementation of investment and establishment plans, land-use, environmental conservation, waste control, health, education, finance and taxation, development, communication, security, infrastructure and coordinating with the relevant governmental departments.

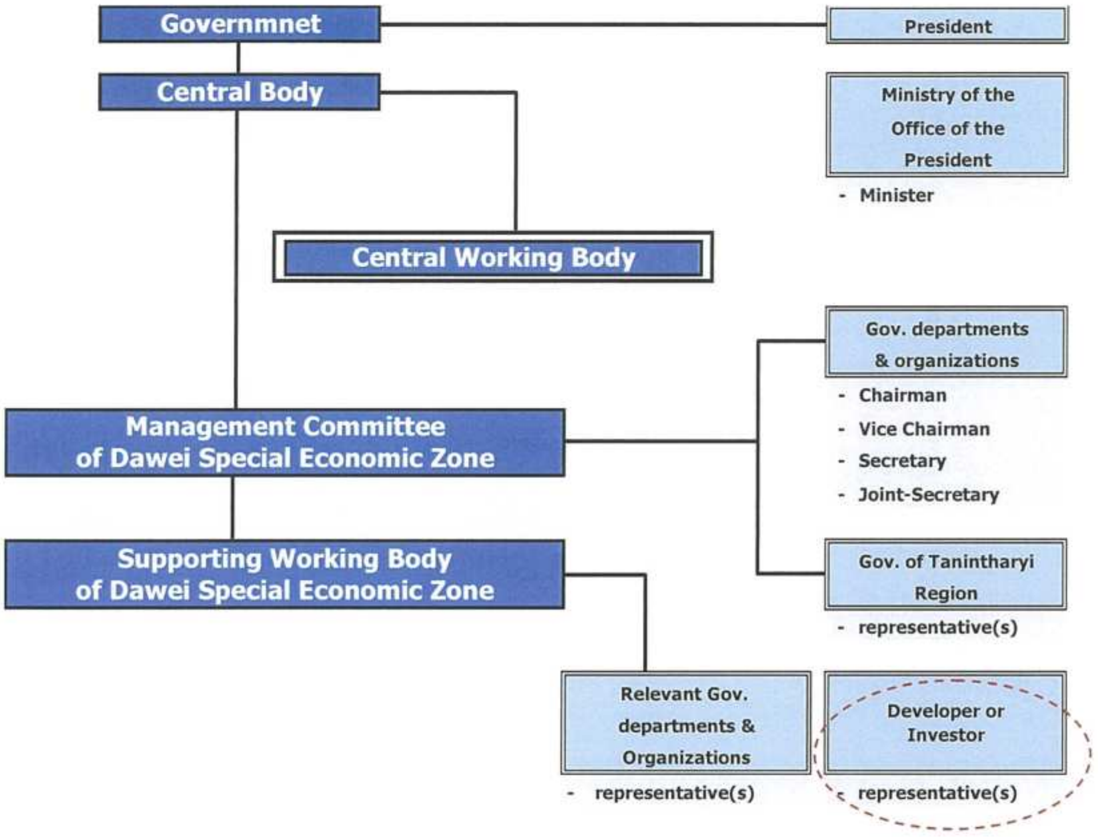


FIGURE 3.4-2 : ORGANIZATIONAL STRUCTURE OF DAWEI SPECIAL ECONOMIC ZONE (DSEZ)

C. Other Relevant Agencies

There are 14 representatives of relevant government agencies and organizations from respective ministries involved in development activities of the Supporting Working Body (SWB) in the project area. Their key responsibilities are summarized in ***Table 3.4-1***.

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

4.1 INTRODUCTION

This chapter presents salient information on the Project, including justification for the selected technology, Project site, Project facilities, arrangements for the Project construction, inputs for the power plant operation, and organization for the commercial operation of the power plant. Some information is taken from some technical literatures relevant to the LNG gas engine power plant and has been edited or elaborated as appropriated by the Consultant for presentation in this chapter. The main text is intended to be concise. Support details are provided in appendixes.

4.2 PROJECT ALTERNATIVES

Due to the project is temporary power plant which is planned to be operative for 2 years and will be removed after Boil-off gas power plant start to operate. The Project design is based on using of simple, small gas engine to generate power.

The selected design alternatives are justified on the following grounds:

(1) Gas engine as a generator

This gas reciprocating engine is selected due to its compact-size and ease for transportation and installation. It can be moved to operate at different site after the life of this Project. The principal of power generation by reciprocating engine is converting the thermal energy into mechanical work by combustion process. Technically, the system will move shafts connected to a piston cylinder (pressure inside the cylinder) to generate power. At this stage of the ESIA, the 15 MW temporary power plant will use a multiple units of 1MW gas generator model Cummins QSK60 or alternatively a multiple units of 1MW gas generator model GE Jenbacher JGS320 (see ***Article 4.5.2*** and ***Appendix 4A***.)

(2) LNG as a fuel

Liquefied natural gas (LNG) is natural gas (predominantly methane, CH_4) that has been converted to liquid form for ease of storage or transport. It takes up about 1/600th the volume of natural gas in the gaseous state. LNG achieves a higher reduction in volume than compressed natural gas (CNG) so that the (volumetric) energy density of LNG is 2.4 times greater than that of CNG or 60 percent of that of diesel fuel. This makes LNG cost efficient to transport over long distances where pipelines do not exist. It is odorless, colorless, non-toxic and non-corrosive. It could be considered the most environmentally friendly fossil fuel, because it has the lowest CO_2 emissions per unit

4.3 PROJECT SITE

4.3.1 Location

The 15 MW Temporary Power Plant will be constructed on idle land plot in jurisdiction of Pagaw Zoon Village, approximately on KM.17 of ITD main road that connect DSEZ to Thai border. Terminal, in area designated as industrial estate area in DSEZ.

The coordinates of project site are UTM 47P 410747E 157958N (***Figure 4.3.1-1***). The land plot has a rectangular shape with 250 meter in length and about 100 meter in width. The size is 25,000 m^2 or 6.25 Acres exclude each side clearance of 30 m. The site is relatively flat with slightly slope at an average elevation of about 25 m above mean sea level (+25.0 m MSL). There are eleven villages existed within 5 kilometer radius from the Project (***see Section 5.1 and 5.2*** in Chapter 5).

4.3.2 Surrounding Areas

The Project area is vacant area. The surrounding area is sparsely populated and designated for industrial development under DSEZ. Major infrastructure or facilities near the Project area are:

- Yebyu Township-about 9 km on the East from the Project site via Highway No.8 and ITD main road. The township is the closest urban community to the Project site.
- Dawei District approximately 30 km south from the Project site via Highway No.8 and ITD main road, Dawei is the capital of Myanmar Tanintharyi Region, it is main port of the south of Myanmar
- Dawei Special Economic Zone which approximately 17 km to the west of the project. Nowadays, DSEZ is still in initial phase and the Project would supply a power for DSEZ prior completion of Boil-off gas power plant.
- Dawei General Hospital – located in Dawei District approximately 30 km from the Project site via Highway No.8 and ITD main road.

4.3.3 Site Development Works

The site development works will include:

- Site clearance: removal of vegetation and top soil
- Land leveling and compaction: due to the site is slightly slope, grading and filling with suitable materials to level the whole site as the same elevation before construction begin.

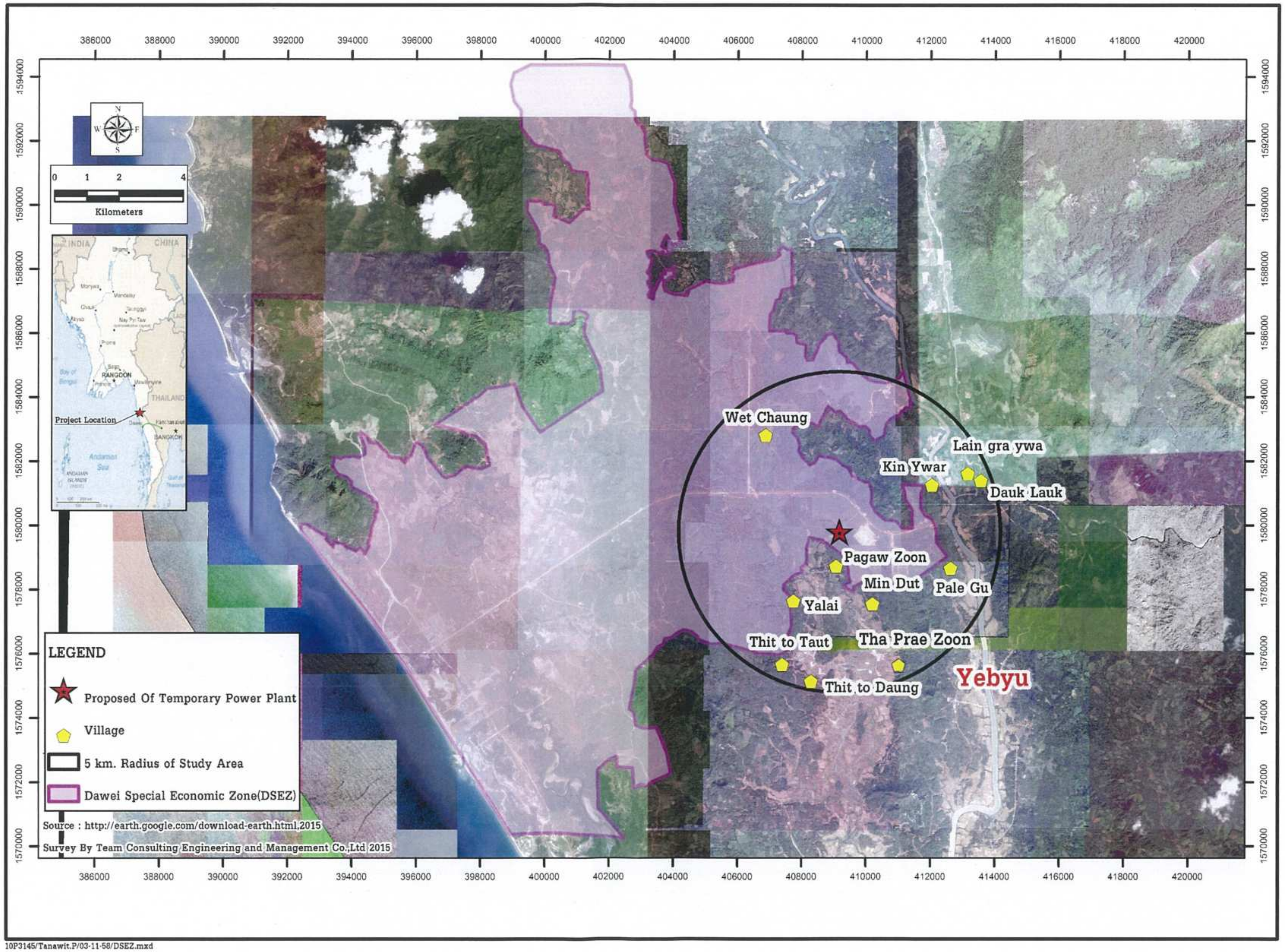


FIGURE 4.3.1-1 : PROJECT LOCATION

4.4 INPUTS FOR OPERATION

4.4.1 Fuel

(1) Source

During the operation period of 24 months, the operation of temporary power plant will necessitate the need for transportation of LNG fuel. LNG will supply from PTT LNG Terminal located at Map Ta Phut, Rayong Province Thailand and transport to the power plant by land transport via Phu Nam Ron border check-point and ITD main road. A distance between PTT LNG Terminal and DSEZ is approximately 750 km is shown in ***Figure 4.4.1-1***.

The consultant made a rough estimate daily requirement of LNG at 144 m^3(total storage of LNG at the power plant is 720 m^3 which can use for 5 days at 75%load factor, quantity of LNG use for one day is 144 m^3). This quantity of LNG could be transported by 4 heavy truck, each truck capacity in transportation of LNG is 13 m^3

(2) Properties

The analysis result of chemical properties (gas compositions) of LNG from PTT LNG terminal, Rayong, Thailand is shown in ***Figure 4.4.1-2***.

4.4.2 Water

(1) Water Requirements

Due to the Project have selected reciprocating gas engine model Cummins QSK 60 (or GE Jenbacher JGS320) to generate power, the engine is already equipped with close circuit cooling system with radiator. No water is required for cooling water makeup. Therefore, raw water is use for non-process consumption.

(2) Sources

Water for operation period of the Project is only potable water for consumption. It is expected that raw water to meet the above demand could be drawn from deep well bore holes within the site boundary. Drinking water should be supplied by outsource contractor.

Phu Nam Ron – Dawei Project Site
(One-way distance: 150 km.)

Map Ta Phut – Phu Nam Ron
(One-way distance: 600 km.)

FIGURE 4.4.1-1 : DISTANCE BETWEEN PTT LNG TERMINAL IN RAYONG, THAILAND TO THE PROJECT SITE

PTT LNG COMPANY LIMITED

8/14-8 Road, Map-Ta-Phut Subdistrict, Muang District, Rayong 21150, Thailand

Tel. 038-978266, 038-978267

Estimate Analysis Report For LNG Loading (From Pipeline Sendout Gas Chromatograph)

Date: 10 July 2013 Location: Pipeline Gas Sendout Chromatograph

Time:9:20 AM

Composition	Unit	Standards for Certification	Average Data Analysis Online GC
Methane (CH4)	Mole %	ASTM D1945-3	92.56
Ethane (C2H6)	Mole %	ASTM D1945-3	6.23
Propane (C3H8)	Mole %	ASTM D1945-3	0.90
i-Buthane (C4H10)	Mole %	ASTM D1945-3	0.12
n-Buthane (C4H10)	Mole %	ASTM D1945-3	0.09
i-Pentane (C5H12)	Mole %	ASTM D1945-3	0.00
n-Pentane (C5H12)	Mole %	ASTM D1945-3	0.00
Hexane (C6H14)	Mole %	ASTM D1945-3	0.00
Carbondioxide (CO2)	Mole %	ASTM D1945-3	0.00
Nitrogen (N2)	Mole %	ASTM D1945-3	0.10
Total	Mole %	ASTM D1945-3	100.00

FIGURE 4.4.1-2 : PROPERTY SPECIFICATIONS OF LNG FROM PTT LNG

4.5 PROJECT FACILITIES

4.5.1 Power Plant Design Concept

The power plant concept is the provision of electricity to support DSEZ during construction period and would be removed after Boil-off Gas Power Plant start to operate. Life of the Project is designated to be 2 years.

Project is designed to use small, prefabricated generating unit which is ease for installation and dismantle. LNG is selected as fuel due to ease of transportation and environmental friendly.

The power plant will be arranged by installation multiple unit of 1 MW gas generator and will be installed as per demand from customers.

The plant will be operated only on fuel gas, with no diesel fuel back up. No supplementary fuel will be provided.

4.5.2 Project Components

The major and other related components of 15 MW Temporary Power Plant which occupied area of 6.25 Acres included:

1) Generator set facility which is included:

- Multiple units (up to 15 no.) of 1 MW model Cummins QSK60 (or GE Jenbacher JGS320) gas generator
- Associated electrical equipment and system

Specification of power generation is listed as follow,

Engine	QSK60	JGS320
Type	Gas Engine	Gas Engine
Manufacturer	Cummins	GE Jenbacher
Electrical Output	1,120 Kw (at 50 Hz)	1,067 Kw (at 50 Hz)
Electrical Efficiency	39%	40%
Total No. of Maximum Installed Units	18 (15working, 3 back-up)	

The Cummins QSK60 natural gas generator, this new V-16 (16 cylinder) gas engine has turbo-charging and low temperature after-cooling, ensuring efficient performance. The units are EPA (US Environmental Protection Agency)-compliant, delivering "Lean-burn" gas technology, and meeting the most demanding emissions guidelines. It includes some of the most advanced environmental technologies available, including sound reduction for extremely quiet operation, smokeless output and a save-all containment base that reduces the risk of fluid leakage. Technical data is shown in ***Table 4.5.2-1 and Table 4.5.2-1***, and the Generator is shown in ***Photo 4.5.2-1***.

TABLE 4.5.2-1

TECHNICAL DATA OF CUMMINS QSK60 GAS GENERATOR

Specifications	Cummins QSK60 Gas
Electrical Output – Continuous Power (COP) at 50 Hz	1,130 kW
Electrical Output – Continuous Power (COP) at 60 Hz	1,300kW
Voltage	400V/3 phase
Engine Speed	1,500 rpm
Specific Fuel Consumption	2.57 kwH/kWhe
Efficiency	39%
Fuel Gas Pressure Range	200 mbar-6bar
No_x Emissions	<500mg/Nm^3 (5% O_2)
Maximum Ambient Temperature	35 °C
Noise Level	80 dB(A) at 7 m
Weight – Containerized Genset only	19,270 kg
Weight – with Gas Ancillary Module	24,930 kg
Length	6.06 m
Height	2.60 m
Width	2.44 m

(Source: http://www.aggreko.fr/docs/1503915/natural-gas-flyer)

TABLE 4.5.2-2

TECHNICAL DATA OF JENBACHER JGS320 GAS GENERATOR

Specifications	Jenbacher JGS320
Electrical Output – Continuous Power (COP) at 50 Hz	1,067 kW
Voltage	400V
Engine Speed	1,500 rpm at 50 Hz
Specific Fuel Consumption	2.43 kwH/kWhe
Efficiency	40%
Fuel Gas Pressure Range	80-450 mbar
No_x Emissions	<500mg/Nm^3 (5% O_2)
Maximum Ambient Temperature	40 °C
Noise Level	117 dB(A) at 1 m
Weight – Genset only	13,700 kg
Length	5.70 m
Height	2.30 m
Width	1.77 m

(Source: https://powergen.gepower.com/content/dam/gepower-pgdp/global/en_US/documents/product/Reciprocating%20Engines/jenbacher-type-3-engine-sheet-en-metric.pdf)

A

B

C

PHOTO 4.5.2-1 : GAS GENERATOR

A. MODEL CUMMINS QSK60

(https://www.cumminspower.com/www/common/templatehtml/technicaldocument/SpecSheets/)

B. MODEL JENBACHER JGS320

(https://powergen.gepower.com/content/dam/gepowerpgdp/global/en_US/documents/product/Reciprocating%20Engines/jenbacher-type-3-engine-sheet-en-metric.pdf)

C. MODULAR DESIGN IN 20ft CONTAINER

(http://www.genexdesign.com/power_generators/projects/project-specific-1500kva-gas)

The modular design, standardized in 20ft ISO containers, allows for easy transportation and flexible installation. It can also be scaled up or down, allowing capacity to change with demand. List of equipment below is equipped in the container;

- Marine Grade Containers
- Sand Filtration System
- Gas Engine (model Cummins QSK 60 or Jenbacher JGS320)
- Air Conditioned Containerized Control Station
- CO_2 Fire Extinguishing System
- Heat, Smoke, and Gas Detection System.
- Air Intake and Ventilation Isolation Dampers
- 100% Radiator Fan Redundancy, 100% Compartment Cooling Fan Redundancy
- Electric Primary Start system
- Remote Station PC with operation and monitoring facility
- Local Station in Event of Remote Fail
- Fuel filters

2) Gas distribution station facility which is included:

- Multiple unit of 45 m^3 LNG storage tank
- Multiple unit of LNG transfer pump
- Multiple unit of ambient air vaporizer
- Associated control and safety system

Specification of power generation is listed as follow,

No. Of LNG Storage Tank	16
Tank Capacity	45 m^3 of LNG (approx. 17 Tons of LNG)
LNG Storage	5 Days at 75% Load Factor
No. Of Air Vaporizer Set	4 Units (2 working + 2 Standby)
Air Vaporizer Capacity	37.5 Tons of LNG per Day per Unit
No. Of LNG Pump	2
LNG Pump Capacity	400 Litre/Minute

3) Other facilities (optional): LNG office area, gas distribution system control, accommodation area, parking area, and etc.

Details and layout of the proposed 15 MW temporary power plant are illustrated and summarized in ***Photo 4.5.2-2*** and ***Figure 4.5.2-1***.

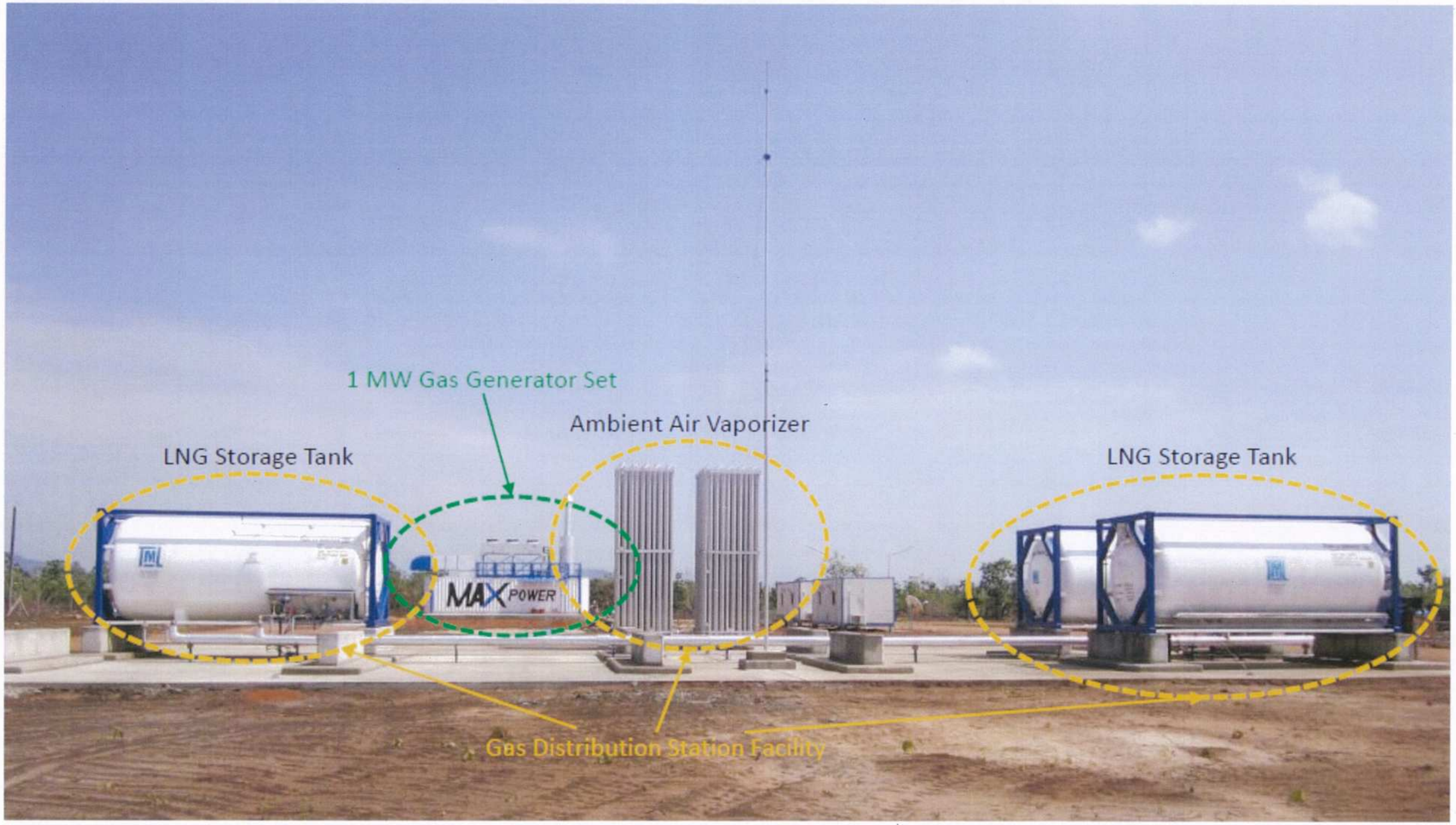


PHOTO 4.5.2-2 : MAJOR COMPONENTS OF PROPOSED 15 MW TEMPORARY POWER PLANT

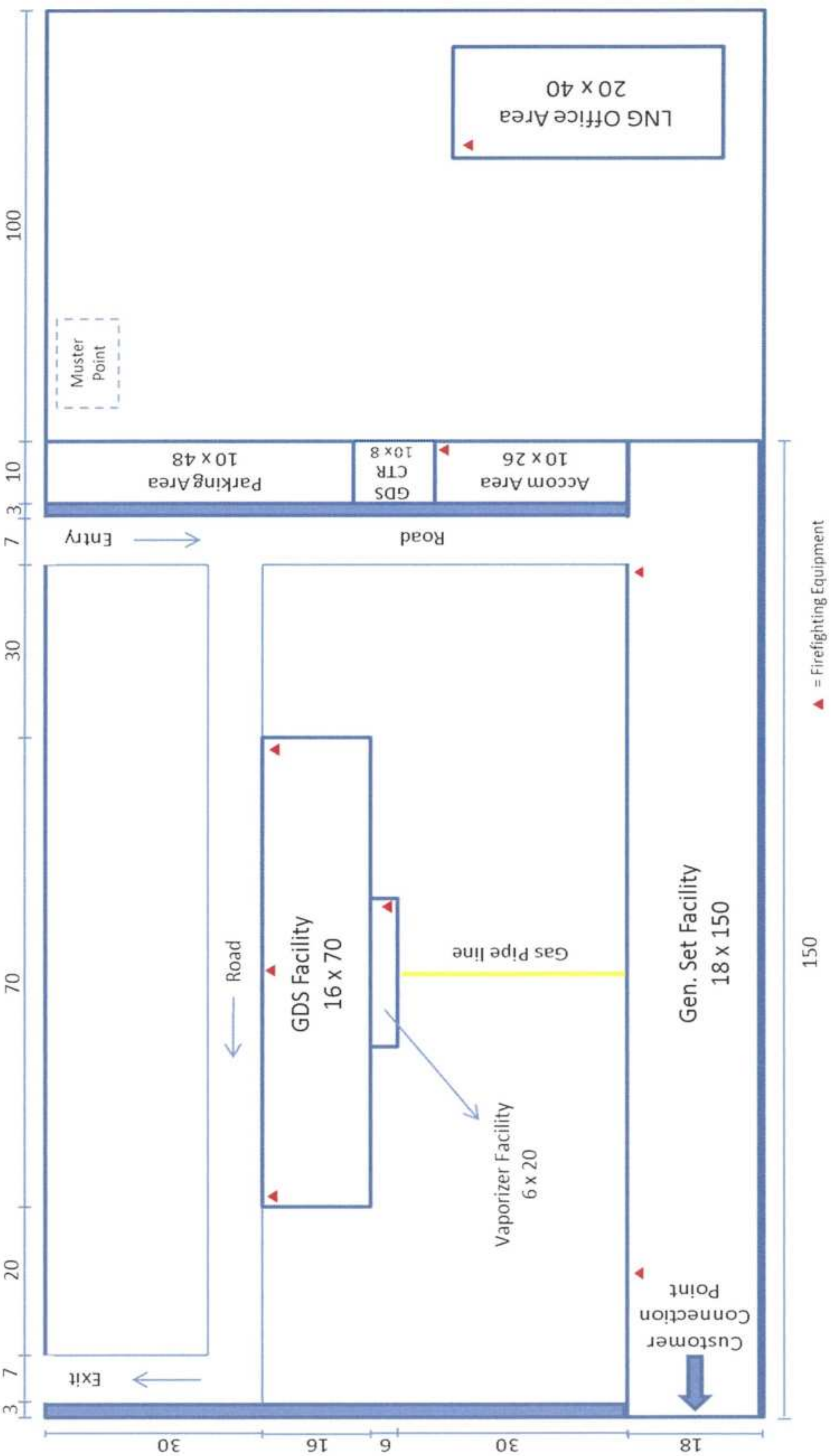


FIGURE 4.5.2-1 : LAYOUT OF PROPOSED 15 MW TEMPORARY POWER PLANT

4.6 PROJECT SCHEDULE

The construction is projected to be commenced in the 3rd quarter of 2018 and would be completed by the end of 2018, a total construction period of 6 months. ***Table 4.6-1*** shows a tentative project construction schedule in bar chart.

TABLE 4.6-1

TENTATIVE PROJECT SCHEDULE

Description	Duration (days)	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Earth and Foundation works	60			■	
Building Structures (Concrete and Steel Structures)	60			■	
Fence and Gates	30			■	
Generator (Gas Engine) Installation (1-3 MW)	30			■	
Associated Equipment Installation	30			■	
Load Test and Trial Energised Date	15				■
Commission Test	15				■
Commencement of Power Plant Phase 1 (1-3 MW)					★

4.7 PROJECT IMPLEMENTATION

4.7.1 Construction Phase

(1) Land Acquisition:

The Project needs to acquire land approximately 25,000 m^2 (100 x 250 m) or 6.25 acres in total. The area required is to be provided by DSEZMC to the Project.

(2) Preparing Temporary Facilities and Utilities for construction Phase:

As of the Project is designed to use ready-made equipment from oversea, and will be transported as a containerized package to the site for final erection. The works in construction period is mainly to construct foundation for equipment and installation of such equipment and testing and commissioning the power plant. Details on related works are described below;

- **Number of worker and staff**

It is estimated that 50 workers and staff are required for this phase. All of them can stay in ITD camp site.

- **Site Preparation**

All the site clearing, land leveling and other site preparation works will be handled by ITD construction team.

Gen Set Container Being Lifted onto Foundation

Gen Set Assembly in Progress

Gas Pipe Laying between GDS and Gen Set

Air Vaporizers Being Installed

20 M3 LNG Tank Being Lifted onto Foundation

SCADA and Control Panel Being Installed

FIGURE 4.7.1-1 : EQUIPMENT INSTALLATION FOR 15 MW TEMPORARY POWER PLANT

- **Source of Electricity**

During construction, the electricity will be supplied from mobile generator.

- **Water Requirement (Quantity and Source of Water)**

During construction, there will be only water requirement for civil work. Quantity of daily requirement should be less than 50 m^3. It is suggested that new groundwater well should be bored for using in this phase and further for implementation phase.

- **Types and Number of Construction Equipments**

As all of equipment will be pre-fabricated or manufactured from oversea, thus the construction equipment will be limited for land leveling, foundation construction, transport equipment (trucks and cranes) and welding equipment and tools.

- **Types and Source of Construction Material and Storage Area.**

All the civil work will be constructed by ITD construction team and the material and storage area should be in ITD camp, therefore the installment of power plant will be handled separately by gas engine supplier which all the tools and equipment will be stored in worker camp at the power plant construction site.

For the installation of the Power Plant and gas distribution station, the entire facility was erected using 17 people as following: The equipment installation is shown in ***Figure 4.7.1-1***.

a) Gas Engine 15 Persons
b) Company Supervision 2 Persons

4.7.2 Operation Phase

The estimated personal to be worked for the operation and maintenance of the Project are as follows;

- There will be a total of 7 to 12 persons assigned to operate and maintain the power on 24/7 basis
- All the maintenance will be performed by the experienced, well-trained staff
- LNG storage tanks must be inspected every two (2) years for pressure relief and safety valve inspection and testing.
- For the gas generator, the maintenance schedule should be on the set of running time. Since standby set run infrequently, the maintenance schedule is usually in term of daily, weekly, monthly or long term task.

- Due to the power plant will be operated as a base load plant until Boil-off Gas Power Plant starts to operate, albeit the allowable scheduled maintenance as mandated in the terms and conditions of the service agreement. The maintenance service is detailed below;

No.	Maintenance	Frequency	Downtime (hrs) per Machine	Downtime (hrs) for 3 machines (3 MW)	Downtime (hrs) for 10 machines (10 MW)	Downtime (hrs) for 15 machines (15 MW)
1	A Service	Once per Month	1	3	10	15
2	B Service	Once per Month	1.5	4.5	15	22.5
3	Component Changes	Once per Month	2	6	20	30
Total Downtime per month				13.5	45	67.5

4.8 ENVIRONMENTAL MANAGEMENT

(1) Air Emission Control System (Operation Phase)

The pollution emission of gas generator model Cummins QSK60 is showed below;

Exhaust Emissions			
Specific Load		100% Load ±2%	
NO_x – Oxides of Nitrogen		489 mg/nm³ For 1.0 g/hp-hr NO_x Cal	307 mg/nm³ For 1.0 g/hp-hr NO_x Cal
CH4 – Methane (affected by gas composition)		1330 mg/nm³	1192 mg/nm³
CO – Carbon Monoxide		676 mg/nm³	766mg/nm³
Exhaust Silencer			
Make and Type		IMS	
Certificate	Yes	M10084	
Permissible back pressure	Mm (ins) Hg	6.35 (0.25")	
Noise			
Sound Power	dBA (Lw)	104 (Est)	107 (Est)
Sound Pressure at 1 metre	dBA	87	90
Sound Pressure at 7 metres	dBA	80	84
Sound Pressure at 15 metre	dBA	73	77

In the ESIA investigations, the Consultant will review and verify the figures.

(2) Noise Control

It is recommended that following noise limits in any frequently occupied area of the power plant:

- 85 dB (A) at a distance of 1 metre from the source or from the noise insulation enclosure, if any.
- 90 dB (A) at a distance of 1 metre from the source for the steam safety valves

The target noise level in control rooms and offices is 55-60 dB(A) depending on the location inside the plant.

(3) Wastewater Management

Four (4) unit of 2000 L. septic tank would be installed at construction site in order to treat wastewater from consumption of staff. Septic systems are underground wastewater treatment structures, commonly used in rural areas without centralized sewer systems. They use a combination of nature and proven technology to treat wastewater from household plumbing produced by bathrooms, kitchen drains, and laundry. Effluent in the septic tank would be pumped by authorized contractor to treat outside.

In areas where oil leak could occur, water shall be sent into an Oil/Water separator before its release to store in holding pond. All clean surface (oil free) waters collected in paved areas will be drained to the ditch or holding pond. The 15 MW temporary power plant do not require makeup water for cooling process.

Outside paved areas, rain and firewater will be drained by percolation through the soil.

(4) Solid waste Management

There is no solid waste from electricity generation activities. For other normal waste from administrative or accommodation will be treated by local service or Industrial Estate's service.

(5) Occupational Safety and Health Program

The Proponent ensured that the 15 MW temporary power plant and its associated facilities will be designed in compliance with applicable OHS requirements for thermal power plants, such as noise, vibration, and hazardous works.

CHAPTER 5

DESCRIPTION OF THE EXISTING ENVIRONMENTAL AND SOCIAL CONDITION

CHAPTER 5

DESCRIPTION OF THE EXISTING ENVIRONMENTAL AND SOCIAL CONDITION

5.1 SETTING THE STUDY LIMITS

In the Environmental Social Impact Assessment (ESIA) study, it is necessary to establish baseline information on the environmental and socio-economic settings of an area which could receive directly and indirectly impacts from the Project construction and operation. The baseline information serves two purposes. Firstly, it is used, in conjunction with the information on the Project, for identification of potential impacts of the Project and assessment of their significance. Secondly, it serves as the benchmark for evaluating environmental and social management performance of the Project construction and operation.

For the purpose of establishing baseline information on the environment, the study limits are to consist of geographical limit and contextual limit to guide the baseline information collection.

5.1.1 Geographical Study Limit

The geographical study limit is defined as an area surrounding the project site from which the baseline information collection should be collected. In this ESIA Study, the geographical study limit is about 5 km extending from the center of the project site. This geographical study limit covers 78.6 km^2 of circular area around the project site as shown in a map in ***Figure 5.1.1-1***.This area is referred to in subsequent sections of this Scoping Report as "the study area". The study area should cover sensitive receptors of environmental impacts of the Project during project construction and operations. However, the air pollution study will cover a larger area than the study area if sensitive receptors are found to exist beyond the 5 km limit.

5.1.2 Contextual Study Limit

The ESIA Guidelines defines the contextual study limit to consist of five groups of components: (i) physical components; (ii) biological components; (iii) socio-economic components; (iv) cultural components; and (v) visual components. Considering the nature of this Project and its potential environmental issues, the composition of each main component is presented below:

(1) Physical Components

- Meteorology
- Geography/Topography
- Geology
- Seismology
- Soils
- Air Quality
- Noise
- Surface water Quality
- Groundwater Quality

(2) Biological Components

- Terrestrial Resource (Forestry and Wildlife)
- Aquatic Ecology

(3) Socio-economic Components

- Population
- Health Conditions
- Gender Issues
- Main Economic Activities
- Level of Education
- Vulnerable Group
- Land Use
- Infrastructure
  - Roads
  - Traffic counting
  - Electricity
  - Water supply
  - Waste management

(4) Cultural Components

- Religions and Belief
- Sites of Traditional and Historical Value
- Natural Resources Use for Livelihoods
- Key Institutions and Organizations

(5) Visual Components

The following sections briefly describe each component with details in appendices as appropriate. The methods of information collection are also described as deemed necessary.

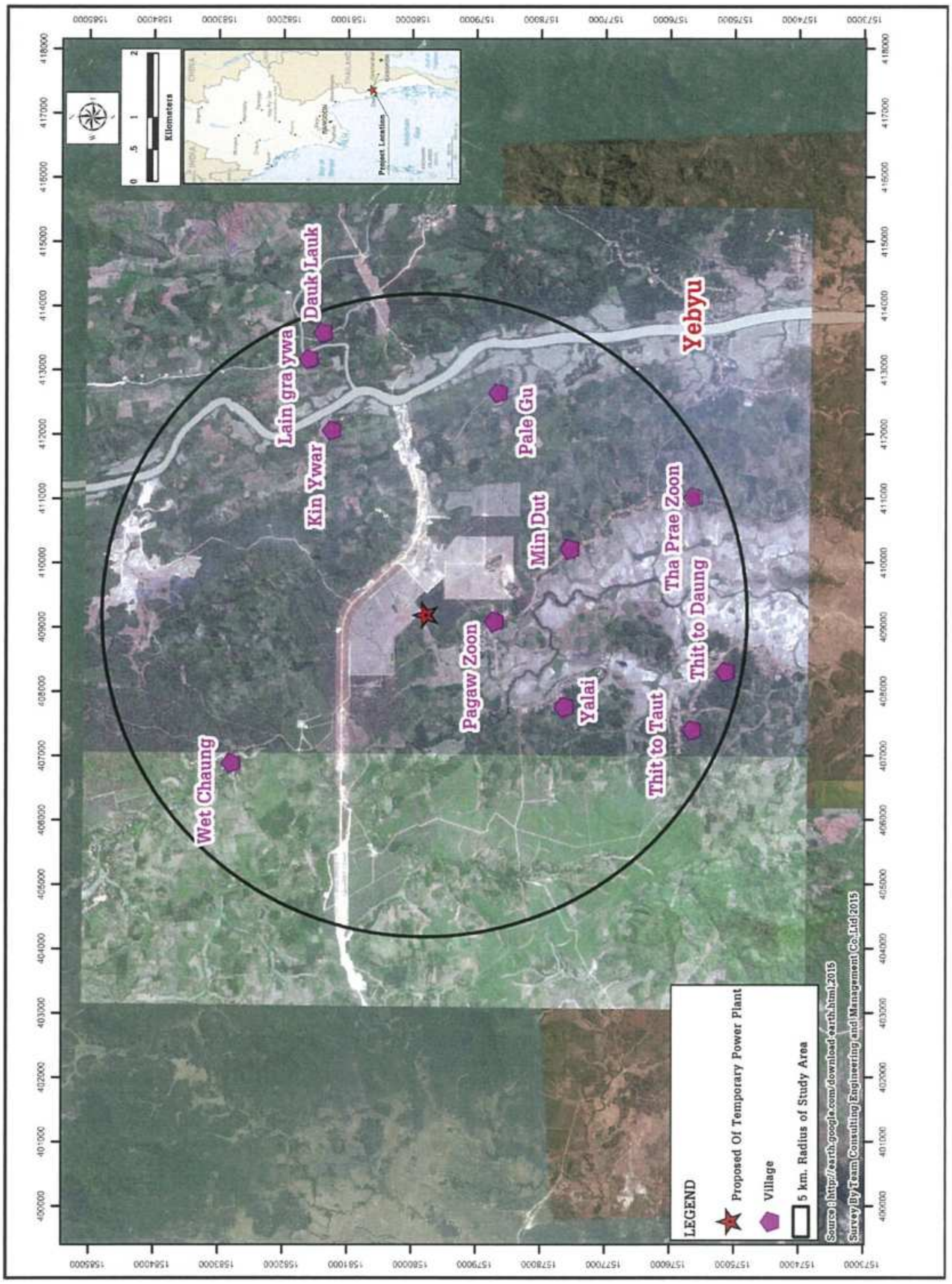


FIGURE 5.1.1-1 : PROJECT STUDY AREA OF ESIA FOR 15 MW TEMPORARY POWER PLANTS PROJECT

5.2 DESCRIPTION OF THE PHYSICAL COMPONENTS

5.2.1 Overview of the Study Area

A. Tanintharyi Region in a Nutshell

The study area is located in the Dawei Special Economic Zone (DSEZ) which is under jurisdiction of Tanintharyi Region (see map in ***Figure 5.1.1-1***). A brief regional profile is presented below:

Capital	**Dawei**
Number of districts	**3**
Number of townships	**10**
Number of wards	**83**
Number of village tracts	**264**
Number of villages	**1,250**
Total population (Est.2012)	**1,713,447**
Area	**43,328 km^2. There are many islands off the coast, the large Mergui Archipelago in the southern and central coastal areas and the smaller Moscos Islands off the northern shores**
Borders • **North:** • **East** • **West** • **South**	 **Mon State** **Thailand** **Andaman Sea** **Ranong Province, Thailand**
Latitude	**14° 5'2.98"N**
Longitude	**98° 12'E5.67"E**
Ethnicities	**Bamar, Rakhine, Mon, Shan, Karen, Salone, Malay (Bashu)**
Main economic activities	**Fishing, Forestry, Mining, Agriculture**

Source: Tanintharyi Region Profile, updated June 2014, UNHCR, South-East Myanmar Information Management Unit (*data.unhcr.org/thailand/download.php?id=221*)

The districts and townships of the Region are shown in ***Figure 5.2.1-1***. The Region is sparsely populated as indicated by its overall population density of 39.6 persons/km^2.

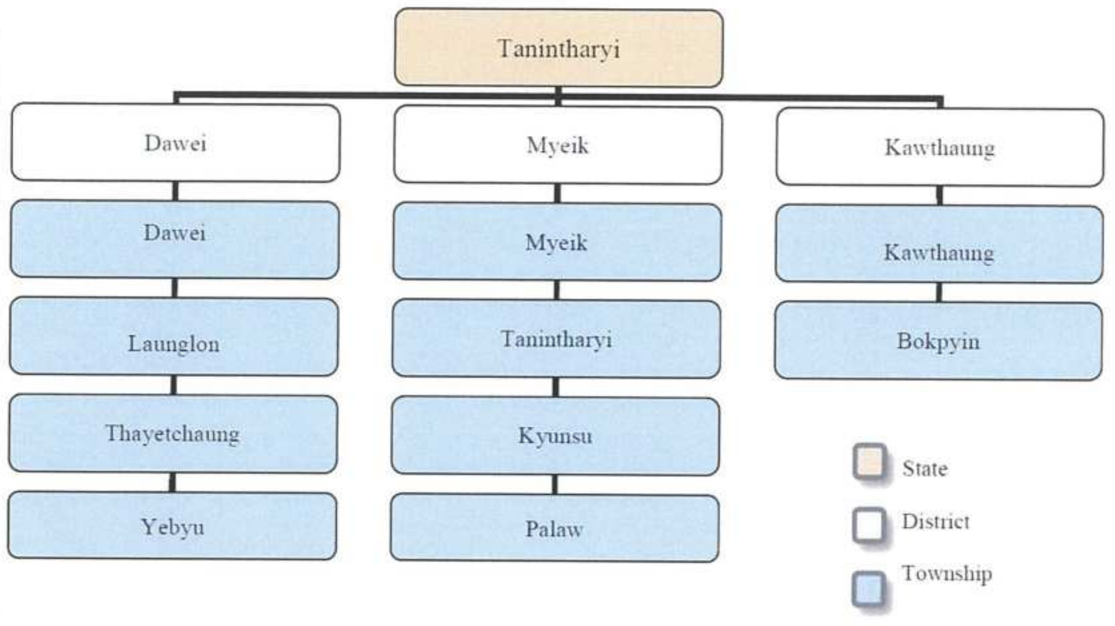


FIGURE 5.2.1-1 : DISTRICTS AND TOWNSHIPS OF TANINTHARYI REGION

The DSEZ is in Dawei District which has four townships. The total population of Dawei District[1] was estimated at 492,277 in 2014, consisting of 146,271 in Dawei Township, 118,301 in Launglon Township, 105,599 in Thayetchaung Township, and 122,106 in Yebyu Township.

On most social development indicators, Tanintharyi Region fares comparably to the national average, but access to basic services in remote islands is noted as a concern. Although the Region has significant reserves of natural resources (mainly natural gas and metals), poverty incidence (at 33 percent) is higher than the national average (26 percent).

B. The Study Area

The study area as defined in **Section 5.1** has a total area of about of about 19,415 acres (78.6 km^2) or 7,854 ha, which covers eleven villages in Yebyu townships as shown in ***Figure 5.1.1-1***. ***Table 5.2.1-1*** provides names of the villages and their approximate distance from the Project site which is located in the administrative area of Yebyu Township.

[1]Source: www.citypopulation.de/php/myanmar-admin.php?adm1id=0601

TABLE 5.2.1-1

VILLAGES IN THE STUDY AREA

Township	Village	Approx. km from the Project Site
Yebyu	Wet Chaung	3.78 km.
	Kin ywar	3.22 km.
	Lain Gra Ywa	4.38 km.
	Dauk Lauk	4.65 km.
	Pale Gu	3.63 km.
	Min Dut	2.51 km.
	Tha Prae Zun	4.54 km.
	Kyauk Hwet Kone	4.73 km.
	Thit to Taut	4.53 km.
	Yalai	2.55 km.
	Pagaw Zoon	1.06 km.

5.2.2 Meteorology

(1) Methodology for Data Collection and Analysis

The description of climatic conditions of the study area is based on two secondary information sources:

- Rainfall data recorded at Dawei Meteorological Station from 1999 to 2014.
- Meteorological data recorded at Italian-Thai Development Public Company Limited (ITD) Meteorological Station in DSEZ for 2013 and 2014. The data include air temperature, air pressure, relative humidity, and wind speeds and directions.

The monthly data from the two sources are shown in ***Table 5.2.2-1***, and ***Table 5.2.2-2***, respectively.

(2) Climatic Conditions

In general, the regional climate is significantly influenced by the south-west and north-east monsoons as shown in ***Figure 5.2.2-1***. The south-west monsoon from the Indian Ocean and Andaman Sea passes through the south peninsula around mid-May, bringing with it moisture-laden winds and causing heavy rain and air humidity. The north-east monsoon from the main land starts to pass through the region from November to February.

TABLE 5.2.2-1
AVERAGE RAINFALL AT DAWEI STATION

Station: Dawei Meteorological Station

Year: 1999-2014

Latitude: 14° 06' N **Longitude**: 98° 13' E

Unit: mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1999	52	7	120	916	747	1,145	525	1,341	755	410	176	1	6,195
2000	12	25	49	267	815	1,131	1,377	1,247	927	285	6	0	6,141
2001	7	6	113	6	980	1,311	986	1,974	323	184	21	9	5,920
2002	0	0	13	47	972	959	1,278	1,471	1,346	116	114	15	6,331
2003	1	1	189	68	566	904	1,431	1,205	706	256	0	0	5,327
2004	3	11	57	8	931	1,030	665	1,370	268	109	0	0	4,452
2005	0	8	8	20	419	1,234	1,664	1,011	857	186	120	6	5,533
2006	0	24	67	215	759	738	2,081	1,880	604	448	0	0	6,816
2007	1	0	0	117	610	620	1,460	1,228	815	454	7	0	5,312
2008	0	52	47	188	975	1,026	1,038	766	1,149	259	51	0	5,551
2009	0	0	47	283	416	1,223	1,825	903	1,107	440	6	0	6,250
2010	31	0	0	0	411	478	478	832	417	381	0	40	3,068
2013	48	61	36	30	273	886	1,793	1,021	1,070	293	74	1	5,586
2014	0	0	5	29	296	1,199	1,583	1,336	981	258	136	0	5,823
Average	11	14	54	157	**655**	**992**	**1,299**	**1,256**	**809**	291	51	5	5,593

Source: Dawei Meteorological Station, 2015

TABLE 5.2.2-2

CLIMATIC DATA FOR THE PERIOD 2013-2014 IN DSEZ

Station: Italian-Thai Development Public Co., Ltd. Meteorological Station
Year: 2013-2014
Latitude: 14° 15' N **Longitude**: 98° 02' E

Observed Items	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	Temperature (Celsius)													
Max	2013	34.3	35.4	36.2	36.9	35.5	33.4	32.5	32.6	32.9	34.3	36.0	33.9	34.5
	2014	34.7	33.3	36.6	35.3	35.2	34.1	32.9	33.4	33.1	35.4	35.7	35.8	34.6
Min	2013	17.1	19.7	17.9	21.2	22.9	23.3	22.4	22.4	22.9	22.2	19.4	13.5	20.4
	2014	13.7	16.0	17.3	22.2	23.4	23.4	22.9	22.5	22.6	22.3	19.5	19.0	20.4
Mean	2013	25.5	27.6	27.7	28.8	28.5	26.9	25.7	26.3	26.3	27.1	27.5	24.2	26.8
	2014	23.8	25.1	27.0	29.2	28.6	27.0	26.4	26.2	26.3	27.6	27.3	27.0	26.8
	Air Pressure (mbar)													
Max	2013	1017.5	1016.1	1016.6	1013.5	1011.4	1012.1	1011.6	1012.5	1012.7	1014.5	1014.9	1018.0	1014.3
	2014	1021.0	1017.1	1017.4	1015.9	1014.4	1013.7	1013.1	1014.0	1014.9	1016.0	1016.0	1016.5	1015.8
Min	2013	1007.8	1006.0	1006.0	1004.7	1003.2	999.9	964.6	1000.5	1003.9	1004.6	1005.3	1006.2	1001.1
	2014	1008.9	1006.6	1006.7	1006.3	1005.3	1001.2	1004.5	1006.5	1003.0	1006.3	1007.4	1007.2	1005.8
Mean	2013	1012.4	1010.8	1010.8	1008.8	1008.2	1006.3	1007.3	1008.0	1008.5	1010.6	1010.3	1012.2	1009.5
	2014	1014.2	1011.9	1012.1	1010.8	1010.0	1017.6	1008.9	1010.2	1010.7	1011.7	1012.0	1012.1	1011.9
	Relative Humidity (%)													
Max.	2013	96.4	94.7	94.6	94.6	93.9	94.4	94.3	94.2	94.6	94.9	94.0	93.3	96.4
	2014	95.9	96.4	92.9	93.3	93.7	93.7	94.2	94.4	95.0	95.0	95.2	93.8	96.4
Min.	2013	24.8	27.5	28.7	40.3	45.7	55.8	10.8	5.4	57.5	41.1	33.7	28.5	57.5
	2014	19.0	35.8	19.5	50.1	47.3	56.5	64.1	60.2	57.6	39.2	34.4	27.9	64.1
	Wind (m/s)													
Max. Wind Speed	2013	9.1	13.3	11.7	16.1	18.0	23.4	18.1	24.7	8.3	7.0	7.7	8.7	24.7
	2014	9.6	5.8	6.1	5.2	6.4	7.2	8.8	6.7	7.1	6.6	7.4	43.3	43.3

Source: Italian-Thai Development Public Co., Ltd., 2015

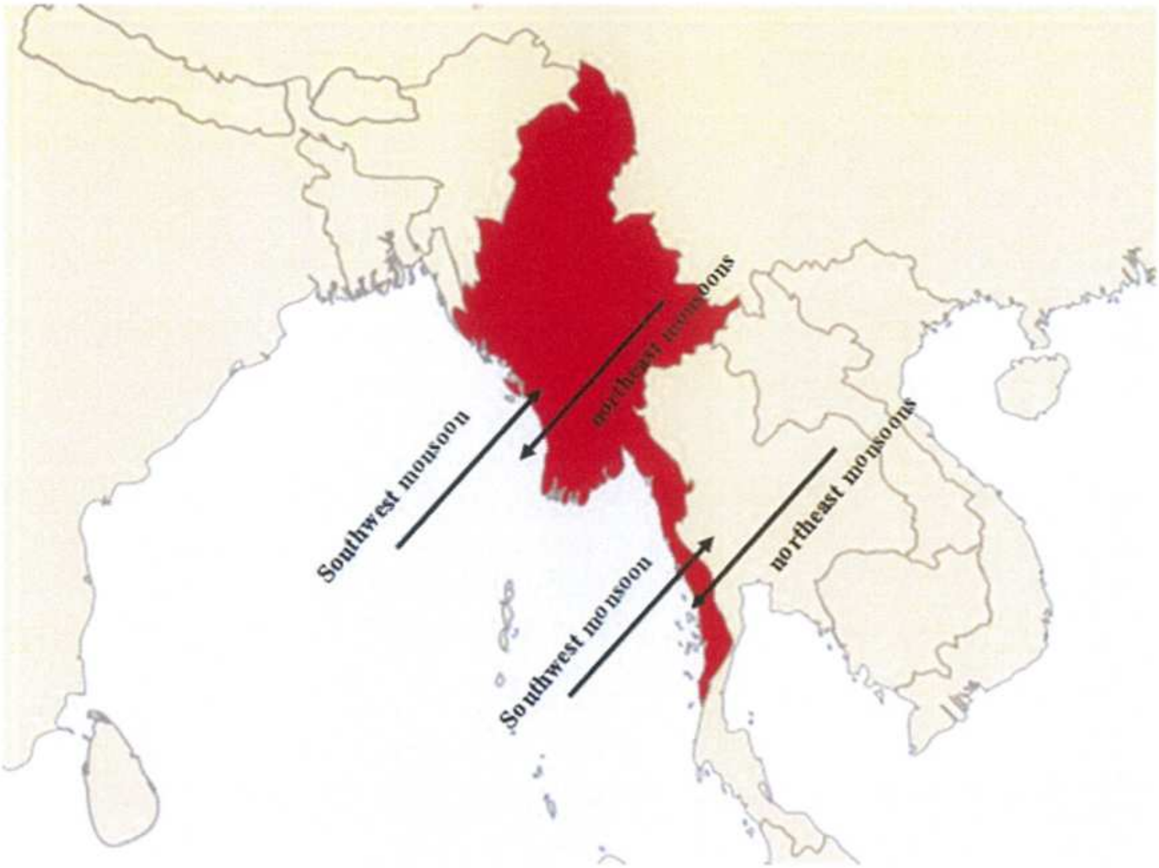


FIGURE 5.2.2-1 : MONSOON WIND DIRECTION PASSING THROUGH MYANMAR

The study area has tropical monsoon climate characterized by three seasons.

The winter season normally begins in November and lasts until February. During this period, the weather is relatively cold and dry due to the northeast monsoon. The monthly mean minimum temperatures are normally in the range 13.5-19.7°C.

The summer season follows the winter season, normally from March to April. The climate in this period is relatively warm and humid with average temperatures between 27.0-29.2°C and the monthly mean maximum temperatures are between 35.3-36.9°C. During March and April, a transition period prevails during which the northeast monsoon begins to withdraw and the air mass movements bring warm air to the region from southeast directions. Some light rainfalls, known as the pre-monsoon rain, could be expected during this period.

The rainy season normally begins in April and lasts until the end of November. Intense rainfalls normally occur in May till October as indicated by the monthly amount of rainfalls. The total annual rainfall from 1999 to 2014 was between 3,068 to 6,816 mm with significant annual variation.

(3) Wind Speed and Wind Direction

The wind data collected by ITD as shown in ***Table 5.2.2-2*** are the only long term wind data relevant to the study area. To supplement this data base, the Consultant collected data on wind speeds and directions for dry season at two stations which are same station as air quality and noise data sampling station. ***Photo 5.2.2-1*** shows photographs of the sampling stations. The locations of the two stations are:

Station A1: Pagaw Zoon Primary School, Yebyu Township, Dawei District, Tanintharyi Region (UTM 409304E, 1578442N)

Station A2: Pale Gu Village, Yebyu Township, Dawei District, Thanintharyi Region (UTM 412472E, 1580212N)

For wet season, data on wind speed and direction were derived from Mudu village (Station A3) which is sampled by the study of ESIA for initial phase power plant of Dawei SEZ. This station is located at approximately 10 km. on the West from the Project site. Detail of this station is:

Station A3: Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region (UTM 402425E, 1576727N)

Figure 5.2.2-2 is a map showing the locations of the air sampling stations in dry and wet season.

The measurement of wind speeds and directions was made at 10 meters above ground level. The results of measurements are summarized in ***Table 5.2.2-3*** and ***Table 5.2.2-4***. The wind rose profile at each station is shown in ***Figure 5.2.2-3***. Analysis report on wind speed and direction is in ***Appendix 5A***.

The results can be summarized as follows:

For the dry season, the prevailing winds direction was West at Station A1 and West-southwest (NE) at Station A2. These data indicate that the local wind directions are consistent with the north-east monsoon direction occurred during the measurement period in January. The wind speeds were between 0.4-0.9 and 0.4-4.7 m/s while the percentage of calm wind (wind speeds< 1 knot) were around 68.0 and 0.0% at Station A1 and A2, respectively. These wind speed data indicated a low level of dispersion of air pollutants emitted from the Project's power plant.

For the wet season, the prevailing winds direction in Mudu Village (Station A1) was West (W). The wind speeds was between 0.0-2.7 m/s while the percentage of calm wind (wind speeds< 1 knot) was around 68.0 %. The wind speed data indicated a low level of dispersion of air pollutants emitted from the Project's power plant.

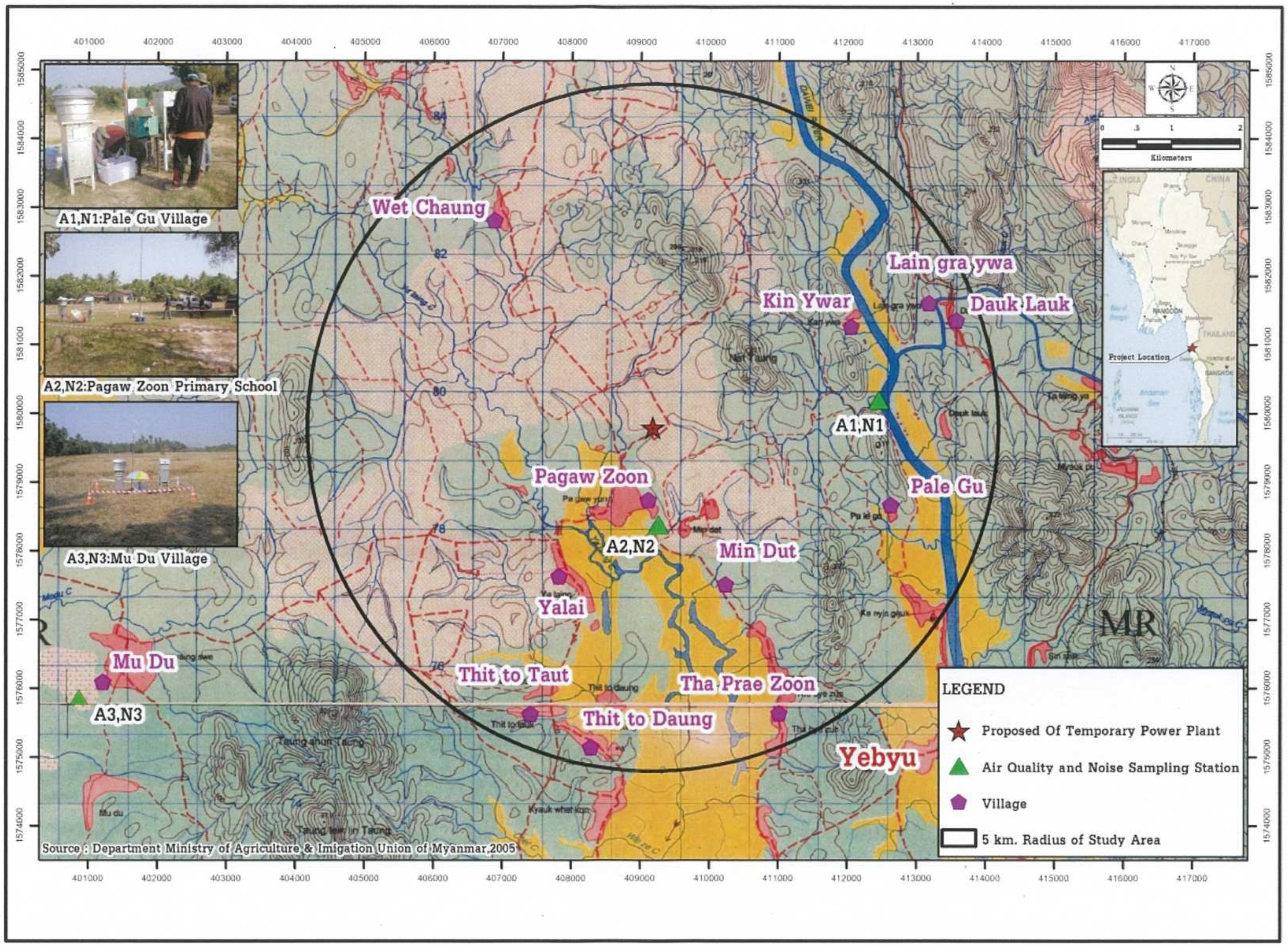


FIGURE 5.2.2-2 : WIND SPEED AND WIND DIRECTION MEASUREMENT STATIONS FOR PROJECT STUDY

Remark : A1N1 and A2N2 are sampling station for Dry Season (January 29-February 1, 2015)

A3N3 is sampling station for Wet Season (October 7-10, 2015). This station was sampled by ESIA for initial phase power plant of Dawei SEZ

TABLE 5.2.2-3

RESULTS OF WIND SPEED AND DIRECTION MEASUREMENTS FOR DRY SEASON (JANUARY 29-FEBRUARY 1, 2015)

Measured Station	Distance from the Project site	Wind Speed (m/s)	Prevailing Wind Direction	% Calm wind
ST1: Pagaw Zoon Primary School	1.03	<0.4-0.9	West and West-Southwest	68.0
ST2: Pale Gu Village	3.63	0.4-4.7	Northeast and West-Southwest	0

Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., January 29 – February 1, 2015.

TABLE 5.2.2-4

RESULTS OF WIND SPEED AND DIRECTION MEASUREMENTS FOR WET SEASON (October 7-10, 2015)

Measured Station	Distance from the Project site	Wind Speed (m/s)	Prevailing Wind Direction	% Calm wind
ST3: Mudu Village	10.70	0.0-2.7	West West-Southwest	68.0

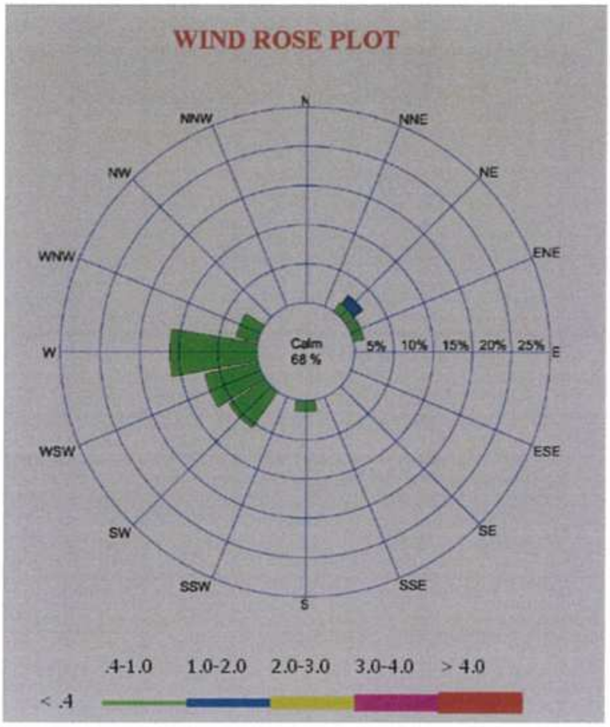
Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., October 7 – 10, 2015. (ESIA for initial phase power plant of Dawei SEZ)

Station A1: Pagaw Zoon Primary School

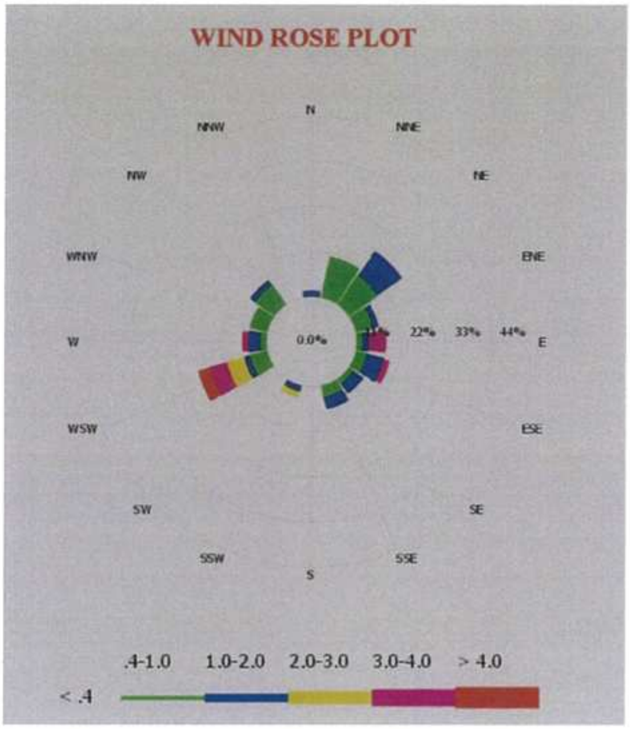
Station A2: Pale Gu Village

Station A3 : Mudu Village

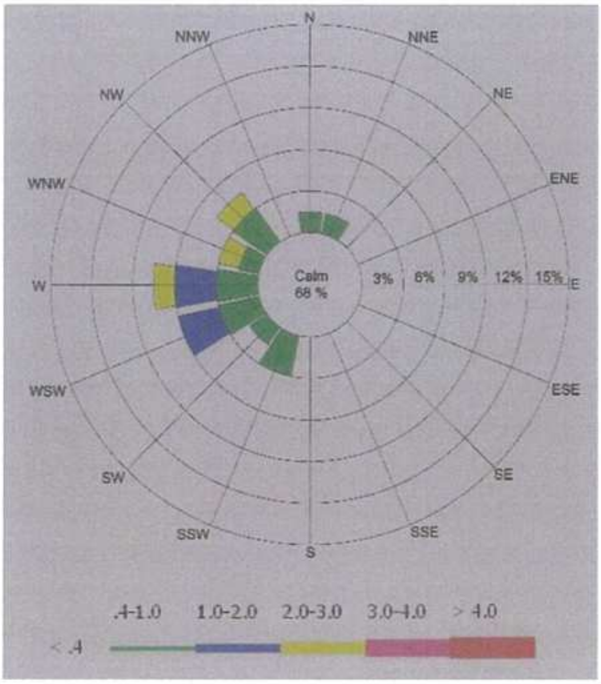
PHOTO 5.2.2-1 : WIND SPEED AND WIND DIRECTION STATION



Station A1:
Wind Speed/Direction Measurement at Pagaw Zoon Village in Dry Season (January 29-February 1, 2015)



Station A2:
Wind Speed/Direction Measurement at Pale Gu Village in Dry Season (January 29-February 1, 2015)



Station A3:
Wind Speed/Direction Measurement at Mudu Village in Wet Season (October 7-10, 2015)

FIGURE 5.2.2-3: WIND ROSE FROM WIND SPEED AND WIND DIRECTION MEASUREMENT OF THE PROJECT

5.2.3 Geography/Topography

The geographic coordinate of proposed project site is 14.09°N and 98.20°E, located on eastern side of the highland, the south of the Republic of the Union of Myanmar. Regarding to the physical characteristics of study area (5 km. radius), its elevations from north to south range between 0-20 meters (see ***Figure 5.2.3-1***). Some parts in the eastern side are located in the Dawei River Basin. The Dawei River, that nourishes natural ecosystem and communities, naturally flows in the north-south direction and draining into the Andaman Sea. The areas are characterized by plains alternating with hilly terrains in the valley, and high mountain ranges surrounded the area (ranges from 100 to 200, above mean sea level (MSL)).

Its topography can be mainly characterized into 2 key categories (***Photo 5.2.3-1***), as follows:

A. River

There is the Dawei River, about 4 km. from proposed project site, flowing pass the eastern side of study area. The origin of up-stream water comes from the eastern mountain ranges. An approximate width range of the Dawei River is 200-1,500 m. The width of estuary is about 6-7 kilometer. The depth range of the river is between 1-15 m.

B. Flood Plains

Due to the study area situates near Dawei River, where the river periodically overflows its basin especially during the wet season. These plains are appropriate for agricultural activities, such as cashew nut and coconut plantations.

C. Mountain Range

Within the study area, there are the eastern mountain ranges, extends from the north to south direction. The range of their height is between 100-200 m. above MSL. The highest peak is about 219 m. above MSL.

River

Mountain Range

PHOTO 5.2.3-1 : LANDFORMS IN THE STUDY AREA

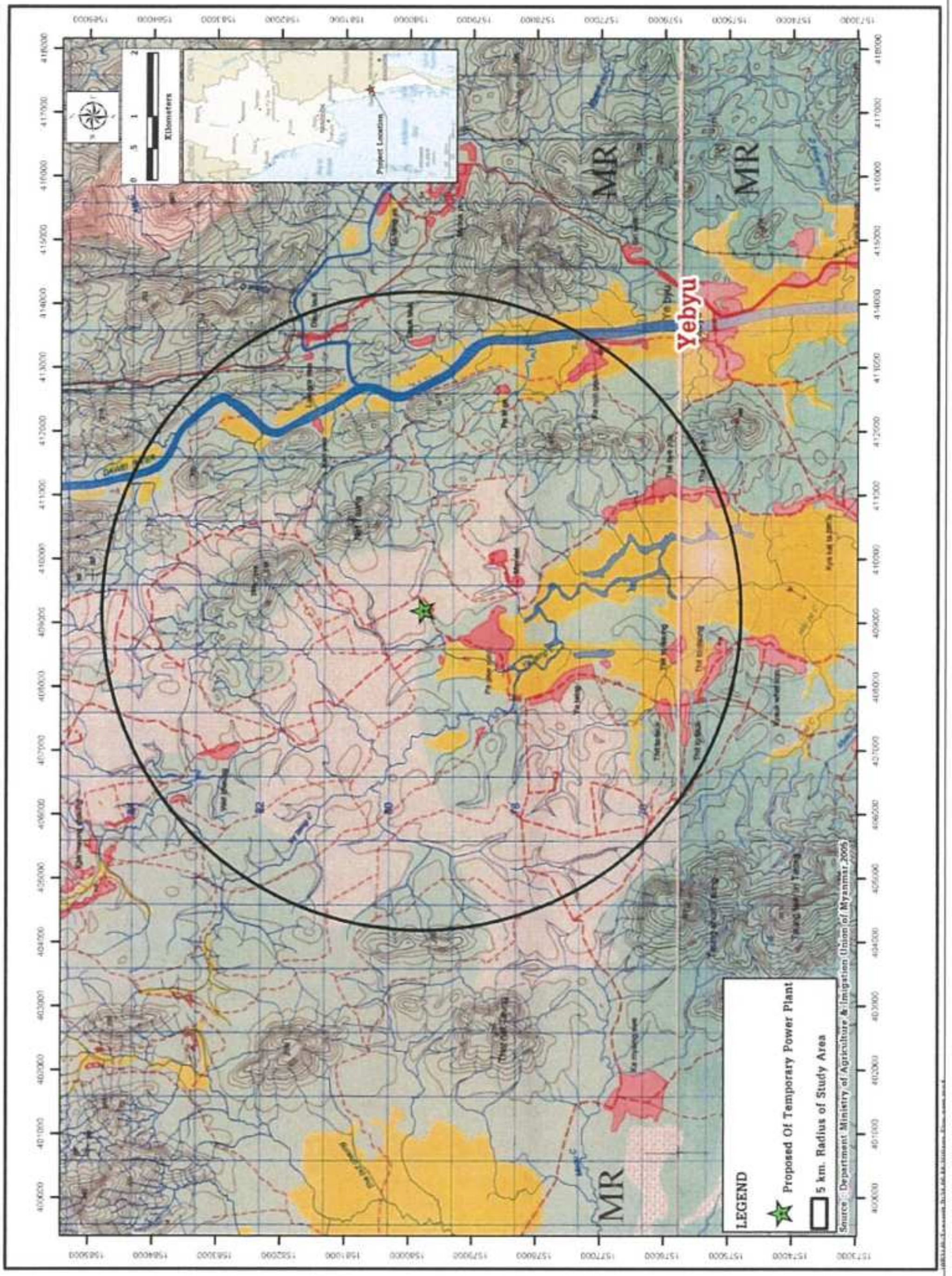


FIGURE 5.2.3-1: TOPOGRAPHIC CONDITION OF THE PROPOSED PROJECT SITE

5.2.4 Geology

According to the geological map of US Army Geospatial Center, the project site is located in Taninthryi Region, the Republic of the Union of Myanmar.

Tanintharyi Division is in the southern part of the eastern most geotectonic belt of Myanmar, which refers to the Shan-Tanintharyi Massif or the Karen-Tanintharyi Unit in the Geological Map of Myanmar (scale 1:1,000,000 by National Stratigraphic Committee for IGCP, 1977) and map of Burma Rock Types (published in 1990 by Army Geospatial Center, US Army Corps of Engineers and US Geological Survey) (***Figure 5.2.4-1***). During the Carboniferous Period – Upper Paleozoic Era, it was formed as the basement, composing of thick sequence of folded argillite, greywacke and slate, with lesser amount of limestone, quartzite, agglomerate and conglomerate.

The name Mergui Series was given by T. Oldhem in 1856 to the unfossilliferous strata, composing of crushed shale, agglomerate, limestone and quartzite, which are found widely in the Region. The Mergui Series is pre-Carboniferous in age and underlies the Moulmein limestone. This Mergui series should be equivalent to Kaeng Krachan Group in Thailand and is interpreted to be a turbidite deposit on the continental shelf.

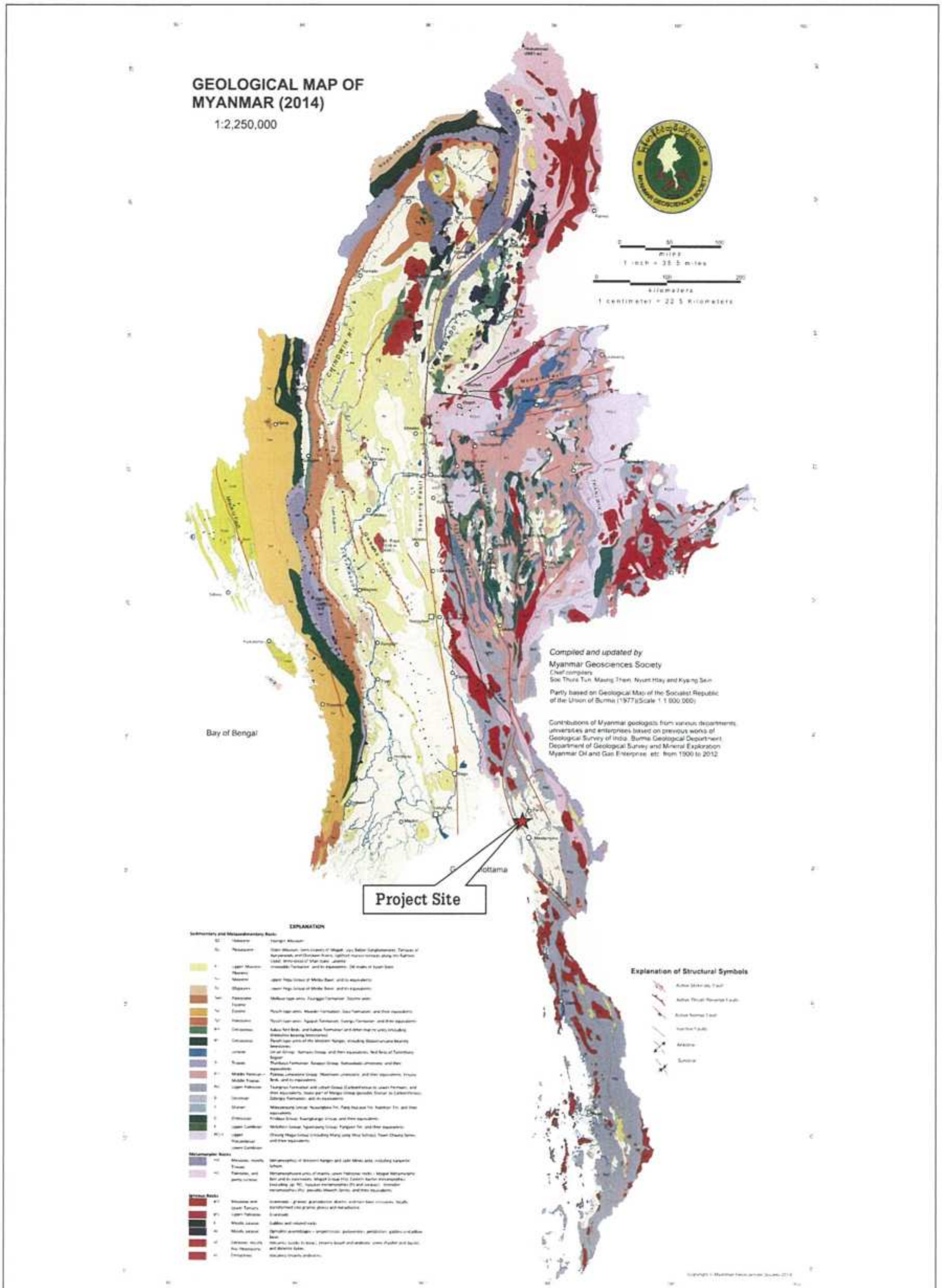
The predominant rock type of the Mergui Series in Dawei district is argillite, fine grained rock of blue gray to black color at fresh, with obscure bedding and only incipient cleavage. The Carboniferous argillite composes of small crystals of andalusite and silliminite, with finely divided graphite.

The next major rock type is dark grey or almost black "greywacke" which has weathered to an ashy brown color. This rock lacks bedding and is composed of sub angular fragments of fine-grained rock in matrix identical to the argillites.

5.2.5 Seismology

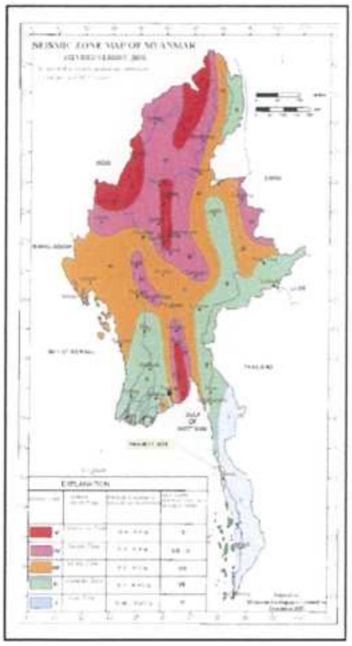
The seismic zone map of Myanmar is presented in ***Figure 5.2.5-1***. The five seismic zones are demarcated and named (from low to high). A probable maximum range of ground acceleration in g values and equivalent Modified Mercalli Scale classes are given for each zone.

The seismic map indicates that Tanintharyi Region is located in the lowest seismic hazard zone in Myanmar. No major earthquakes have been recorded in this Region. The Project site is located in the moderate zone II with a probable maximum range of ground acceleration from 0.1-0.15 g.



Source: Army Geospatial Center, US Army Corps of Engineers and US Geological Survey (2014)

FIGURE 5.2.4-1 : GEOLOGICAL MAP OF THE PROPOSED PROJECT AREA



EXPLANATION			
SEISMIC ZONE	GENERAL DESCRIPTION	PROBABLE RANGE OF GROUND ACCELERATION	EQUIVALENT MODIFIED MERCALLI SCALE CLASSES
V	Destructive Zone	0.4 - 0.5 g	IX
IV	Severe Zone	0.3 - 0.4 g	VIII - IX
III	Strong Zone	0.2 - 0.3 g	VIII
II	Moderate Zone	0.1 - 0.15 g	VII
I	Low Zone	0.05 - 0.07 g	VI

Source: Meteorological and Hydrological Department, Yangon, Myanmar.

FIGURE 5.2.5-1: SEISMIC HAZARD MAP OF TANINTHARYI REGION

5.2.6 Soils

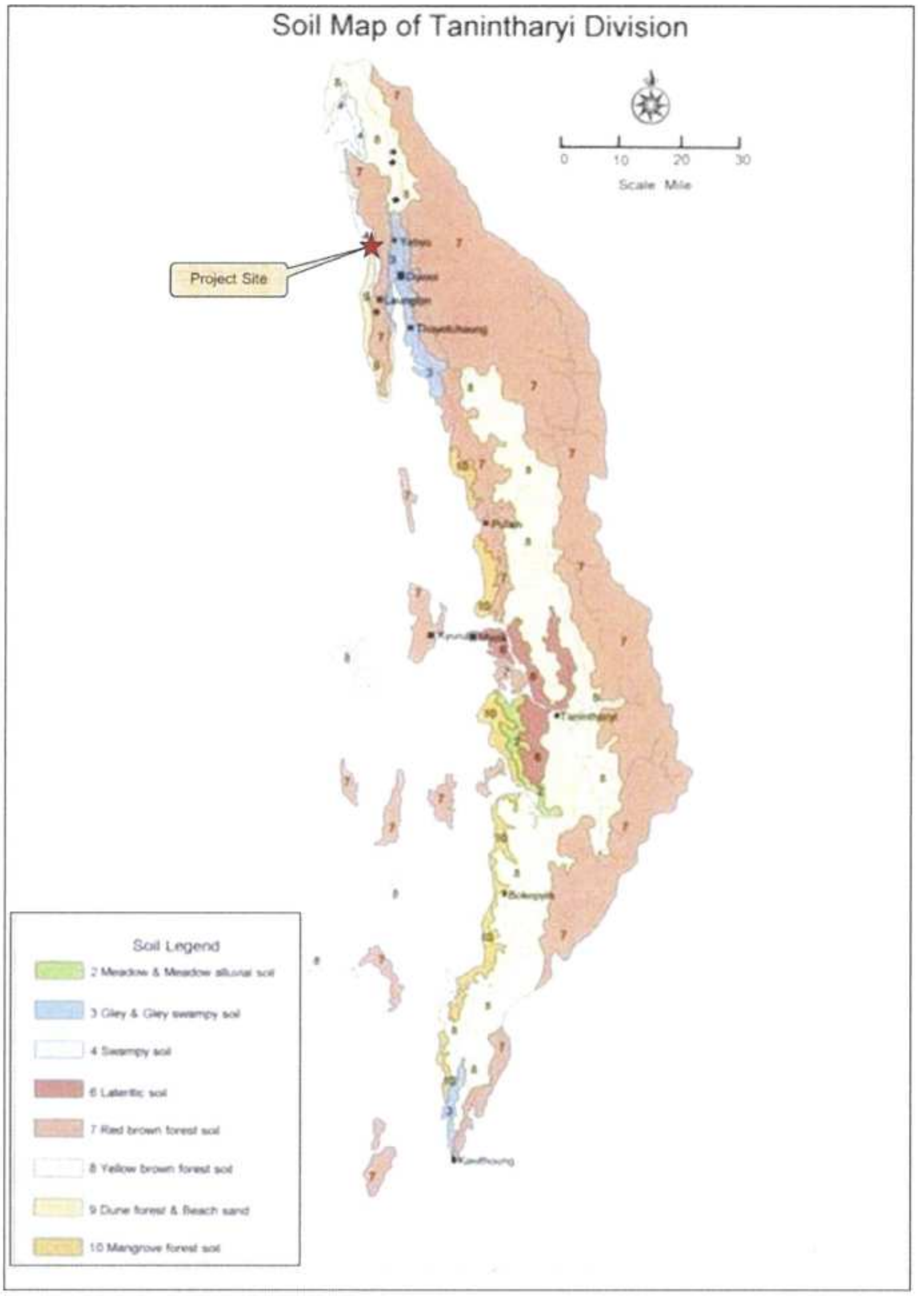
According to soil map of Taninthayi Division as shown in ***Figure 5.2.6-1***, soils in the study area are classified into Gley swampy soil or Gleysol in FAO classification system. Gleysol is one of the 30 soil groups in the classification system of the Food and Agriculture Organization (FAO). Glesols are formed under waterlogged conditions produced by rising groundwater. Unless drained, this soil group, being saturated with groundwater for long enough periods, will develop a characteristic "gley color pattern". The soils are influenced by tidal sea water where salinity limits its use for plantation.

Soil within the project site:

Field observation on soils was conducted during sited investigation. There are 2 sampling observation; the descriptions are demonstrated as follows ***(Photo 5.2.6-1 to 5.2.6-2)***:

Soil characteristic at sampling observation 1; they are deep soils with grey to dark brown color. Soil texture is sandy loam in upper layer and sandy clay loam in lower layer.

Soil characteristic at sampling observation 2; they are moderately deep to deep soils with yellowish brown to brown color. Soil texture is loamy sand in upper layer and sandy loam in lower layer. Lateritic layer are found within the depth of 0.75-1.0 meter.



Source:http://www.apipnm.org/swlwpnr/reports/y_ta/z_mm/mmmp222.htm#506

FIGURE 5.2.6-1 : SOIL MAP IN TANINTHARYI REGION

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015

PHOTO 5.2.6-1 : SOIL SAMPLING OBSERVATION 1

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015

PHOTO 5.2.6-2 : SOIL SAMPLING OBSERVATION 2

5.2.7 Air Quality

Air quality surveys for dry season were conducted during January 29 - February 1, 2015 at two stations (A1, A2) where the wind data was collected. Brief information on both sampling stations are as follows:

Station A1-Pagaw Zoon Primary School: The school is located at about 1.1 km. to the south of the proposed project site. This station is surrounded by Pagaw Zoon community to the east, west, and south, and the abandoned palm oil farm and proposed project site to the north.

Station A2-Pale Gu Village: The village is located at about 3.3 km to the east of the proposed project site. The surroundings are flat and mountainous areas to the north and south, Dawei River and Pale Gu community in east, and mountainous areas and proposed project site to the west.

For wet season, data on air quality were derived from Mudu village (Station A3) which is sampled by the study of ESIA for initial phase power plant of Dawei SEZ during October 7 – 10, 2015. Detail of this station is:

Station A3-Mudu Village: This village is located at about 10.7 km. to the west of proposed project site. This station is surrounded by paddy field and orchard to the east and west, and the abandoned palm oil farm and proposed project site to the north.

The sampling stations in both seasons are shown in ***Photo 5.2.7-1*** and ***Figure 5.2.7-1***.

The field measurements were carried out in parallel for 3 consecutive days at each station using two sets of air quality measurement equipment. The air quality parameters measured included TSP (Total Suspended Particle), PM-10, SO_2, and NO_x. The sampling and analytical methods used were those recommended by USEPA and are as follows:

Pollutant	Sampling / Analysis Method	Sampling Period
TSP (Average 24 Hour)	High-Volume Air Sampler / Gravimetric method	72-hours
PM-10 (Average 24 Hour)	High-Volume Air Sampler (PM-10) / Gravimetric method	72-hours
SO_2 (Average 24 Hour)	Pararosaniline (ASTM D2914-78)	72-hours
NO_x (Average 24 Hour)	Sodium Arsenite (US.EPA EQN-1277-026)	72-hours

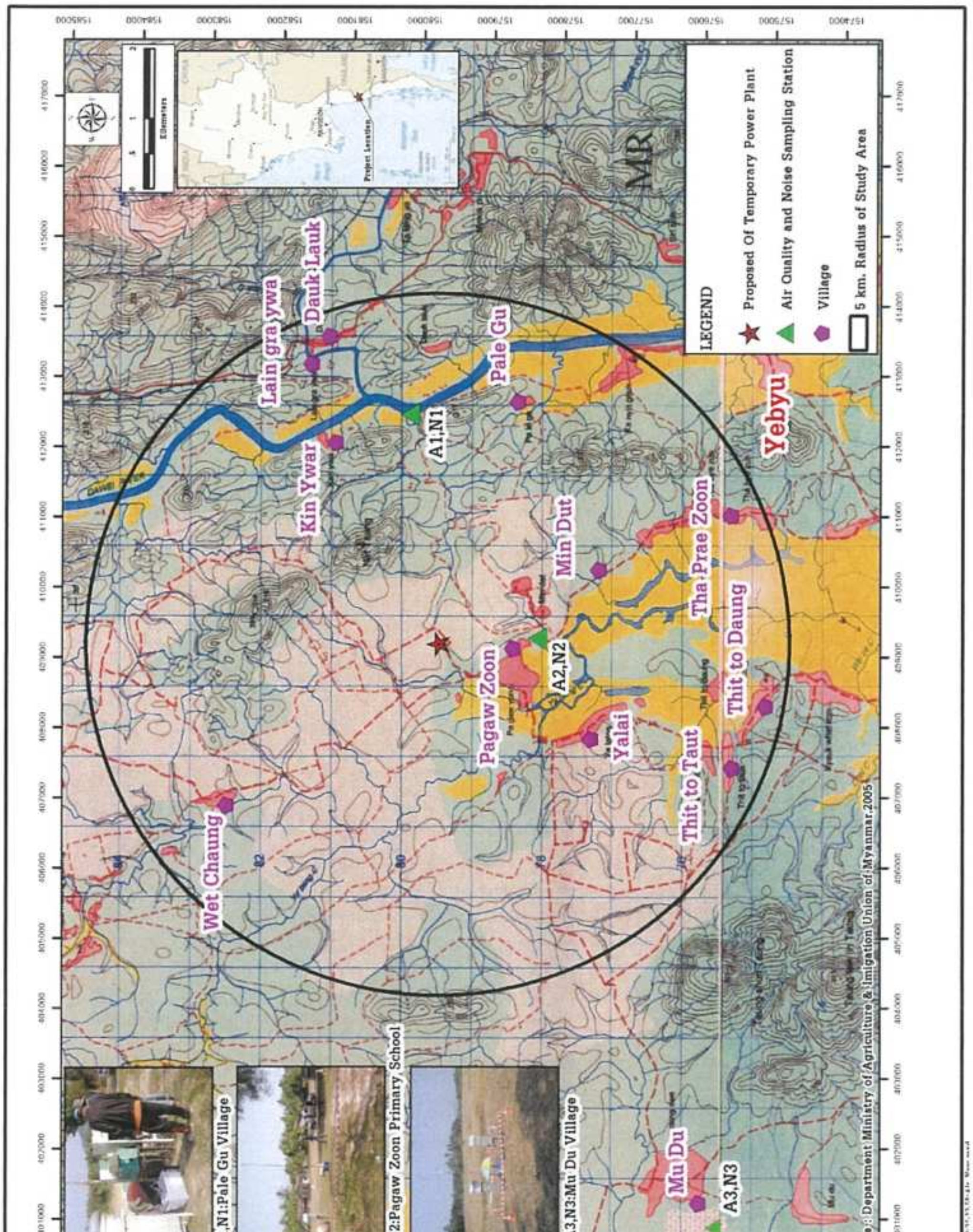


FIGURE 5.2.7-1: AIR QUALITY AND NOISE MEASUREMENT STATIONS FOR PROJECT STUDY

Results of the air quality surveys for dry season at station A1 and A2 are summarized in ***Table 5.2.7-1A*** with a comparison to the air quality standards of IFC and World Bank. The following conclusions may be drawn:

- In overall, the ambient air quality at all two stations was good as all pollutant concentrations were much below the maximum permissible concentrations prescribed in the standards.
- The concentration of both PM-10 (Avg. 24 hr.) in two sampling station were within standard.
- The TSP concentration (Avg. 24 hr.) in Pagaw Zoon Primary School was within standard. However, the TSP concentration in Pale Gu village is exceed than standard during 29-30 January 2015 (262.17 μg/m^3). The reason was in this sampling station located on open area and near ITD main road (laterite road) which effected from dust diffusion from traffic activities of both local people and ITD vehicles.
- The concentrations of NO_2 and SO_2 were low as no industrial activities in the area.

TABLE 5.2.7-1A

RESULTS OF THE AIR QUALITY MEASUREMENTS (DRY SEASON)

Station	Sampling Date	Results of Measurement (μg/m^3)			
		TSP	PM-10	NO_2	SO_2
		Average 24 Hour	Average 24 Hour	Average 24 Hour	Average 24 Hour
A1:Pale Gu Village, Yebyu Township, Dawei District, Tanintharyi Region	29-30 Jan. 2015	262.17	52.11	<18	<50
	30-31 Jan. 2015	193.14	53.67	<18	<50
	31-Jan. – 1 Feb. 2015	225.14	59.54	<18	<50
	Min-Max	**193.14-262.17**	**52.11-59.54**	**<18**	**<50**
A2 : Pagaw ZoonVillage, Yebyu Township, Dawei District, Tanintharyi Region	29-30 Jan. 2015	178.57	67.34	<18	<50
	30-31 Jan. 2015	169.89	58.89	<18	<50
	31-Jan. – 1 Feb. 2015	154.93	52.49	<18	<50
	Min-Max	**154.93-178.57**	**52.49-67.34**	**<18**	**<50**
Ambient Air Quality Standards of World Bank Group (1998)[1/]		**230**	**150**	**150**	**150**
Ambient Air Quality Standards of World Bank (2007)[2/]		**-**	**150**	**-**	**125**

Remark: Clear weather is experienced over the sampling period

[1/] Refer to Ambient Air Quality in Power Plant "Thermal Power: Guidelines for New Plant", Pollution Prevention and Abatement Handbook WORLD BANK GROUP, Effective July 1998.

[2/] WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (April 30, 2007).

Source: Field survey by TEAM Consulting Engineering and Management Co., Ltd., January 29 – February 1, 2015

For wet season, result of air quality from Mudu Village which is sampled by the study of ESIA for initial phase power plant of Dawei SEZ are shown in ***Table 5.2.7-1A***. Result is summarized below:

- Overall air quality was good as all pollutant concentrations were much below the maximum permissible concentrations prescribed in the standards.

- The concentration of TSP (Avg. 24 hr.) and PM-10 (Avg. 24 hr.) were within standard.

- The concentrations of NO_2 and SO_2 were relatively low compared with the Ambient Air Quality Standards of World Bank (1998 and 2007) (***Table 5.2.10-2***).

Details of air quality in both season are given in ***Appendix 5B.***

TABLE 5.2.7-1B

RESULTS OF THE AIR QUALITY MEASUREMENTS (WET SEASON)

Station	Sampling Date	Results of Measurement (µg/m^3)			
		TSP	PM-10	NO_2	SO_2
		Average 24 Hour	Average 24 Hour	Average 24 Hour	Average 24 Hour
A3:Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region	7-8 October 2015	23.97	9.38	<18	<50
	8-9 October 2015	13.71	4.32	<18	<50
	9-10 October 2015	15.64	5.46	<18	<50
	Min-Max	**13.71-23.97**	**4.32-9.38**	**<18**	**<50**
Ambient Air Quality Standards of World Bank Group (1998)[1/]		**230**	**150**	**150**	**150**
Ambient Air Quality Standards of World Bank (2007)[2/]		**-**	**150**	**-**	**125**

Remark: [1/] Refer to Ambient Air Quality in Power Plant "Thermal Power: Guidelines for New Plant", Pollution Prevention and Abatement Handbook WORLD BANK GROUP, Effective July 1998.

[2/] WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (April 30, 2007).

Source: Field survey for ESIA for Initial Phase of Power Plant of Dawei SEZ by TEAM Consulting Engineering and Management Co., Ltd., October 7-10, 2015

The results clearly show that the wet season has better air quality than the dry season as most of the air pollutants are removed by rain. However, clean air at the two air sampling stations would be expected considering low industrial and traffic activities in the study area. The data in ***Table 5.2.7-1A*** and ***Table 5.2.7-1B*** also indicate large gaps between the existing air quality and the permissible maximum concentration in all four key air quality parameters except the TSP (Avg. 24 hr.) at Station A1 which higher than the permissible maximum value of 230 µg/m^3. This indicates that the air-shed of the study area still has a large assimilative capacity.

Pagaw Zoon Primary School

Sampling Station

Air Quality Measurement at Pagaw Zoon Primary School, Yebyu Township, Dawei District, Tanintharyi Region (A1 & N1) during January 29 – February 1, 2015

Pale Gu Village

Sampling Station

Air Quality Measurement at Pale Gu Village, Yebyu Township, Dawei District, Tanintharyi Region (A2 & N2) during January 29 – February 1, 2015

Air Quality and Noise Measurement at Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region (A3 & N3), October 7 – 10, 2015

Source : ESIA for initial phase power plant of Dawei SEZ

PHOTO 5.2.7-1 : AIR QUALITY AND NOISE MEASUREMENT STATION WITHIN 5 KM RADIUS OF POWER PLANT

5.2.8 Noise

The Project construction will invariably create noise which could disturb nearby sensitive receptors. As the Project area is sparsely populated, existing levels of background noise are expected to be below the maximum permissible limits prescribed in the national noise standard. Nevertheless, it would be useful to establish the baseline data on background noise levels in the Project site.

The Consultant conducted noise measurements during January 29 – February 1, 2015 (Station N1 and Station N2). The two stations were set in the same location for air quality sampling as shown in ***Figure 5.2.7-1*** and ***Photo 5.2.7-1*** Information on the two stations is summarized below:

Particulars	Station N1 : Pagaw Zoon Primary School	Station N2 : Pale Gu Village
Reference Coordinates	UTM 409304E, 1578442N	UTM 412472E, 1580212N
District	Dawei	Dawei
Nearest village	Min Dut	Kin Ywar
Nearest noise sources	village activities	village activities

The noise level was measured and recorded continuously for 72 hours using a sound level meter. The results are summarized in ***Table 5.2.8-1*** and details of the measurements are presented in ***Appendix 5C***. IFC noise standards are also compared with the background noise levels in ***Table 5.2.8-1***. Major finding are:

- In general, the noise levels at the two stations were still below the U.S. EPA standard.
- The background noise level expressed in LAeq-1 hr. exceeded the limit set by the IFC Standard for residential, institutional and educational areas during both daytime and nighttime in all two sampling stations.
- However, the IFC noise standards are applicable to residential, institutional and educational areas. As the Project area and the surrounding areas are designated for industrial development, the existing background noise levels are still acceptable as indicated by the U.S. EPA noise standard.

TABLE 5.2.8-1

NOISE LEVEL MEASUREMENT AT 2 SAMPLING STATIONS DURING JANUARY 29 – FEBRUARY 1, 2015

Sampling Location	Sampling Date	Noise Level (dB(A))					
		LAeq 1 hr (Daytime)	LAeq 1 hr (Nighttime)	Leq 24 hr	Lmax	Ldn	L90
N1: Pale Gu Village, Yebyu Township, Dawei District, Tanintharyi Region	Jan. 29-30, 2015	51.1-59.8	46.2-54.1	54.7	98.8	58.4	45.0
	Jan. 30-31, 2015	52.4-58.6	46.6-59.4	54.5	91.7	57.8	46.0
	Jan. 31-Feb. 1, 2015	52.3-56.3	45.5-57.1	53.0	88.4	56.5	44.8
Min-Max		**51.1-59.8**	**45.5-59.4**	53.0-54.7	88.4-98.8	56.5-58.4	44.8-46.0
N2: Pagaw Zoon Village, Yebyu Township, Dawei District, Tanintharyi Region	Jan. 29-30, 2015	52.1-59.6	48.3-52.9	54.4	93.3	58.0	48.7
	Jan. 30-31, 2015	48.7-58.9	46.7-52.9	53.2	86.8	56.3	47.7
	Jan. 31-Feb. 1, 2015	47.9-60.0	47.1-49.8	51.5	91.5	55.8	46.6
Min-Max		**47.9-60.0**	**46.7-52.9**	51.5-54.4	86.8-93.3	55.8-58.0	46.6-48.7
Standard		**55.0*** 1/	**45.0**** 1/	-	-	-	-
		-	-	**70.0** 2/, 3/	**110** 3/	-	-

Remark: Clear weather is experienced over the sampling period

* for residential, institutional and educational area during daytime (7.00 a.m.-10.00 p.m.)

** for residential, institutional and educational area during nighttime (10.00 p.m. – 7.00 a.m.)

1/ Environmental, Health, and Safety (EHS) Guidelines, International Finance Corporation, April 2007

2/ Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, U.S. EPA (U.S. Environmental Protection Agency). 1974.

3/ Notification of Guidelines for Community Noise, World Health Organization (WHO), 1999.

Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., January, 2015

5.2.9 Surface Water Quality

The study of surface water quality was conducted on January 21, 2015. Surface water sample were collected at two selected stations within 5 km of the project site as indicated in a map in ***Figure 5.2.9-1***.

At each station, water samples were collected by grab sampling technique at the middle-depth below surface. Water sample were collected, handled and conserved following Standard Method for the Examination of Water and Wastewater. APHA, AWWA and WEF 22nd Edition, 2012. Dissolved oxygen (DO), pH, temperature, conductivity and transparency were measured *in situ* (***Photo 5.2.9-1***). The sampled water were sent to the assigned laboratory in Thailand for analysis of various quality parameters. The water quality data was presented in ***Table 5.2.9-1*** and compared with surface water quality standard adopted by Thailand. Details of the measurements are presented in ***Appendix 5D***.

The data clearly indicates that surface water quality at both stations was good with high dissolved oxygen above required level for protection of aquatic fauna and fisheries (6.0 mg/L; Thailand surface water quality standard, 1994) and low BOD. Heavy metal were detected at very low concentration. It could be indicated that water in SW1 and SW2 are to be of good quality with suitable for supporting aquatic ecosystem.

SW1

SW2

PHOTO 5.2.9-1 : SAMPLING OF SURFACE WATER

TABLE 5.2.9-1

RESULTS OF SURFACE WATER QUALITY SAMPLING, FEBRUARY 1, 2015

Characteristic	Parameter	Unit	SW1	SW2	Standard*
1. Physical	Depth	m.	2.8	0.8	-
	Temperature	°C	23.9	24.3	Changing not more than 3 °C from natural condition
	Transparency	m.	0.6	0.8	-
	Conductivity	mS/cm	13.70	13.50	-
2. Chemical	pH	-	5.64	5.37	5.0 – 9.0
	DO	mg/l	6.72	7.01	4.0
	Salinity	ppt	0	0	-
	Turbidity	NTU	1.5	2.4	-
	COD	mg/l	22	28	-
	BOD	mg/l	0.8	1.2	2.0
	Total Dissolved Solids	mg/l	43.8	32.0	-
	Suspended Solids	mg/l	<5.0	<5.0	-
	Oil & Grease	mg/l	<5.0	<5.0	0.14
	Iron	mg/l	0.62	0.16	-
	Lead	mg/l	<0.005	<0.005	0.05
	Cyanide	mg/l	<0.003	<0.003	0.005
	Arsenic	mg/l	<0.0003	<0.0003	0.01

Remark: SW1: 47P 407860E 1578333N (clear water with lightly suspend solid)
SW2: 47P 405766E 1580191N (clear water with lightly suspend solid)
*Thailand for Surface Water Quality Standard Category 3 : Medium clean surface water with some pollution contamination, suitable for 1) consumption and use water with prior customary water treatment and disinfection and 2) agriculture

Source: TEAM Consulting Engineering and Management Co., Ltd., February 2015

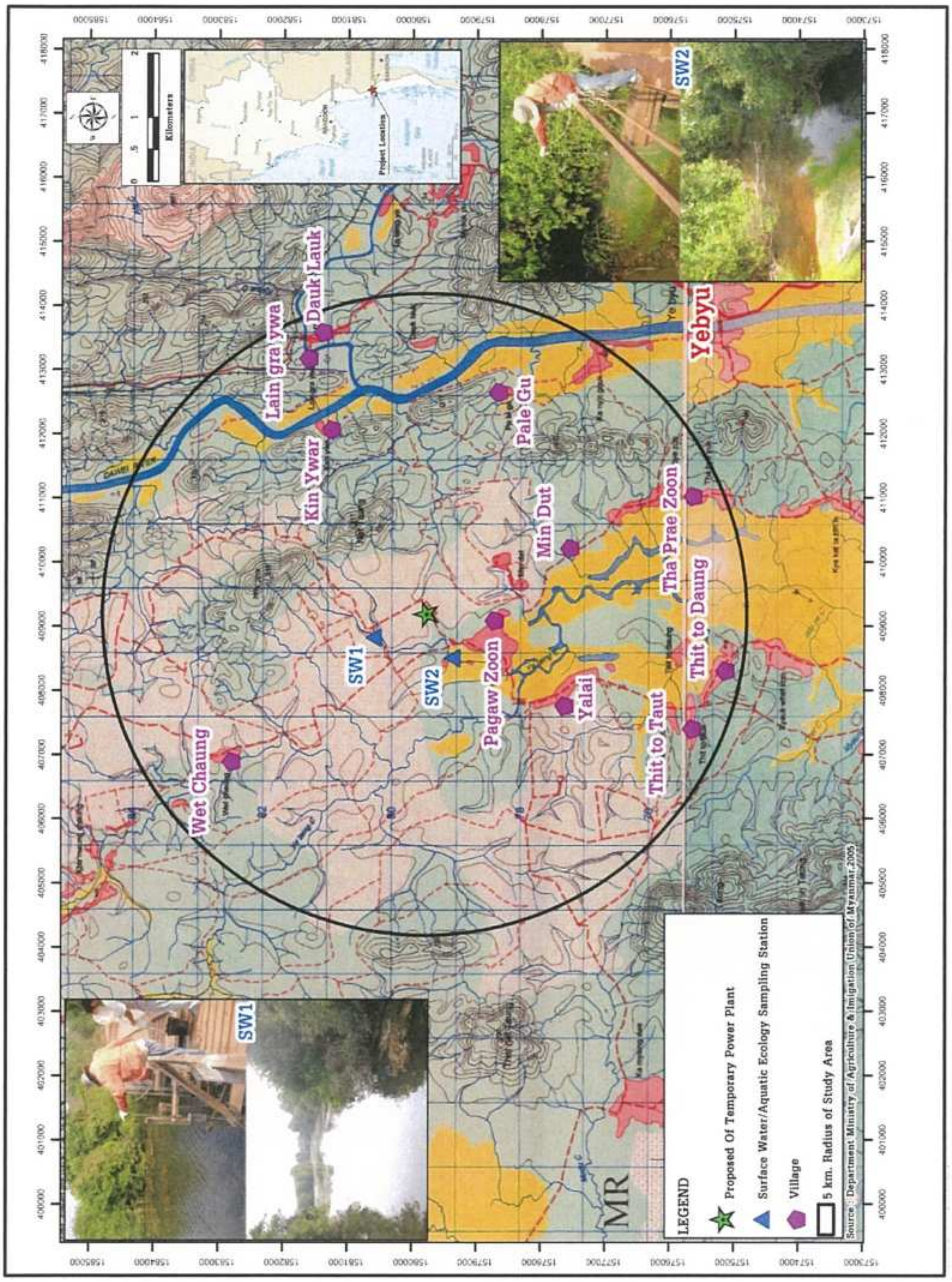


FIGURE 5.2.9-1 : LOCATION OF SURFACEWATER /AQUATIC ECOLOGY SAMPLING STATION

5.2.10 Groundwater Quality

Groundwater bored wells are found scatter in villages nearby the Project site. Two wells, one at proposed project site (GW1) and another in Pagaw Zoon School (GW2), were selected for groundwater quality surveys. The locations of the two villages are indicated on a map in ***Figure 5.2.10-1*** and ***Photo 5.2.10-1***

Groundwater sampling at GW1 was conducted on January 29, 2015 and GW2 was on February 1, 2015. In each sampling, a grab sample of about5 liters was collected at 0.3 m below surface for *in-situ* and laboratory analyses. ***Table 5.2.10-1*** shows the ground water quality data compared with WHO Guidelines for Drinking-water. Details of the measurements are presented in ***Appendix 5E***. The data indicated water in both well are not suitable for drinking due to their low pH which mean the water are slightly acid. Others analyzed parameters were comply with the WHO standards for drinking purpose.

GW1: Proposed project site

GW2: Pagaw Zoon School

PHOTO 5.2.10-1 : GROUNDWATER SAMPLING ACTIVITIES AT EACH STATION

TABLE 5.2.10-1

RESULTS OF GROUND WATER QUALITY ANALYSIS AT EACH STATION JANUARY 29 AND FEBRUARY 1, 2015

Characteristic	Parameter	Unit	GW1	GW2	WHO Drinking Water Standard[1]
Sampling Date			29/1/2015	1/2/2015	
1. Physical	Odour	-	None	None	-
	Water temperature	°C	25.9	26.2	-
	Conductivity	µs/cm	18.20	23.40	250
	Oil & Grease	mg/l	-	-	-
2. Chemical	pH	-	**4.94**	**4.93**	6.5 – 8.5
	Turbidity	NTU	1.0	1.1	-
	DO	mg/l	4.69	5.33	-
	Salinity	ppt	<0.1	<0.1	-
	Total Dissolved Solids	mg/l	30.0	30.0	-
	Suspended Solids	mg/l	<5.0	<5.0	-
	Total Hardness	mg/l	121.6	17.6	-
	Chloride	mg/l	3.0	3.0	250
	Sulfate	mg/l	<5.0	<5.0	-
	Nitrite-Nitrogen	mg/l	<0.01	<0.01	-
	Nitrate-Nitrogen	mg/l	0.26	0.13	50
	Arsenic	mg/l	<0.0003	<0.0003	0.01
	Cadmium	mg/l	<0.003	<0.003	0.003
	Lead	mg/l	<0.005	0.020	0.01
	Zinc	mg/l	0.001	0.003	-
	Copper	mg/l	<0.003	<0.003	2.0
	Manganese	mg/l	0.008	0.010	0.4
	Total Iron	mg/l	0.17	0.33	-
	Mercury	mg/l	<0.0005	<0.0005	0.006
	Calcium		0.422	1.20	-
	Cyanide	mg/l	<0.003	<0.003	-
3.Biological	*E. coli*	MPN / 100 ml.	No detect	No detect	
	Total Coliform Bacteria	MPN / 100 ml.	>23	5.1	

Remark : GW1 : Well at proposed Project Site (47P 410726E, 1578333N)
GW2 : Pagaw Zoon School (47P 409309E, 1580191N)
[1]WHO Guidelines for drinking water quality 4th Edition

Source: TEAM Consulting Engineering and Management Co., Ltd., January and February 2015

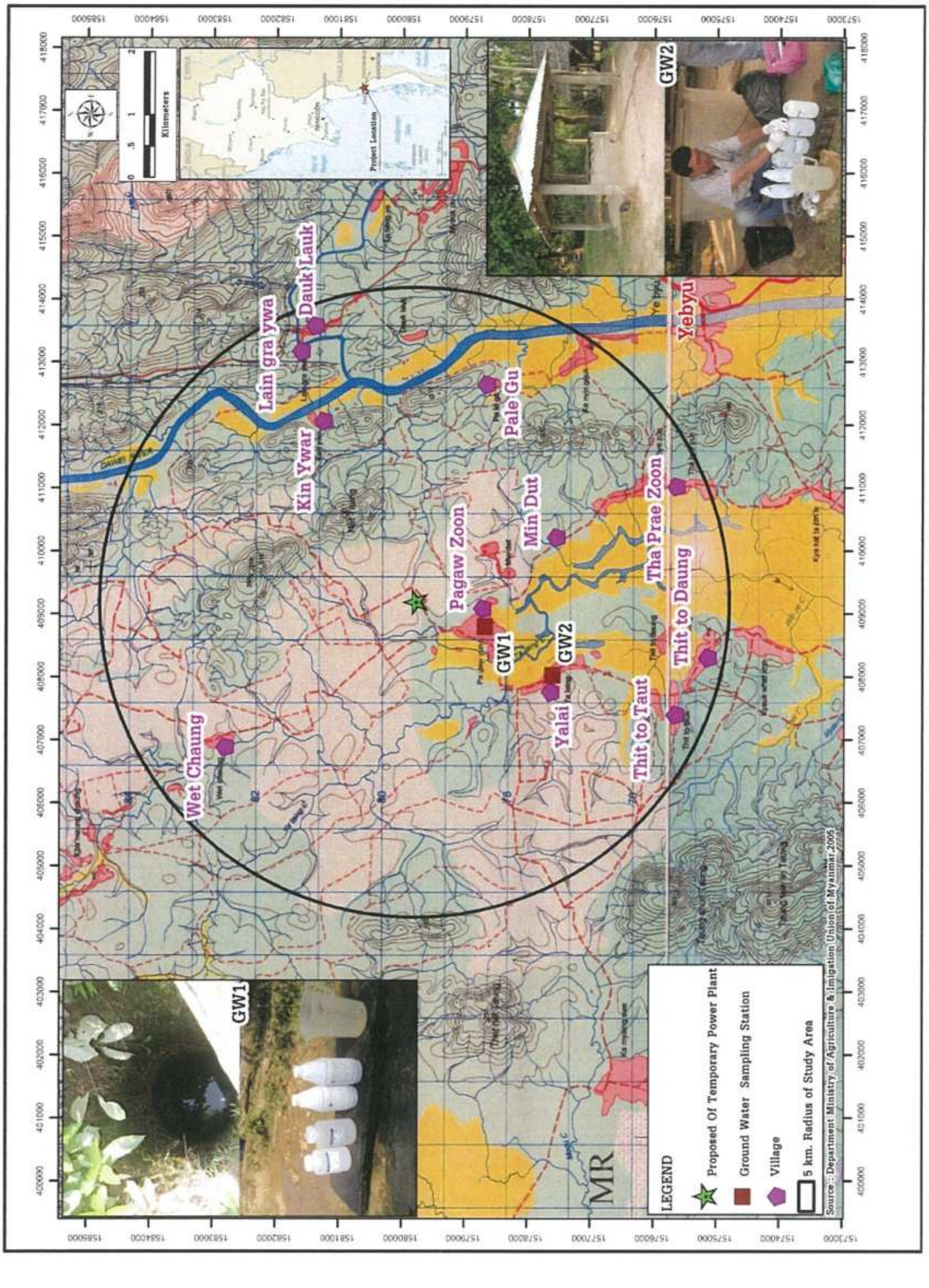


FIGURE 5.2.10-1 : LOCATION OF GROUNDWATER SAMPLING STATION

5.3 DESCRIPTION OF THE BIOLOGICAL COMPONENTS

5.3.1 Terrestrial Resource

The study of terrestrial ecology was based on (i) secondary information on terrestrial ecology in the region, and; (ii) results of field surveys conducted in the proposed project site on January 27 – 29, 2015. The field surveys were conducted at two levels; (a) The surveys at the project site and (b) radius of five kilometers from project site (Radius Zone). In both surveys, satellite images were used as a guide map. Methodology and taxonomy reference for terrestrial ecology survey are described in ***Appendix 5F***

A. Forests Resources

Since the area of project site and radius of 5 kilometers from project sites are not much area for sampling plots (the areas are patchy). Therefore, this study was not randomized plots.

The surrounding of project site composed of wilderness site and palm plantation only whereas sites of five kilometers radius from project site consisted as (1) wilderness site (2) agriculture land as paddy rice, Mango orchard, Cashew Nut orchard, Palm plantation and Para rubber plantation and (3) two types of natural forests were mixed deciduous forest (MDF) and Dry evergreen forest (DEF). These areas locate surrounding twelve villages. All of species are shown in ***Table 5.3.1-1***.

a. Project Site

There were 48 species (47 genera and 32 families) found in this site. The highest family was grass family (Gramineae) including 5 species follow by Euphobiaceae family as 4 species; Leguminosae and Melastomataceae as 3 species; Apocynaceae, Bignoniaceae, Lauraceae, Moraceae, Rubiaceae, Rutaceae as 2 species and remaining families was found only one species of each family. It could classify into eight growth form were tree (17 species); Shrub (12 species); Climber (7 species); Shrubby tree (6 species); Exotic tree (2 species); Shrub/shrubby tree and exotic palm (1 species). All of plant are also commonly found in this area and not species in IUCN's red list.

b. Radius Zone

The radius zone is habitats of 77 plant species (69 genera and 35 families). Leguminosae and Gamineae families were highest species (9 species) follow by Euphobiaceae (8 species); Palm family (4 species); Barringtoniaceae, Dipterocarpaceae, Guttiferae and Myrtaceae (3 species), Anacardiaceae, Bignoniaceae, Compositae, Dillentiaceae, Lythraceae, Meliaceae, Moraceae and Rubiaceae (2 species) and other family had only one species.

It can classify by growth form to be 12 growth forms as Tree (40 species); Grass (7 species); Herb (6 species); Shrubby tree (5 species); Climber, Herb climber, Shrub/shrubby tree, Bamboo, Exotic tree and Exotic palm (2 species). All of plants are also commonly found in this country and not species in IUCN's red list.

The Forest in project site area and radius zone are shown in ***Photo 5.3.1-1***, and some of Dominance tree species are shown in ***Photo 5.3.1-2***.

Palm plantation and wilderness areas

Wilderness area close to Plant concrete

A. Project site

Palm plantation

Mixed deciduous forest

Cashew Nut orchard

Mixed orchard

B. Radius Zone (radius of 5 kilometer from project site)

PHOTO 5.3.1-1 : FORESTS EXISTING IN THE STUDY AREA

Grewia paniculata Roxb.

Ardisia murtonii Fletch.

Croton oblongifolius Roxb.

PHOTO 5.3.1-2 : SOME DOMINANCE TREE SPECIES IN THE STUDY AREA

TABLE 5.3.1-1

LIST OF PLANT SPECIES FOUND IN PROJECT SITE AND RADIUS ZONE JANUARY 27 - 29, 2015

Family	Scientific name	Growth form	Study Areas	
			Project area	Radius of 5 km.
ANACARDIACEAE	*Anacardium occidentale* Linn.	ExST		X
	Mangifera griffithii Hook. f.	T	X	X
ANNONACEAE	*Uvaria hahnii* Sincl.	C	X	
APOCYNACEAE	*Aganosma marginata* G. Don	C	X	
	Wrightia tomentosa Roem. & Schult.	ST	X	
ARACEAE	*Hapaline benthamiana* Schott	H		X
BARRINGTONIACEAE	*Barringtonia acutangula* Gaertn. subsp. spicata Payens	ST		X
	Barringtonia macrocarpa Hassk.	T		X
	Careya sphaerica Roxb.)	T	X	X
BIGNONIACEAE	*Fernandoa adenophylla* Steenis	T	X	X
	Stereospermum fimbriatum A. DC.	T	X	
BORAGINACEAE	*Heliotropium indicum* R. Br.	H		X
COMPOSITAE	*Eupatorium adenophorum* Spreng.	H		X
	Eupatorium odoratum Linn.	ExH	X	
	Spilanthes acmella Murr.	H		X
CONVOLVULACEAE	*Merremia vitifolia* Haller f.	C		X
CUCURBITACEAE	*Diplocyclos palmatus* Jeffrey	C		X
DILLENIACEAE	*Dillenia obovata* Hoogl.	T		X
	Dillenia parviflora Griff.	T		X
DIOSCOREACEAE	*Dioscorea hispida* Dennst.	HC		X
DIPTEROCARPACEAE	*Dipterocarpus obtusifolius* Teijsm. ex Miq.	T		X
	Hopea odorata Roxb.	T		X
	Shorea siamensis Miq.	T		X
ESCALIONIACEAE	*Polyosma arguta* Craib	T	X	X
EUPHORBIACEAE	*Aporusa villosa* Baill.	ST	X	X
	Bridelia affinis Craib	ST		X
	Croton oblongifolius Roxb.	T	X	X
	Glochidion sphaerogynum Kurz	T	X	X
	Hevea brasiliensis Mull-Arg.	T		X
	Macaranga quadricornis Ridl.	S/ST		X
	Phyllanthus emblica Linn.	T		X
FAGACEAE	*Lithocarpus trachycarpus* A. Camus	T		X
FLACOURTIACEAE	*Flacourtia indica* Merr.	S	X	
GRAMINEAE	*Acrachne racemosa* Ohwi	G		X
	Axonopus compressus Beauv.	G		X
	Bambusa arundinacea Willd.	B		X
	Bambusa natans Wall.	B		X
	Cynodon dactylon Pers.	G	X	X
	Dendrocalamus strictus (Roxb.) Nees	G		X
	Digitaria sanguinalis Scop.	G		X
	Imperata cylindrica Beauv.	G		X
	Panicum incomtum Trin.	G	X	
	Saccharum spontaneum Linn.	G	X	
	Setaria geniculata Beauv.	G	X	
	Thysanolaena maxima Ktze.	G	X	X

TABLE 5.3.1-1

LIST OF PLANT SPECIES FOUND IN PROJECT SITE AND RADIUS ZONE JANUARY 27 - 29, 2015 (CONT'D)

Family	Scientific name	Growth form	Study Areas	
			Project area	Radius of 5 km.
GUTTIFERAE	*Cratoxylum cochinchinense* Bl.	T		X
	Garcinia costata Hemsl.	T		X
	Garcinia nigrolineata Planch.	T	X	
	Mesua ferrea Linn.	T		X
LABIATAE	*Tectona grandis* Linn. f.	T		X
LAURACEAE	*Litsea glutinosa* C.B. Robinson	T	X	-
	Phoebe paniculata Nees	T	X	-
LEGUMINOSAE-CAESALPINIACEAE	*Cassia fistula* Linn.	T		X
	Cassia timoriensis DC.	ST	X	
	Delonix regia Raf.	ExT		X
LEGUMINOSAE-MIMOSACEAE	*Acacia auriculaeformis* Cunn.	ExT		X
	Acacia mangium Wild.	T		X
	Adenanthera pavonina Linn.	T		X
	Albizia lebbeckoides Benth.	T		X
	Xylia xylocarpa Taub.	T		X
LEGUMINOSAE-PAPILIONACEAE	*Canavalia rosea* DC.	TrH	X	
	Dalbergia foliacea Wall.	C	X	
	Pterocarpus indicus Willd.	T		X
	Pterocarpus macrocarpus Kurz	T		X
LYTHRACEAE	*Lagerstroemia calyculata* Kurz	T	X	X
	Lagerstroemia macrocarpa Wall.	T		X
MALVACEAE	*Urena lobata* Linn.	US	X	
MELASTOMATACEAE	*Allomorphia exigua* Bl.	S	X	
	Marumia dimorpha Craib	S	X	X
	Melastoma polyanthum Bl.	S	X	
MELIACEAE	*Aglaia edulis* Gray	T		X
	Azadirachta indica Juss. var. siamensis Valeton	T		X
	Sandoricum koetjape Merr.	T	X	
MEMECYLACEAE	*Memecylon myrsinoides* Bl.	S	X	
MORACEAE	*Artocarpus kemando* Miq.	T		X
	Ficus hispida Linn. f.	ST	X	X
	Ficus religiosa Linn.	ExT	X	
MUSACEAE	*Musa acuminata* Colla	H		X
MYRSINACEAE	Ardisia murtonii Fletch.	S	X	X
MYRTACEAE	*Eugenia cinerea* Kurz	T		X
	Eugenia cumini Druce			
	Tristania rufescens Hance			
	Jasminum amplexicaule Ham.			
	Biophytum sensitivum DC.			
PALMAE	*Areca catechu* Linn.	P		X
	Borassus flabellifer Linn.	ExP		X
	Elaeis guineensis Jacq.	ExP	X	X
	Livistona speciosa Kurz	P		X

TABLE 5.3.1-1

LIST OF PLANT SPECIES FOUND IN PROJECT SITE AND RADIUS ZONE JANUARY 27 - 29, 2015 (CONT'D)

Family	Scientific name	Growth form	Study Areas	
			Project area	Radius of 5 km.
PASSIFLORACEAE	*Passiflora foetida* Linn.	HC		X
PERIPLOCACEAE	*Streptocaulon juventas* Merr.	C	X	
PIPERACEAE	*Piper betel* Linn.	C		X
POTALIACEAE	*Fagraea fragrans* Roxb.	T		X
RHIZOPHORACEAE	*Carallia brachiata* Merr.	T	X	X
RUBIACEAE	*Anthocephalus chinensis* (Lamk.) A. Rich. ex Walp.	T		X
	Gardenia sootepensis Hutch.	T	X	
	Ixora cibdela Craib	ST	X	
	Ochreinauclea maingayi (Hook.f.)Ridsd.	T		X
RUTACEAE	*Glycosmis pentaphylla* Corr.	S/ST	X	
	Zanthozylum limonella Alston	ST	X	
SAPINDACEAE	*Zollingeria dongnaiensis* Pierre	T		X
SCHIZAEACEAE	*Lygodium polystachyum* Wall. ex Moore	CF	X	
SONNERATIACEAE	*Duabanga grandiflora* Walp.	T		X
STERCULIACEAE	*Pterospermum semisagittatum* Ham.	T	X	
SYMPHOREMATACEAE	*Congea tomentosa* Roxb.	C	X	
THEACEAE	*Schima wallichii* Korth.	T		X
TILIACEAE	*Grewia paniculata* Roxb.	T	X	
ULMACEAE	*Trema angustifolia* Bl.	ST		X
VERBENACEAE	*Callicarpa arborea* Roxb.	S/ST		X
	Clerodendrum viscosum Vent.	S	X	

Remark: **Plant Habits:**

AqF	:	Aquatic Fern	P	:	Palm
B	:	Bamboo	S	:	Shrub
C	:	Climber	T	:	Tree
CF	:	Climbing Fern	ST	:	Shrubby Tree
CP	:	Climbing Palm	S/ST	:	Shrub/Shrubby Tree
ExC	:	Exotic Climber	TerF	:	Terrestrial Fern
ExST	:	Exotic Shrubby Tree	ExT	:	Exotic Tree
EF	:	Epiphyte Fern	EO	:	Epiphyte Orchid
F	:	Fern			

Source : TEAM Consulting Engineering and Management Co., Ltd., January, 2015

B. Fauna Resources

Details of the species list and the IUCN red list of fauna resources found in project site and study radius 5 kilometers (radius zone) showed in ***Table 5.3.1-2***

a. Project Site

In the project site, 22 fauna species were found in the project site, consisting of: (i) 13 bird species, (ii) 6 mammal species (iii) and, 3 reptile species. Mostly of species were uncommon species in this area, except Salika-Myna *(Acridotheres tristis)* was common species.

b. Radius Zone

In the radium zone of 5 kilometers form project site, 29 fauna species were found in the project site, consisting of: (i) 25 bird species, (ii) 1 mammal species (iii) and, 3 reptile species. There were two species with common in this area as Indian roller *(Coracias benghalensis)* and Salika-Myna *(Acridotheres tristis)* but mostly species are in least concern status.

Examples of wildlife found in project area are shown in ***Photo 5.3.1-3***.

C. Wildlife Status

Species are classified by the IUCN Red List (2013) into nine groups based on such criteria as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation. The detail are as follows:

- Extinct (EX) – No known individuals remaining.
- Extinct in the wild (EW) – Known only to survive in captivity, or as a naturalized population outside its historic range.
- Critically endangered (CR) – Extremely high risk of extinction in the wild.
- Endangered (EN) – High risk of extinction in the wild.
- Vulnerable (VU) – High risk of endangerment in the wild.
- Near threatened (NT) – Likely to become endangered in the near future.
- Least concern (LC) – Lowest risk. Does not qualify for a more at risk category. Widespread and abundant taxa are included in this category.
- Data deficient (DD) – Not enough data to make an assessment of its risk of extinction.
- Not evaluated (NE) – Has not yet been evaluated against the criteria.

TABLE 5.3.1-2

LIST OF FAUNA SPECIES FOUND IN PROJECT SITE AND RADIUM ZONE JANUARY 27 - 29, 2015

Fauna Species	Abundance						IUCN Red List			
	Project site			Radius of 5 km.						
	Vc	Co	Uc	Vc	Co	Uc	CR	EN	VU	NT
Aves-Bird										
Ciconiiformes										
Accipitridae										
Oriental honey buzzard *(Pernis ptilorhyncus)*	-	-	-	-	-	X	-	-	-	-
Ardeidae										
Cattle egret *(Bubulcus ibis)*	-	-	-	-	-	X	-	-	-	-
Little Egret *(Egretta garzetta)*	-	-	-	-	-	X	-	-	-	-
Columbiformes										
Columbidae										
Rock pigeon *(Columba livia)*	-	-	-	-	-	X	-	-	-	-
Spotted Dove *(Streptopelia chinensis)*	-	-	X	-	-	X	-	-	-	-
Coracidae										
Indian roller *(Coracias benghalensis)*	-	-	X	-	X	-	-	-	-	-
Cuculiformes										
Cuculidae										
Greater coucal *(Centropus sinensis)*	-	-	-	-	-	X	-	-	-	-
Green-billed Malkoha *(Phaenicophaeus tristis)*	-	-	-	-	-	X	-	-	-	-
Falconiformes										
Falconidae										
Common Kestrel *(Falco tinnunculus)*	-	-	X	-	-	X	-	-	-	-
Galliformes										
Phasianidae										
Red junglefowl *(Gallus gallus)*	-	-	X	-	-	X	-	-	-	-
Passeriformes										
Corvidae										
Jungle crow *(Corvus macrorhynchos)*	-	-	X	-	-	-	-	-	-	-
Dicruridae										
Black Drongo *(Dicrurus macrocercus)*	-	-	X	-	-	-	-	-	-	-
Greater Racket-tailed Drongo *(Dicrurus paradiseus)*	-	-	-	-	-	X	-	-	-	-
Hirundinidae										
Barn Swallow *(Hirundo rustica)*	-	-	X	-	-	-	-	-	-	-
Laniidae										
Brown shrike *(Lanius cristatus)*	-	-	X	-	-	X	-	-	-	-
Leiothrichidae										
White-crested Laughingthrush *(Garrulax leucolophus)*	-	-	-	-	-	X	-	-	-	-
Muscicapidae										
White-rumped shama *(Copsychus malabaricus)*	-	-	X	-	-	X	-	-	-	-
Nectariniidae										
Olive-backed Sunbird *(Nectarinia jugularis)*	-	-	-	-	-	X	-	-	-	-
Nectariniidae										
Olive-backed Sunbird *(Nectarinia jugularis)*	-	-	-	-	-	X	-	-	-	-
Pycnonotidae										
Sooty-headed bulbul *(Pycnonotus aurigaster)*	-	-	X	-	-	X	-	-	-	-
Striated Bulbul *(Pycnonotus striatus)*	-	-	-	-	-	X	-	-	-	-

TABLE 5.3.1-2

LIST OF FAUNA SPECIES FOUND IN PROJECT SITE AND RADIUM ZONE JANUARY 27 - 29, 2015 (CONT'D)

Fauna Species	Abundance						IUCN Red List			
	Project site			Radius of 5 km.						
	Vc	Co	Uc	Vc	Co	Uc	CR	EN	VU	NT
Sturnidae										
Baffalo-Myna *(Acridotheres fuscus)*	-	-	X	-	-	X	-	-	-	-
Salika-Myna *(Acridotheres tristis)*	-	X	-	-	X	-	-	-	-	-
White-vented Myna *(Acridortheres javanicus)*	-	-	-	-	-	X	-	-	-	-
Sylviidae										
Common Tailorbird *(Phylloscopus fuscatus)*	-	-	-	-	-	X	-	-	-	-
Pelecaniformes										
Phalacrocoracidae										
Little cormorant *(Microcarbo niger)*	-	-	-	-	-	X	-	-	-	-
Piciformes										
Megalaimidae										
Lineated barbet *(Megalaima lineata)*	-	-	X	-	-	X	-	-	-	-
Strigiformes										
Strigidae										
Collared scops-Owl *(Otus lempisi)*	-	-	-	-	-	X	-	-	-	-
Tytonidae										
Oriental bay owl *(Phodilus badius)*	-	-	-	-	-	X	-	-	-	-
Mammlia-Mammal										
Artiodactyla										
Suidae										
Wild boar *(Sus scrofa)*	-	-	X	-	-	-	-	-	-	-
Carnivora										
Viverridae										
Common Palm Civet *(Paradoxurus hermaphroditus)*	-	-	X	-	-	-	-	-	-	-
Pholidota										
Manidae										
Malayan Pangolin *(Manis javanica)*	-	-	X	-	-	-	X	-	-	-
Rodentia										
Muridae										
House mouse *(Mus musculus)*	-	-	X	-	-	-	-	-	-	-
Roof rat *(Rattus rattus)*	-	-	X	-	-	X	-	-	-	-
Sciruidae										
Flying squirrel *(Aeromys tephomelas)*	-	-	X	-	-	-	-	-	-	-
Reptilia-Reptiles										
Squamata										
Agamidae										
Dragon lizard *(Calotes mystaceus)*	-	-	-	-	-	X	-	-	-	-
Columbidae										
Rice paddy snake *(Enhydris plumbea)*	-	-	X	-	-	-	-	-	-	-
Elapidae										
Cobra *(Naja naja)*	-	-	X	-	-	X	-	-	-	-
King Cobra *(Ophiophagus hannah)*	-	-	X	-	-	X	-	-	X	-

Remark:

IUCN Red List :
CR : Critically Endangered Species
EN : Endangered Species
VU : Vulnerable Species
NT : Near Threatened Species

Abundance :
Vc : Very common
Co : Common
Uc : Un common

Source : TEAM Consulting Engineering and Management Co., Ltd., January, 2015

Oriental honey buzzard *(Pernis ptilorhyncus)*

Sooty-headed bulbul *(Pycnonotus aurigaster)*

Snakes slough of King Cobra

Indian roller *(Coracias benghalensis)*

PHOTO 5.3.1-3 : EXAMPLES OF WILDLIFE FOUND IN THE PROJECT SITE

When discussing the IUCN Red List, the official term " threatened" is a grouping of three categories:

- Critically Endangered (Cr) This category includes species, which are facing an extremely high risk of extinction in the wild in the immediate future.
- Endangered (En) This category includes species, which are facing a very high risk of extinction in the wild in the near future.
- Vulnerable (Vu) This category includes species, which are facing a high risk of extinction in the wild in the medium-term future.

Furthermore, IUCN (2013) also evaluates species which do not satisfy the criteria for any of the categories as mentioned above, but which are close to qualifying for vulnerable. Species included in this subcategory are classified as near-threatened (Nt).

Summary of 2013 IUCN Red List categories.

The conservation list of IUCN (2013) in four categories included critically endangered, endangered, vulnerable, and near threatened species. Only one species was appearing in red list of the IUCN as King Cobra *(Ophiophagus hannah)*. It was in status of vulnerable species. The status of remaining species is least concern (LC).

5.3.2 Aquatic Ecology

An aquatic ecological study consists of survey on plankton and benthos. The study was conducted along with water sampling at station SW1 and SW2 which shown in ***Figure 5.2.9-1*** and ***Photo 5.3.2-1***.

Plankton sampling at was performed by collecting 30 liters of surface water and pouring through plankton net with mesh size of 70 micron. The retained plankton was transferred into a storage bottle and then preserved with 5 % neutral formalin solution. Species composition and abundance determinations were identified at Kasetsart University laboratory, Bangkok, Thailand.

Benthic samples were collected using Eckman dredge with a grabbing area of 0.25 ft^2. Three grab samplings (0.75 ft^2) were undertaken at each station. Each collected sample was observed to identify the texture and composition of sediments. The information was recorded accordingly. The sediments were washed through a series of wire sieves with mesh size of 1,000 and 500 μm. The retained fauna was kept in a plastic bottle and preserved in 5% formalin solution. All samples were sent to laboratory at Kasetsart University (Thailand) for identification.

PHOTO 5.3.2-1 : AQUATIC ECOLOGICAL SAMPLING ACTIVITIES

Results of the aquatic ecology survey can be summarized as follows:

(1) Phytoplankton

A total of 16species of phytoplankton belong to 3 divisions, namely: Cyanophyta (Blue-Green Algae), chlorophyta (Green Algae) and chromophyta (Brown algae) were identified. The phytoplankton densities in SW1 and SW2 were 42,000 and 28,800 natural units/m^3. The most abundant phytoplankton in SW1 was blue-green algae, *Oscillatoria* sp. but SW2 data could not clarify the abundance one.

(2) Zooplankton

A total of 9 taxa of zooplankton belong to 3 phyla- Phylum Arthropoda, Phylum Chordata, and Phylum Protozoa were identified. The zooplankton densities in SW1 and SW2 were 12,600 and 38,400 natural units/m^3. The most abundant zooplankton was copepod nauplius with densities ranging from 4,200-19,200 cells/m^3.

Results of plankton identification for this study were shown in ***Table 5.3.2-1***.

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS FEBRUARY, 2015

PLANKTON	Density (1natural unit/cu.m.)		Total
	SW 1	SW 2	
Phytoplankton			
Division Cyanophyta			
Class Cyanophyceae (Blue-Green Algae)			
Order Nostocales			
Family Oscillatoriaceae			
Oscillatoria sp.	8,400	2,400	10,800
Division Chlorophyta			
Class Chlorophyceae (Green Algae)			
Order Chroococcales			
Family Hydrodictyaceae			
Pediastrum duplex		2,400	2,400
Order Zygnematales			
Family Desmidiaceae			
Closterium acerosum	4,200		4,200
Hyalotheca mucosa	4,200		4,200
Staurastrum wildemanni		2,400	2,400
Family Zygnemataceae			
Mougeotia scalaris	4,200		4,200
Zygnema sp.	4,200	4,800	9,000
Arthrodesmus convergens		2,400	2,400
Order Ulothrichales			
Family Ulothrichaceae			
Ulothrix aequalis	4,200		4,200
Division Chromophyta			
Class Bacillariophyceae (Diatom)			
Order Bacillariales (Pennate Diatom)			
Suborder Fragilariineae			
Family Fragilariaceae			
Synedra ulna		2,400	2,400
Suborder Bacillarineae			
Family Naviculaceae			
Frustulia vulgaris		2,400	2,400
Pinnularia sp.	4,200		4,200
Family Eunotiaceae			
Eunotia sp.	4,200	2,400	6,600
Class Fragilariaphyceae			
Order Tabellariales			
Family Tabellariaceae			
Tabellaria frocculosa	4,200		4,200

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS FEBRUARY, 2015 (CONT'D)

PLANKTON	Density ([1]natural unit/cu.m.)		Total
	SW 1	SW 2	
Phytoplankton			
Division Cyanophyta			
Class Cyanophyceae (Blue-Green Algae)			
Order Nostocales			
Family Oscillatoriaceae			
Oscillatoria sp.	8,400	2,400	10,800
Division Chlorophyta			
Class Chlorophyceae (Green Algae)			
Order Chroococcales			
Family Hydrodictyaceae			
Pediastrum duplex		2,400	2,400
Order Zygnematales			
Family Desmidiaceae			
Closterium acerosum	4,200		4,200
Hyalotheca mucosa	4,200		4,200
Staurastrum wildemanni		2,400	2,400
Family Zygnemataceae			
Mougeotia scalaris	4,200		4,200
Zygnema sp.	4,200	4,800	9,000
Arthrodesmus convergens		2,400	2,400
Order Ulothrichales			
Family Ulothrichaceae			
Ulothrix aequalis	4,200		4,200
Division Chromophyta			
Class Bacillariophyceae (Diatom)			
Order Bacillariales (Pennate Diatom)			
Suborder Fragilariineae			
Family Fragilariaceae			
Synedra ulna		2,400	2,400
Suborder Bacillarineae			
Family Naviculaceae			
Frustulia vulgaris		2,400	2,400
Pinnularia sp.	4,200		4,200
Family Eunotiaceae			
Eunotia sp.	4,200	2,400	6,600
Class Fragilariaphyceae			
Order Tabellariales			
Family Tabellariaceae			
Tabellaria frocculosa	4,200		4,200
Class Dinophyceae (Dinoflagellates)			
Order Gonyaulacales			
Family Ceratiaceae			
Ceratium deflexum		2,400	2,400
Order Peridiniales			
Family Peridiniaceae			
Peridinium sp.		4,800	4,800

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS FEBRUARY, 2015 (CONT'D)

PLANKTON	Density ([1]natural unit/cu.m.)		Total
	SW 1	SW 2	
Zooplankton			
Phylum Arthropoda			
Class Crustacea (Crustaceans)			
Subclass Copepoda (Copepods)			
Order Calanoida			
*Copepod larva (Nauplius)	4,200	19,200	23,400
Order Cyclopoida (Cyclopoids)			
*Unidentified Cyclopoids		4,800	4,800
Subclass Brachiopoda			
Order Cladocera			
Family Chydoridae			
Alona sp.		4,800	4,800
Phylum Protozoa			
Class Sarcodina			
Subclass Rhizopoda			
Order Testacida			
Family Arcellidae			
Arcella bathystoma	4,200		4,200
A. vulgaris		2,400	2,400
Family Difflugiidae			
Centropyxis aculeata	4,200		4,200
Phylum Rotifera (Rotifer)			
Class Monogononta			
Order Ploima			
Family Lecannidae			
Lecane papuana		2,400	2,400
Family Trichocercidae			
Trichocerca capucina		2,400	2,400
Order Flosculariacea			
Family Hexarthridae			
Hexarthra mira		2,400	2,400
DENSITY			
Phytoplankton	42,000	28,800	70,800
Zooplankton	12,600	38,400	51,000
TOTAL	54,600	67,200	121,800
DIVERSITY			
Phytoplankton	9	10	16
Zooplankton	3	7	9
TOTAL	12	17	25
Diversity Index	2.46	2.54	

Remark: [1] natural unit for phytoplankton is cell, filament or colony: zooplankton is cell, colony or individual

* = unidentified

SW1: UTM 47P 407860E 1578333N, SW2: UTM 47P 405766E 1580191N

Source: TEAM Consulting Engineering and Management Co., Ltd., February, 2015

(3) Benthos

In total, 3 species of benthos were identified in the benthic samples collected at both sampling stations. They belong to Phylum Annelida, Phylum Arthropoda and Phylum Mollusca. Their densities ranged from 22 to 44 individuals/m^2.

Results of benthos identification are shown in ***Table 5.3.2-2***.

TABLE 5.3.2-2

RESULTS OF BENTHOS SAMPLINGS AND ANALYSIS FEBRUARY, 2015

BENTHOS	STATION		Total (individual/sq.m.)
	SW1	SW2	
PHYLUM ANNELIDA			
Class Oligochaeta (freshwater earthworm)			
Order Pleseiora			
Family Tubificidae			
Tubifex sp.	22		22
PHYLUM ARTHROPODA			
Class Insecta			
Order Diptera			
Family Chironomidae (Midges)			
Chironomus sp.	22	44	66
PHYLUM MOLLUSCA			
Class Gastropoda (Gastropod)			
Order Mesogastropoda			
Family Thiaridae (snail)			
Melanoides sp.		44	44
Total density (individual/sq.m.)	44	88	132
Total diversity (species)	2	2	12

Remark: SW1: UTM 47P 407860E 1578333N
SW2: UTM 47P 405766E 1580191N

Source: TEAM Consulting Engineering and Management Co., Ltd., February, 2015

5.4 THE SOCIO-ECONOMIC COMPONENTS

5.4.1 Studied Villages

The locations of all villages in the study area are indicated in a map in ***Figure 5.1.1-1***. Pagaw Zoon, Min Dut and Yalai Villages are the most adjacent to the proposed project site while Dauk Lauk and Lain Gra Ywa is located behind the mountain range then these two villages are excluded because it will not be reached by any impacts from this temporary power plant. Kyauk Hwey Kone were studied instead of Thit toh Duang due to this village is continuous with Thit toh Taut. All these villages have been established as settlements area for over 100 years. They have the cluster pattern of settlement.

The collection of baseline information on social profile covered nine villages in the study area (see ***Figure 5.1.1-1***). They are Kin Ywar, Pale Gu, Wet Chaung, Pagaw Zoon, Min Dut, The Prae Zun, Kyauk Hwet Kone, Yalai, and Thit toh Taut in Yebyu Township. The project site is about 1.10 km from Pagaw Zoon Village. These nine villages may be affected to some extent by environmental disturbances caused by construction and material transport activities, and traffic safety from transportation of LNG Thailand via ITD main road.

5.4.1.1 Information Collection

Information on social, economic, and health profiles of the nine villages[1] was collected from secondary and primary sources. The secondary information was compiled from statistical records, maps, publications, and online database. The primary information was collected through interviewing sampled persons representing the village and household levels.

At the village level, the interviewed persons were key-informants, including the village headmen and elders of the three villages. At the household level, the interviews covered 185 samples out of a total of 1,939 households. The sampling number and its distribution are shown in ***Table 5.4.1-1*** and were derived using the statistical-based sampling methodology recommended in the references listed below[2].

[2] Israel, Glenn D. 1992.Sampling the Evidence of Extension Program Impact.Program Evaluation and Organizational Development, IFAS, University of Florida.PEOD-5. October
Normann, D.W., F.D. Worman, J.D. Sietbert and E. Modiakgotla, 1995. *The Farming systems Approach to Development and Appropriate Technology Generation*, Food and Agriculture Organization (FAO) of the United Nations, Rome.
Farming Systems Research and Development: Guidelines for Developing Countries. Boulder, Colorado, USA: Westview Press; quoted by Normann et al., 1995.

TABLE 5.4.1-1

DISTRIBUTION OF SAMPLE SIZE FOR THE SOCIO-ECONOMIC SURVEY IN 9 VILLAGES

No.	Village	No. of Household	Population	Sample size
1	Min Dut	92	451	15
2	Pagaw Zoon	410	2,212	30
3	Yalai	348	1,623	25
4	Wet Chaung	104	449	20
5	Pale Gu	100	ND	15
6	Kyauk Whet Kone	205	1,060	20
7	Tha Prae Zun	169	746	15
8	Thit to Daung	100	ND	15
9	Thit toh Taut	411	3,171	30

Source : Key Informant Interview by TEAM Consulting Engineering and Management Co., Ltd., October 2015

The socio-economic study was focused on establishing baseline information on socio-economic components of communities within the study area. The information was collected from secondary and primary sources. The secondary information was mostly at the district or township levels which were found in official statistics, published and unpublished papers and documents made available in the internet. The primary information was at the village level and was obtained through interviewing village headmen and key informants in the nine villages in the ***Table 5.4.1-1***. Questionnaires were used to guide the interviews (see ***Appendix 5G and Appendix 5H***). Results of the interviews are presented in ***Appendix 5I***, and are used to describe the local socio-economic conditions presented in subsequent sections.

5.4.1.2 Demography

The population and number of households in the nine studied villages are presented in ***Table 5.4.1-2***. The total population was 9,989 living in 2,189 households. This gives an average household size of about 4-5 persons. The population in the study area accounted for about 8% of the total population of the Yebyu Township.

At the village level, Pagaw Zoon and Thit toh Taut are the largest villages in term of population. Their populations of over 2,000 each are larger than the others. The smallest village is Kin Ywar where its population is only 180.

TABLE 5.4.1-2

HOUSEHOLDS AND POPULATION IN ALL VILLAGES OF THE STUDY AREA

Village	No. of Household	Population		
		Male	Female	Total
Kin Ywar	42	70	110	**180**
Pale Gu	148	414	452	**866**
Wet Chaung	140	200	300	**500**
Pagaw Zoon	563	1,100	1,189	**2,289**
Min Dut	120	80	120	**200**
The Prae Zun	167	371	389	**760**
Kyauk Hwet Kone	132	573	570	**1,143**
Yalai	466	831	864	**1,695**
Thit toh Taut	411	1,076	1,100	**2,176**
Total of 9 villages in the study area	2,189	4,785	5,204	**9,989**
Township population	N/A	62,259	64,593	**126,798**
% to township population	N/A	7.69	8.06	**7.88**

Sources: Data derived from:

1. Health Profile of Launglon and Yebyu Township, 2013 (information was provided by Health Officer of Launglone and Yebyu Township collected by the Consultant in January, 2015)
2. Interview village headmen key informants in each village, in January 2015 by the Consultant

5.4.1.3 Communities

The people in the study area are rural type people. They have close relationship and help each other in the same village.

5.4.1.4 Education

The majority of villagers in the eight villages completed only elementary education. Some of them had earned mid-education, monastery school and higher education. Only few people are illiterate. ***Table 5.4.1-3*** gives information on education of the villagers in each village.

TABLE 5.4.1-3

EDUCATION LEVEL OF VILLAGERS IN THE PROJECT STUDY AREA

Educational level	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Illiterate	1	0	2	0	0	1	1	2	**7**
Elementary	12	8	11	9	17	22	16	9	**104**
Mid-education	6	4	1	1	6	4	0	1	**23**
Higher education/ university	1	3	0	0	3	3	0	1	**11**
Monastery school	1	0	1	5	0	0	3	2	**12**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.1.5 Vulnerable Groups

Vulnerable groups were identified in eight villages of the study area as shown in ***Table 5.4.1-4***. The number of vulnerable persons is small compared to the total population. The majority of them are household elderly who are over sixty year old. According to key-informants, there is no special program or activity to support these vulnerable people in this area. By social structure, they are taken care of by relatives and neighbors and are living in the communities without difficulties.

TABLE 5.4.1-4

IDENTIFIED VULNERABLE GROUP IN THE PROJECT STUDY AREA

Vulnerable person	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Person with disability	1	0	10	4	0	12	0	0	**27**
Household elderly over 60 years	25	0	20	30	1	45	6	20	**147**
Female household elderly	5	0	15	15	6	24	7	10	**82**
Persons living alone	4	0	0	5	4	2	2	5	**22**
Homeless	1	5	0	0	0	10	0	0	**16**

Source : Key Informant Interview by TEAM Consulting Engineering and Management Co., Ltd. January 2015

5.4.1.6 Ethnic and Minority Groups

The majority of people in the study area belongs to Dawei ethnic group of Bamar. A very small number of Mon and Rakhine people is living in the study area. The Dawei people practice Theravada Buddhism and speak the native language of Dawei. The Mon and Rakhine also practice Theravada Buddhism (see ***Table 5.4.1-5***).

TABLE 5.4.1-5

ETHNIC AND MINORITY GROUP IN THE PROJECT STUDY AREA

Ethnic & Minor Person	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Dawei	146	116	164	127	465	544	135	411	**2,150**
Mon	1	0	1	0	0	4	0	0	**6**
Bamar	1	4	0	3	0	0	3	0	**11**
Karen	0	0	1	1	1	14	2	0	**19**
Rakhine	0	0	1	1	0	1	0	0	**3**
Total	**148**	**120**	**167**	**132**	**466**	**563**	**140**	**411**	**2,189**

Source : Key Informant Interview by TEAM Consulting Engineering and Management Co., Ltd. January 2015

5.4.1.7 Gender Situation

In general, men and women are equal in Myanmar. Therefore, there are no gender issues within the study area. Roles, work division and decision making between men and women are determined by physical conditions, social structure and norms. Decision making on some aspects are on a joint or sharing basis by both male and female. Once a decision is made in a family by one party, it will always be respected by another party. For example, men and women are making decisions together on participation in activities in their community, property purchasing and religious activities. While men play a major role on fishing, farming and political interest, women dominate in cooking and children's education. Although women don't go fishing in the sea due to physical constraints, they do collect aquatic fauna such as shell, clams, and shrimp in mangroves forest to supplement the family fishing.

5.4.1.8 Religion

Buddhism is the only religion adopted by the villagers.

5.4.1.9 Political and Social Organizations

Based on the old cluster type of settlement and social structure, the local communities pay respect to their leaders, heads of villages, and the senior monks and abbots in particular. Normally, there are no formal social groups in the study area. Villagers gather to form a group when required for particular activities. For example, they gather to respond to local needs related to religious and funeral activities. Each group is composed of specified members who have the same interest and are normally led by the village elders. These groups are activated occasionally.

Youth groups are active at the community level. The number of members of each youth group varies from village to village. The group in Mudu has about 300 members. The youth groups help in community functions when required, such as in religious ceremonies, or when the communities ask for their assistance. A firefighting team is established in Mudu but not in the other villages of the study area.

The active community-based organization in the study area is Dawei Development Association-DDA, formed by young and active peoples from Dawei Region. The organization is a rights watchdog that monitors the lurching progression of DSEZ. Their foci are on green development, property rights, land rights, natural resource management for sustainable regional development and education.

5.4.2 Economic Profile

5.4.2.1 Occupation

Table 5.4.2-1A and 5.4.2-1B shows data on household occupations in the eight villages. Agriculture is dominant economic activity among the villagers. There are general wage labor, government officer and employee in less number. Furthermore, some people have alternative occupation such as handicraft, migrant worker, shop keeper and vehicle garage.

TABLE 5.4.2-1A

HOUSEHOLD MAIN OCCUPATION BY VILLAGE IN THE PROJECT STUDY AREA

Occupation*	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Agriculture	7	8	5	12	17	11	15	7	**82**
Government officer	0	1	4	2	1	1	1	0	**10**
Employee	2	0	1	0	0	2	0	1	**6**
Trading	2	1	0	0	1	1	0	1	**6**
Wage labor	3	0	0	0	4	5	3	1	**16**
Handicraft	0	0	1	0	0	1	0	1	**3**
Others**	7	5	4	1	3	9	1	4	**34**

Remarks : */ Some household have more than one occupation

**/ Grocery shop, Purchase of agricultural products etc.

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-1B

HOUSEHOLD SUPPLEMENTARY OCCUPATION BY VILLAGE IN THE PROJECT STUDY AREA

Occupation*	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Agriculture	2	0	1	1	3	2	1	2	**12**
Government officer	0	0	1	1	1	1	0	0	**4**
Employee	0	0	1	0	1	1	0	0	**3**
Trading	1	0	0	0	1	1	2	0	**5**
Wage labor	1	1	2	0	1	0	6	3	**14**
Handicraft	0	0	0	0	0	0	0	0	**0**
Others**	17	14	10	13	19	25	11	10	**119**

Remarks : */ Some household have more than one occupation

**/ Grocery shop, Purchase of agricultural products etc.

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd. January 2015

In line with the occupations, many villagers are unemployed which means the agricultural sector becomes more significant toward their living. As well as agriculture, the daily wage paid labor is important for the villages' economics and villagers' cost of living.

Daily wages paid to casual workers are slightly difference between male and female adults, and between boys and girls (see ***Table 5.4.2-2***). Boys and girls get less wages than adults which could be considered normal.

TABLE 5.4.2-2

AVERAGE EMPLOYMENT AND WAGE RATE IN THE PROJECT STUDY AREA

Type of Labor	Average Employment Rate (Kyat)
Boy	1,444
Girl	2,556
Male adult	638,444
Female adult	559,056
Male elderly	667
Female elderly	556

Remark : Rate of exchange 1,283 kyat = 1 USD
Source : Key Informant Interview by TEAM Consulting Engineering and Management Co., Ltd, January 2015

There is also labor who is working outside the eight villages of the project study area: the average number of labor working outside villages is 2 persons per household. Mostly, the labor would migrate to work in Thailand where the compensation rate is higher, while some of them are working in nearby district. Those labors working at Thailand, are working as the factory employee, construction labor, rubber orchard labor, fishery, and housemaid, etc. (see ***Table 5.4.2-3, 5.4.2-4A and 5.4.2-4B***).

TABLE 5.4.2-3

AVERAGE LABOR WORKING OUTSIDE THE VILLAGES OF THE PROJECT STUDY AREA

Person/household	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Average
Average person working outside village	3	2	3	2	2	3	2	2	**2**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd. January 2015

TABLE 5.4.2-4A

WORK PLACE WHERE LABOR WORKING OUTSIDE THE VILLAGES OF THE PROJECT STUDY AREA

Place/District (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Thailand	93.75	75.00	100.00	100.00	87.50	93.75	80.00	60.00	**89.87**
Other village	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laung Lone	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00
Kanbuak	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
Kaul Thoung	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd. January 2015

TABLE 5.4.2-4B

TYPE OF WORK OF LABOR WORK OUTSIDE THE VILLAGES OF THE PROJECT STUDY AREA

Type of work (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Factory employee	6.25	0.00	0.00	8.33	25.00	31.25	0.00	0.00	**11.39**
House maid	6.25	0.00	0.00	0.00	0.00	6.25	0.00	20.00	**3.80**
Construction labor	0.00	12.50	11.11	0.00	12.50	6.25	20.00	20.00	**7.59**
Garden/farm labor	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	**1.27**
Rubber orchard	0.00	0.00	33.33	8.33	0.00	0.00	0.00	0.00	**5.06**
Fishery	0.00	0.00	11.11	8.33	0.00	0.00	20.00	0.00	**3.80**
Other	75.00	75.00	33.33	33.33	37.50	43.75	40.00	60.00	**50.63**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.2 Agricultural Production System

Most of villagers, in the eight villages, live on agriculture though their agricultural production is more modernized in alignment with the market demand. Rubber tree plantation and rubber production is practiced by most of villagers then it is cashew and betel nut. On the other hand, small number of the villagers, found to practice in rice crop, local plant and household-consumption plant (see ***Table 5.4.2-5A and 5.4.2-5B***).

TABLE 5.4.2-5A

AGRICULTURAL ACTIVITIES OF HOUSEHOLD IN THE PROJECT STUDY AREA

Type of crop (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Rubber	28.00	42.86	34.48	45.16	39.29	32.31	31.25	26.19	**34.74**
Cashew	24.00	15.15	20.69	34.48	25.00	27.69	28.13	16.67	**24.68**
Betel nut	24.00	21.21	31.03	9.68	12.50	12.31	25.00	11.90	**17.21**
Lime/lemon	4.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	**0.65**
Djeankol bean	4.00	3.03	0.00	0.00	1.79	3.08	0.00	4.76	**2.27**
Rice/paddy	8.00	3.03	3.45	9.68	8.93	10.77	3.13	11.90	**8.12**
Chili	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.32**
Pepper	4.00	0.00	0.00	0.00	1.79	0.00	3.13	2.38	**1.30**
Sugar cane	0.00	3.03	3.45	0.00	0.00	0.00	0.00	0.00	**0.65**
Mango	0.00	3.03	0.00	0.00	1.79	4.62	0.00	7.14	**2.60**
Vegetable	0.00	0.00	3.45	0.00	1.79	1.54	0.00	2.38	**1.30**
Coconut	0.00	0.00	3.45	0.00	1.79	1.54	3.13	0.00	**1.95**
Durian	0.00	0.00	0.00	0.00	1.79	1.54	3.13	0.00	**0.97**
Bamboo	0.00	0.00	0.00	0.00	0.00	1.54	3.13	2.38	**0.65**
Palm oil tree	0.00	0.00	0.00	0.00	0.00	1.54	0.00	2.38	**0.32**
Marian	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	**0.32**
Seasonal fruits	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	**0.32**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-5B

AVERAGE INCOME FROM AGRICULTURAL PRODUCTION OF HOUSEHOLD IN THE PROJECT STUDY AREA

Type of crop (Kyat/Crop)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Rubber	104.761.90	45,000.00	133.333.33	2.151.111.13	472.179.46	526.944.43	170.833.30	204.444.47	**476,076.00**
Cashew	29.000.00	3.666.67	83.333.37	849.084.47	223.717.92	498,611.10	229,083.30	368,111.13	**285.575.99**
Betel nut	20,000.00	111.666.67	51,066.67	157.777.80	96.794.85	407,777.77	22.916.65	141.111.13	**126.138.94**
Lime/lemon	19,047.62	-	-	-	-	-	-	-	**2,380.95**
Djeankol bean	19.047.62	1.666.67	-	-	4,166.67	-	-	3.333.00	**3,526.75**
Rice/paddy	16.666.67	-	13,333.33	206.666.67	391.666.67	422.707.69	-	640.777.80	**211,477.35**
Pepper	-	-	-	-	-	12,820.50	11.666.65	15.000.00	**4,935.89**
Sugar cane	-	3,333.33	13.333.33	-	-	-	-	-	**2,083.33**
Mango	-	-	-	-	5.500.00	12.820.50	-	1.113.777.80	**141.512.29**
Vegetable	-	-	13,333.33	-	800.00	11,538.46	-	-	**3.208.97**
Coconut	-	-	-	-	-	-	-	1,111.111.13	**138,888.89**
Durian	-	-	-	-	2.500.00	12.820.40	-	-	**1.2915.05**
Bamboo	-	-	-	-	1.666.67	-	-	15.000.00	**2,083.33**
Palm oil tree	-	-	-	-	-	-	-	8,000.00	**1,000.00**
Marian	-	-	-	-	-	-	-	8,000.00	**1,000.00**
Seasonal fruits	-	-	-	-	-	-	-	13.333.33	**1,666.67**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

As see in table above, rubber, cashew and betel nut are the three highest agricultural income, which are planted in all eight villages. Some plants are planted in priority of household consumption, so there is no income from those plants.

Apart from agriculture, livestock is significant source of livelihood among villager; small number of household has livestock in the small number too. It is clear that households raise their livestock for the purpose of household consumption (see ***Table 5.4.2-6***). Poultry is the common livestock among the villagers, their meat and egg are the cheapest source of protein villagers can acquire, while cattle is raised for farming purpose.

TABLE 5.4.2-6

HOUSEHOLD LIVESTOCK IN THE PROJECT STUDY AREA

Household Livestock	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Household with livestock									
- No, have not	18	12	6	13	23	25	10	15	**122**
- Yes, have	3	3	9	2	3	5	10	0	**35**
Type of livestock									
- cattle	1	0	3	0	0	1	1	0	**6**
- swine	0	0	4	0	2	0	3	0	**9**
- poultry	2	3	7	2	2	5	10	0	**31**
- other	0	0	0	0	0	0	2	0	**2**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.3 Household Income and Expenditure

Table 5.4.2-7 presents average annual household income and expenditure of the eight villages expressed in Kyat equivalent at the exchange rate of 1,283 kyat to 1 USD on 3 September 2015.The eight villages are significantly different in average annual household incomes. This reflects the poor condition and the uncertainty in their economic system. Their livelihoods are seem to rely mainly on agriculture for 859,584.68 kyat annually. Yet, their other source of income, such as, agro-forestry, livestock and aqua-culture, is also significant for their cost of living; the villagers of the eight villages earn 3,409,852.62 kyat annually (***Table 5.4.2-5A and 5.4.2-5B***).

The average annual household expenditure (***Table 5.4.2-8***) was similar to average annual household income in the eight villages. The main expenditure is villager's household expenditure, food and goods, then their farm expenditure, seed and fertilizer. For farm expenditure, six of eight villages have average farm expenditure, which is higher than their farm income; this condition hints the collapsing of agricultural sectors in the area. Aligning with farm expenditure their total expenditure is higher than their total income; this indicates the condition of living of the villagers. Therefore, most households in the villages would have no saving and households with debt would be common (***Table 5.4.2-9***).

TABLE 5.4.2-7

ANNUAL AVERAGE OF HOUSEHOLD INCOME OF VILLAGES IN THE PROJECT STUDY AREA

Average income (Kyat/year)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Average
Farm income	111,380.95	273,833.34	390,400.01	1,346,666.66	1,083,475.43	341,333.34	512,921.06	735,000.00	**859,584.68**
Off-farm income	795,238.10	1,114,666.67	333,333.33	1,820,000.00	503,846.15	1,395,833.33	156,500.00	306,666.67	**414,265.20**
Other source	2,374,285.71	5,230,000.00	2,480,133.33	3,693,476.92	3,578,300.00	3,578,300.00	1,450,625.00	3,238,666.67	**3,409,852.62**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-8

ANNUAL AVERAGE OF HOUSEHOLD EXPENDITURE IN THE PROJECT STUDY AREA

Average expenditure (Kyat/year)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Average
Farm expenditure	175,476.19	637,066.67	2,375,886.67	423,333.33	474,076.92	1,003,600.00	1,034,000.00	468,666.67	**827,760.81**
Household expenditure	182,142.86	6,480,000.00	159,166.67	183,333.33	216,634,.60	197,483.33	99,750.00	152,666.67	**958,897.18**
Total expenditure	3,660,766.67	4,343,966.67	6,844,253.33	5,441,680.00	4,771,765.38	6,092,935.00	4,828,842.50	5,740,866.67	**5,227,009.53**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-9

SUFFICIENCY OF HOUSEHOLD INCOME IN THE PROJECT STUDY AREA

Sufficiency of household income (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Average
Sufficient	4.76	26.67	0.00	26.67	23.08	23.33	5.00	33.33	**17.83**
Insufficient	95.24	73.33	100.00	73.33	76.92	76.67	95.00	66.67	**82.17**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.4 Land Ownership

Land in the eight villages is used for farming and housing. Farm land is usually located outside the village, while residential area is located inside. It found that villagers holding at least 2 plots; one is on the outside the village, another is on inside. The inside village plot is used for residential area and housing thus it is smaller average area is 1.5 acre. The outside village plot is used for agriculture and farming this it is bigger average area is 7.8 acre (see ***Table 5.4.2-10***).

TABLE 5.4.2-10

CURRENT LAND HOLDING IN THE PROJECT STUDY AREA

Current land holding	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Land holding inside village									
- Average Number of plot (plot)	1	1	1	1	1	1	1	1	**1**
- Average Area (acre)	0.7	1.7	1.1	2.9	1.3	1.5	1.0	1.7	**1.5**
Land holding outside village									
- Average Number of plot (plot)	1	1	1	2	1	1	1	1	**1**
- Average Area (acre)	4.2	5.6	4.9	9.3	8.6	4.8	7.3	5.4	**6.3**
Total land holding									
- Average Number of plot (plot)	2	2	2	3	2	2	2	2	**2**
- Average Area (acre)	5.0	7.5	6.1	12.2	9.9	6.2	8.3	7.1	**7.8**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.5 Health Care

Health issue in the project study area is concern villagers' sanitary, waste disposal and disease and treatment. Most of the households have latrine type of toilet. They mostly burn their garbage, while some may bury it. To dispose household used water, they prefer to pour water on the dirt and feed their domestic animal (see ***Table 5.4.2-11***).

TABLE 5.4.2-11

HOUSEHOLD SANITARY AND WASTE MANAGEMENT IN THE PROJECT STUDY AREA

Sanitary and waste management (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Type of toilet									
- Latrine	0.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	**97.45**
- No latrine	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	**2.55**
Garbage disposal									
- Littering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
- Burying	4.76	0.00	0.00	0.00	0.00	3.33	0.00	0.00	**1.27**
- Burn	85.71	73.33	93.33	100.00	88.46	83.33	85.00	80.00	**85.99**
- Other mean	9.52	26.67	6.67	0.00	11.54	13.33	15.00	20.00	**12.74**
Used water disposal									
- Pour onto the dirt	80.95	66.67	93.33	93.33	88.46	96.15	85.00	80.00	**84.08**
- Pour into water source	4.76	6.67	0.00	0.00	0.00	0.00	0.00	0.00	**1.27**
- Other mean	14.29	26.67	6.67	6.67	11.54	19.23	15.00	20.00	**14.65**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

Common diseases, found among villagers, is the common fever and hypertension, while the infectious and transferring diseases, such as, malaria and flu are barely found. If villagers have any symptom, they will seek treatment from local clinic, some buy medicine by themselves. Only the few will go to the hospital (see ***Table 5.4.2-12***).

TABLE 5.4.2-12

COMMON DISEASE AND TREATMENT IN THE PROJECT STUDY AREA

Disease and Treatment (%)	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Type of Disease									
- Common fever	25.71	38.10	38.10	33.33	32.69	36.17	39.39	40.00	**35.74**
- Hypertension	17.14	14.29	4.76	9.52	9.62	10.64	15.15	12.00	**12.05**
Type of Treatment									
- Clinic	28.57	47.62	57.14	42.86	40.38	53.19	27.27	35.00	**41.37**
- Buy medicine	22.86	23.81	4.76	4.76	30.77	8.51	18.18	10.00	**17.27**
- See a doctor	28.57	28.57	19.05	9.25	15.38	10.64	36.36	25.00	**20.88**
- Hospital	0.00	0.00	19.05	38.10	3.85	8.51	9.09	10.00	**9.24**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.6 Infrastructure

The eight villages are supplied with electricity, most of it is from the village electricity system, while some use the diesel engine to generate electricity, as well as small number of solar power generator. However, there is still small number of household which cannot access to electricity power. The average payment for electricity per month is 200,704 kyat (see ***Table 5.4.2-13***).

TABLE 5.4.2-13

ELECTRICITY IN THE PROJECT STUDY AREA

Electricity Used	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Type of electricity (%)									
- diesel engine generator	14.29	20.00	6.67	0.00	7.69	10.00	25.00	26.67	**13.38**
- village electricity	71.43	33.33	53.33	86.67	38.46	66.67	0.00	40.00	**49.04**
- solar power generator	9.52	20.00	20.00	0.00	30.77	10.00	50.00	20.00	**8.92**
- No electricity	0.00	6.67	0.00	6.67	0.00	0.00	25.00	0.00	**4.46**
Payment rate/month									
Average payment (kyat)	6,655	48,000	939,810	18,933	146,245	61,136	370,600	14,250	**200,704**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

Apart from electricity, water supply for the village especially drinking and cooking water is quite good in quality. Mostly, water source is shallow pond then pumping well and yard-pond connection. Though villager barely disinfection the water before drinking and cooking. Yet, some may boil or chlorinate water before drinking and cooking. Washing and cleaning water also comes from the same source and the villager barely disinfection the water too. However, the quality of washing water is lesser than drinking water (see ***Table 5.4.2-14A and 5.4.2-14B***).

TABLE 5.4.2-14A

DRINKING AND COOKING WATER IN THE PROJECT STUDY AREA

Drinking & Cooking Water	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Water source (%)									
- Pumping well	14.29	26.67	0.00	0.00	0.00	3.33	0.00	13.33	**6.37**
- Shallow pond	52.38	60.00	93.33	100.00	100.00	93.33	100.00	86.67	**86.62**
- Yard connection (pond)	33.33	13.33	0.00	0.00	0.00	0.00	0.00	0.00	**5.73**
Disinfection (%)									
- No disinfection	38.10	33.33	60.00	73.33	50.00	60.00	80.00	40.00	**54.78**
- Boiling	28.57	40.00	13.33	13.33	26.92	23.33	10.00	46.67	**24.84**
- Chlorinating	28.57	26.67	20.00	13.33	23.08	16.67	10.00	13.33	**19.11**
- Other	4.76	0.00	4.76	0.00	0.00	0.00	0.00	0.00	**1.27**
Quality of water (%)									
- Good	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	**100.00**
- Poor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-14B

WASHING AND CLEANING WATER IN THE PROJECT STUDY AREA

Washing & Cleaning Water	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Water source (%)									
- Pumping well	14.29	20.00	0.00	0.00	0.00	3.33	0.00	13.33	**5.73**
- Shallow pond	47.62	66.67	73.33	46.67	88.46	86.67	100.00	86.67	**76.43**
- Yard connection (pond)	33.33	13.33	0.00	0.00	0.00	0.00	0.00	0.00	**5.73**
Disinfection (%)									
- No disinfection	33.33	33.33	33.33	26.67	38.46	53.44	80.00	40.00	**43.95**
- Boiling	14.29	40.00	13.33	6.67	26.92	23.33	10.00	46y.67	**22.29**
- Chlorinating	28.57	20.00	20.00	13.33	23.08	16.67	10.00	0.00	**17.20**
- Other	4.76	0.00	4.76	0.00	0.00	0.00	0.00	0.00	**1.27**
Quality of water (%)									
- Good	95.24	100.00	73.33	46.67	88.46	93.33	100.00	100.00	**88.54**
- Poor	4.67	0.00	26.67	53.33	11.54	6.67	0.00	0.00	**11.46**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.7 Satisfaction of the Living Condition

The study shows that most of the villagers are very satisfied with their living conditions, including environmental, social welfare, and neighborhood condition. There is still good environment and ecological system in their villages. The community is founded with the strong social connection of the neighborhood. Yet, they may less satisfied on crop production condition which is lead to their satisfaction of their life current situation. Many of them have problem of poverty due to the lower income from agricultural production and the higher cost of them (see ***Table 5.4.2-15A and 5.4.2-15B***).

TABLE 5.4.2-15A

SATISFACTION OF THE LIVING CONDITION IN THE PROJECT STUDY AREA

Living Condition	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Environmental Condition (%)									
- Satisfied	95.24	100.00	100.00	93.33	100.00	96.67	90.00	100.00	**96.82**
- Not satisfied	4.76	0.00	0.00	4.76	0.00	3.33	10.00	0.00	**3.18**
Social Welfare Condition (%)									
- Satisfied	85.71	86.67	100.00	100.00	96.15	96.67	100.00	93.33	**94.90**
- Not satisfied	14.29	13.33	0.00	0.00	3.85	3.33	0.00	6.67	**5.10**
Neighborhood Condition (%)									
- Satisfied	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	**100.00**
- Not satisfied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Crop Production Condition (%)									
- Satisfied	76.19	80.00	80.00	80.00	88.46	70.00	95.00	86.67	**81.53**
- Not satisfied	23.81	20.00	20.00	20.00	11.54	30.00	5.00	13.33	**18.47**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

TABLE 5.4.2-15B

SATISFACTION OF LIFE CURRENT SITUATION IN THE PROJECT STUDY AREA

Item	Pale Gu	Min Dut	Tha Byay Zun	Ktouk Hwet Korn	Yalai	Pagaw Zoon	Wat Chaung	Thit to Thot	Total
Life Current Situation (%)									
- Satisfied	80.95	93.33	93.33	86.87	100.00	96.67	75.00	86.67	**89.81**
- Not satisfied	19.05	6.67	6.67	13.33	0.00	3.33	25.00	13.33	**10.19**
Cause of Nonsatisfaction									
- Poverty	50.00	100.00	0.00	50.00	0.00	100.00	80.00	100.00	**68.75**
- Health problem	0.00	0.00	100.00	50.00	0.00	0.00	0.00	0.00	**12.50**
- Social problem	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	**6.25**

Source : Household questionnaire by TEAM Consulting Engineering and Management Co., Ltd, January 2015

5.4.2.8 Forestry

The forest area covers only around 1.29% of the total study area because, in the past, particularly area especially in Pagaw Zoon Village was concession area for palm oil plantation area. The majority is mixed deciduous forest. This forest is resources for additional food and energy for villagers of Wet Chaung and Pale Gu. Apart from collecting woods for building and fuel, villagers also produce charcoal for sale.

5.4.2.9 Industries

In the past, particularly area of the project area was concession area for palm oil industry. The concession was ceased. There are currently no industries in the project area.

5.4.2.10 Mineral Development

No mining activities in the project area.

5.4.2.11 Tourism

There are no tourism attraction sites within the project area. However, there are two locations of tourism potential adjacent to the project area-Nebule and Maungmagan beaches. Nabule beach is about 32 km northwest of Dawei and 11. 5 km west of the Project site. The beach is very long and empty stretch of brilliant white sand. At the north end of Nabule beach is a hillside pagoda with a small restaurant nearby. This location offers great views along the beach and out to the sea (***Photo 5.4.2-1***).

PHOTO 5.4.2-1 : VIEWS AT NABULE BEACH

Maungmagan beach is about 12 km northwest of Dawei and 17. 36 km southwest of the Project site. The beach is currently being developed and upgraded to be a tourism site. There are several simple restaurants serving fresh seafood (***Photo 5.4.2-2***).

PHOTO 5.4.2-2 : VIEWS AT MUANGMAGAN BEACH

5.4.3 Health Profile

5.4.3.1 Access to Health Services

All villages in study area has no hospital. Only two rural health sub-centre are existed at Pagaw Zoon and Thi toh Tuat villages. Each sub-centre has one nurse assistant, with inadequate equipped. Hence villagers have to travel about 3 - 13 km to hospital in Yebyu. Their preference is the township hospital as it is better equipped than health care center with 25 beds, 2 physicians and 16 nurses.

5.4.3.2 Access to Water Supply

The villagers have no access to public water supply. They rely on individual household sources and methods of supply. Groundwater (bored and shallow wells) and rain water are the sources of supply. The water are still in good quality and suitable for domestic use.

5.4.3.3 Mortality and Morbidity

According to information derived from the interviews of village headmen and key informants, there were no serious health problems in the nine villages in the study area. The mortality and morbidity rates were low. In 2014, few cases of headache, high blood pressure, flu and diabetes were recorded. Exception is about 10% of Wet Chaung population was infected by malaria. These diseases were also recorded as the five leading diseases of the townships. However, there were no reports on mortality caused by these diseases.

Table 5.4.3-1 presents data on single leading causes of morbidity in Yebyu Township in year 2012 and 2013. The data shows that Malaria, ARI, Diarrhea, Dysentery and TB are most common causes of morbidity in this township. Unfortunately, there were no data on cause of mortality in Yebyu Township. The data on morbidity reflects the need for clean potable water, household sanitation and food hygiene, including clean external environment, particularly garbage and wastewater disposal.

5.4.3.4 Nutrition Levels

There are no data on nutrition levels specific to the villages in the project area. The two year statistic (2012 – 2013) of nutrition has extracted from Public Health Profile of Yebyu Township. Some key items are presented in ***Table 5.4.3-2***. This presents low percentage of newborns with LBW, under five children with severe underweight and under five children with underweight. However the people are high qualified consumption of adequately iodized salt in general.

TABLE 5.4.3-1

FIVE LEADING CAUSES OF MORBIDITY/MORTALITY IN LAUNGLON AND YEBYU TOWNSHIP

No	Yepyu Township			
	2012		2013	
	Morbidity	Mortality	Morbidity	Mortality
1	Malaria	N/A	Malaria	N/A
2	ARI	N/A	Diarrhea	N/A
3	Diarrhea	N/A	ARI	N/A
4	Dysentery	N/A	Dysentery	N/A
5	TB	N/A	TB	N/A

Remark: ARI = Acute Respiratory Infection, TB =Tuberculosis

Source: Township Health Profile of Yebyu (2013)

TABLE 5.4.3-2

NUTRITION INFORMATION IN YEBYU TOWNSHIP

Percent	Yebyu Township	
	2012	2013
Percentage of newborns with LBW	0.20	0.6
Percentage of under five children with severe underweight	0.08	0.21
Percentage of under five children with underweight	3.04	5.2
Percentage of villages / wards with qualified consumption of adequately iodized salt	93.54	96.0

Remark: LBW = Low Birth Weight

Source: Township Health Profile of Yebyu (2013)

5.4.3.5 Communicable Diseases

Communicable diseases in all villages in the project area appear to be common cold, malaria, Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) were recorded. These diseases, except HIV were also recorded as the five leading diseases of the townships. However, there were only few cases of them appeared.

5.4.4 Infrastructure Facilities

5.4.4.1 Water Use and Water Supply

All villages have no piped water supply system. Groundwater and rain water are two main supply sources which adequately provide water of good quality for domestic consumption. Groundwater is accessed through bore wells or dug wells. Additionally, particularly of Wet Chaung and Yalai use water from Yalai Chaung which run through the project area from northward to southward. The water from Yalai Chaung is available all year round.

5.4.4.2 Hospital, Medical Clinic

Villagers of all villages in the study area rely on hospital in Yebyu. The distance from this hospital to their locations is around 3 - 13 km far. Other choices of medical service are Medical Unit at ITD Main Camp located around 17 km. from the study area and Dawei general hospital which located around 18 km from Yebyu.

5.4.4.3 School and Religious Facilities

The number of existing schools and religious facilities in the project area are shown in ***Table 5.4.4-1.*** All three villages have primary schools, monasteries and cemeteries. Secondary school however exists only in Mudu.

TABLE 5.4.4-1

NUMBER OF SCHOOLS AND RELIGIOUS FACILITIES

Social facilities	Primary School	Secondary School	Temple & Monastry	Cemetery
Dauk Lauk	1		1	
Kin Ywar			1	
Wet Chaung	1		1	
Pagaw Zoon	1		2	1
Min Dut	1		1	
Yalai	1	1	2	1
Thit to Taut	1		1	
Thit to Daung	1		1	
Tha Prae Zun	1		1	
Pale Gu	1		1	1

Source : Survey by TEAM Consulting Engineering and Management Co., Ltd., January 2015

5.4.4.4 Road Transportation

Motorcycle is the most common mode of transportation, followed by bicycle. The roads linked between the project site to all village in the project are laterite roads which mainly approved by ITD. The road between Yalai, Pagaw Zoon and Pale Gu to Yebyu is asphaltic road approved by Myanmar Official. The main for the project is ITD main road connected Dawei SEZ to Thai Border.

(1) Road Condition

Roads connect among all villages in the study area are unpaved laterite road about 4-6 m wide. The main road within the study area is two traffic lanes unpaved laterite road with approximately 10 m wide, constructed by ITD in order to connect DSEZ to Thai border at Phu Nam Ron. This road is mainly used by ITD in purpose of transport workers and materials from Thailand to ITD camp site. Locals are allows to use this road. Most of the local roads in the study area can use all year round. ***Figure 5.4.4-1*** is a map showing existing roads in the study area. Existing road conditions at several locations are shown in ***Photo 5.4.4-1***.

(2) Traffic volume

To establish base line data on traffic conditions of study area, traffic recording was carried out on ITD road near **Dawei River Bridge** (UTM 47P 412478E 1580203N). Traffic counting was done manually by observers, number and types of vehicles passing the station were recorded for 12 hours from 6:00 am to 6:00 pm. The traffic was performed on 30 and 31 January, 2015, covering one working day and one holiday. Data on of traffic condition were used to calculate the V/C ratios.

Traffic condition is normally assessed in terms of road capacity relative to traffic volume, V/C ratio is commonly used for this purpose. This ratio is considered as a baseline traffic flow condition and will be further utilized to evaluate the consequences of the Project's impact on local traffic.

The location of the traffic counting station is indicated on a map in ***Figure 5.4.4-1*** and ***Photo 5.4.4-1***.

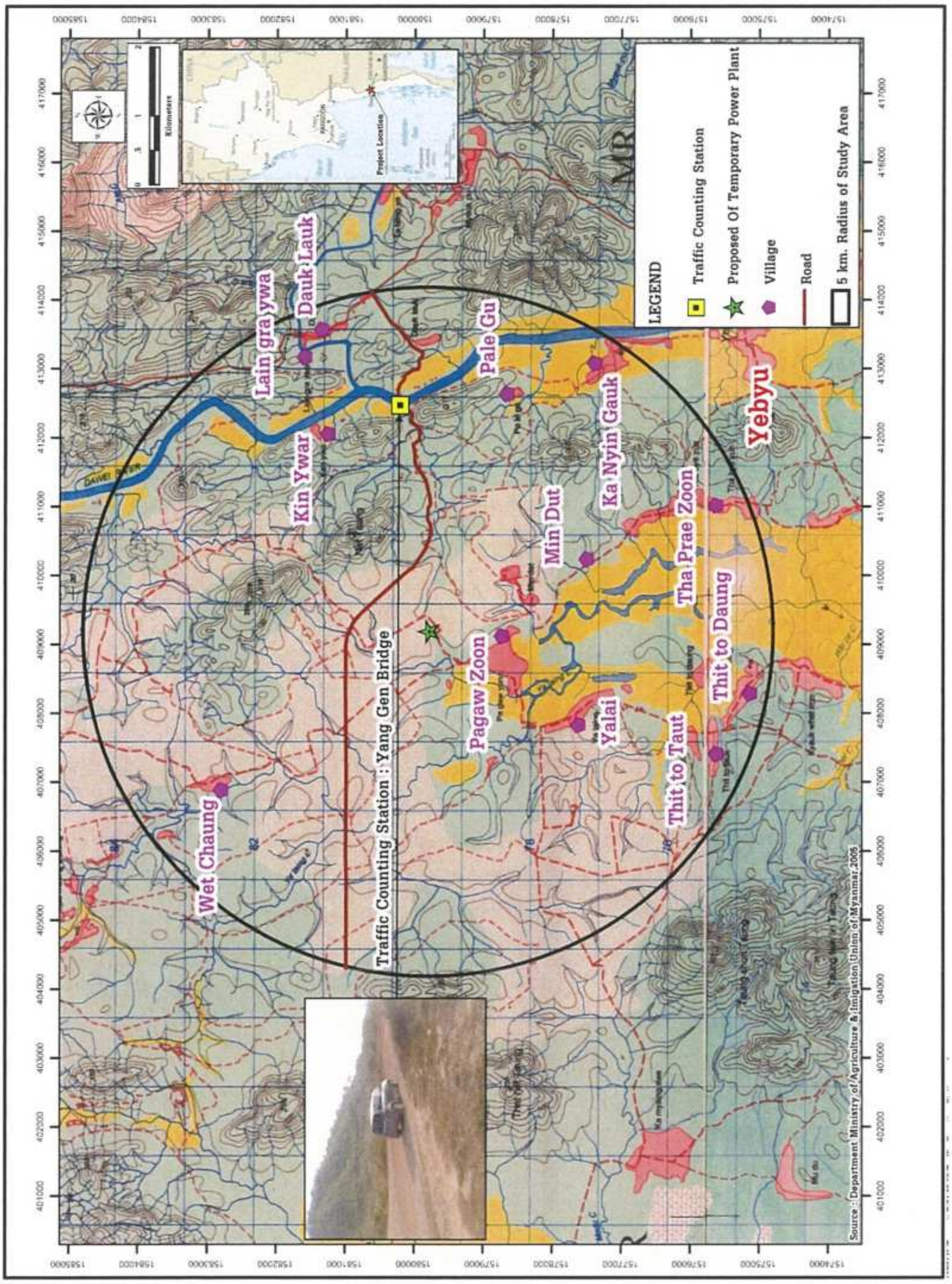


FIGURE 5.4.4-1: LOCATION OF TRAFFIC COUNTING STATION

Existing condition of road at Kin Ywar Village

Existing condition of road at Yalai Village

Existing condition of road at Pale Gu Village

Road upgrading at Pagaw Zoon Village

Existing condition of ITD road in front of the site

Existing condition of ITD road at Traffic counting 1 (TC1)

PHOTO 5.4.4-1 : EXISTING CONDITION OF ROAD AND TRAFFIC COUNTING WITHIN PROJECT STUDY AREA

The calculation of V/C ratios follows the following steps:

1) Convert the number of vehicles from observation to Passenger Car Unit (PCU) by using Passenger Car Equivalents (PCE) factors specified for each type of vehicles as indicated in ***Table 5.4.4-2***. This is used as "Traffic Volume" or "V".

TABLE 5.4.4-2

PASSENGER CAR EQUIVALENT FACTOR OF EACH VEHICLE

Types of Vehicles	Passenger Car Equivalents Factor (PCE)
Passenger Car and Taxi	1.00
Light bus	1.50
Medium bus	1.50
Light truck	1.00
Crane and grader	2.10
Medium truck (6 wheeled truck)	2.10
Heavy truck (10 wheeled truck)	2.50
Heavy truck including trailer	2.50
Bicycle, Tricycle	0.33
Motorcycle	0.33

Source: Paopong, 1997 and DOH of Thailand, 2011.

2) Select an applicable carrying capacity or "C" for the road (***Table 5.4.4-3***). The capacity can be estimated following the highway capacity manual (HCM, 2000).

3) Ratio of V/C can be calculated using the following formula

$$\text{V/C ratio} = \frac{\text{Traffic Volume}}{\text{Carrying Capacity of Respective Road}}$$

TABLE 5.4.4-3

TRAFFIC CARRYING CAPACITY AND HIGHWAY TYPES

Highway Types	Carrying Capacity of Traffic Volume (PCU/hr.)
2 way road with more than 2 traffic lanes/multi-traffic lanes	2,000 (per 1 traffic lane)
2 way road with 2 traffic lanes	2,000 (for both directions)
2 way road with 3 traffic lanes	4,000 (for both directions)

Source: Paopong, 1997

V/C ratio can be used to compare with the values defined by the Division of Traffic Engineering (Thailand) as shown in ***Table 5.4.4-4*** for indication of present traffic condition.

TABLE 5.4.4-4

RANGE OF V/C RATIO FOR TRAFFIC CONDITION CLASSIFICATION

Range of V/C Ratio	Classification of Traffic Condition
0.88 – 1.00	Severe traffic congestion
0.67 – 0.88	Heavy traffic congestion
0.52 – 0.67	Satisfactorily traffic flow
0.36 – 0.52	Good traffic flow
0.20 – 0.36	Very good traffic flow

Source: Paopong, 1997

(a) Results of Traffic Counting

The results of traffic counting are presented in four tables in ***Appendix 5J***. The data show traffic volume of 10 categories of vehicles as follows: (i) passenger car; (ii) light bus; (iii) medium bus; (iv) crane and grader; (v) light truck: (vi) six-wheeled truck; (vii) ten-wheeled truck; (viii) heavy truck including trailer; (ix) bicycle and tricycle; and (x) motorcycle.

The traffic volume observed can be summarized as follows.

- Motor cycles were the majority of vehicles followed by passenger car.
- Most of motor cycles come from villages nearby project site and ITD camp site.

(b) Traffic Conditions

The V/C ratio at the recording point on the working day and holiday were 0.02 and 0.01, respectively. However, the ratios were much lower within the range of 0.20 – 0.36. These figures indicate very high traffic flow on the ITD road during the study period and its capacity could bear more traffic volume. Details on traffic condition was shown in ***Table 5.4.4-5***.

TABLE 5.4.4-5

EXISTING TRAFFIC CONDITION AT DAWEI RIVER BRIDGE JANUARY 30 – 31, 2015

Types of vehicles	PCE	Numbers of vehicles and direction							
		30 Jan 2015 (workday)				31 Jan 2015 (holiday)			
		To ITD Camp		To Thai Border		To ITD Camp		To Thai Border	
		Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day
Bicycle	0.33	4	1.32	4	1.32	4	1.32	2	0.66
Motorcycle	0.33	225	74.25	235	77.55	197	65.01	214	70.62
Passenger Car	1.00	18	18.00	23	23.00	23	23.00	31	31.00
Light Bus	1.50	4	6.00	6	9.00	7	10.50	3	4.50
Medium Bus	1.50	4	6.00	4	6.00	5	7.50	5	7.50
Light Truck	1.00	9	9.00	15	15.00	13	13.00	15	15.00
Medium Truck	2.10	18	37.80	22	46.20	14	29.40	14	29.40
Heavy Truck	2.10	7	14.70	13	27.30	3	6.30	3	6.30
Other	1.30	1	1.30	0	0	0	0	0	0
Total in each lane		290	168.37	322	205.37	266	156.03	287	164.98
Total car/day in both lane		612				553			
Total PCU/day in both lane		373.74				321.01			
PCU/Hr in each lane*		14.03		17.11		13.00		13.75	
PCU/Hr. in both lane*		31.14				26.75			
Carrying Capacity		2,000							
V/C Ratio		0.02				0.01			
Traffic Condition		Very high traffic flow				Very high traffic flow			

Remark: *Average of 30 - 31 January 2015 Values

** Traffic volume per 12 hours according to Traffic counting 30 – 31 January 2015

Source: Traffic survey by TEAM Consulting Engineering and Management Co., Ltd., January 2015

5.4.4.5 Airport

Dawei Airport is about 20 km away from the project area. It serves only domestic flight.

5.4.4.6 Transmission Lines

There is no transmission line in the project vicinity.

5.4.4.7 Electricity

All villages in the study area have no public electricity supply. They have electricity supply for lighting only during the night. The electricity is provided by a small privately owned diesel generator of each village. The users pay the generator owner a monthly fee for the electricity consumption. Some houses have their own generator to generate power for household use.

5.4.4.8 Pipelines

No oil or gas pipelines exist in the project area.

5.4.4.9 Energy Sources

Fire wood, oil, and solar energy are energy sources for the villagers.

5.4.4.10 Waste Management

There are no proper solid waste management and sanitation system in the study area. Domestic solid wastes are collected inside villages without proper containers, and are disposed by open burning within the village boundaries. Waste water is directly discharged into natural water courses nearby.

5.4.5 Unexploded Ordinance (UXO)

The project area has no history of wars. UXO cases have never been reported.

5.4.6 Land Use

Information on existing land use of the study area was established using the following sources of secondary information:

- Topographic map, scale 1 : 50,000
- Satellite image of GOOGLE EARTH (http://earth.google.com)
- Geographical Information System (GIS) of Tanintharyi Division

The secondary information was verified and supplemented by ground truth surveys conducted from January 21 to 24, 2015.

The study area covers 19,407.09 acres (***Figure 5.4.6-1***): comprises of build-up and village agricultural land (village agricultural land, school, industrial land and monastery), agricultural land (paddy field, cashew, para rubber, palm tree and mixed orchards perennial), forest area, and miscellaneous area (open area, idle land, water body and road). ***Photo 5.4.6-1*** shows typical scenes of the various types of land use in the study area. The land use types are summarized in ***Table 5.4.6-1*** and shown in a land use map in ***Figure 5.4.6-1***.

TABLE 5.4.6-1

LAND USE TYPES IN THE STUDY AREA

Name	Area (acre)	Percent (%)
Village/Built Up Area and Agricultural Area[a]	593.11	3.06
Agricultural Land	16,192.26	83.43
Forest Area	251.34	1.29
Miscellaneous Area	2,370.39	12.22
Total	**19,407.09**	**100.00**

Remark: a = 6 Schools, 10 Religious Places and 11 Villages

A village/built up area and agricultural land within 5 km radius of project site

Agricultural Land (left: rubber tree plantation area and right: Palm tree plantation area)

Forest Area

PHOTO 5.4.6-1 : TYPICAL SCENES OF LAND USE IN THE STUDY AREA

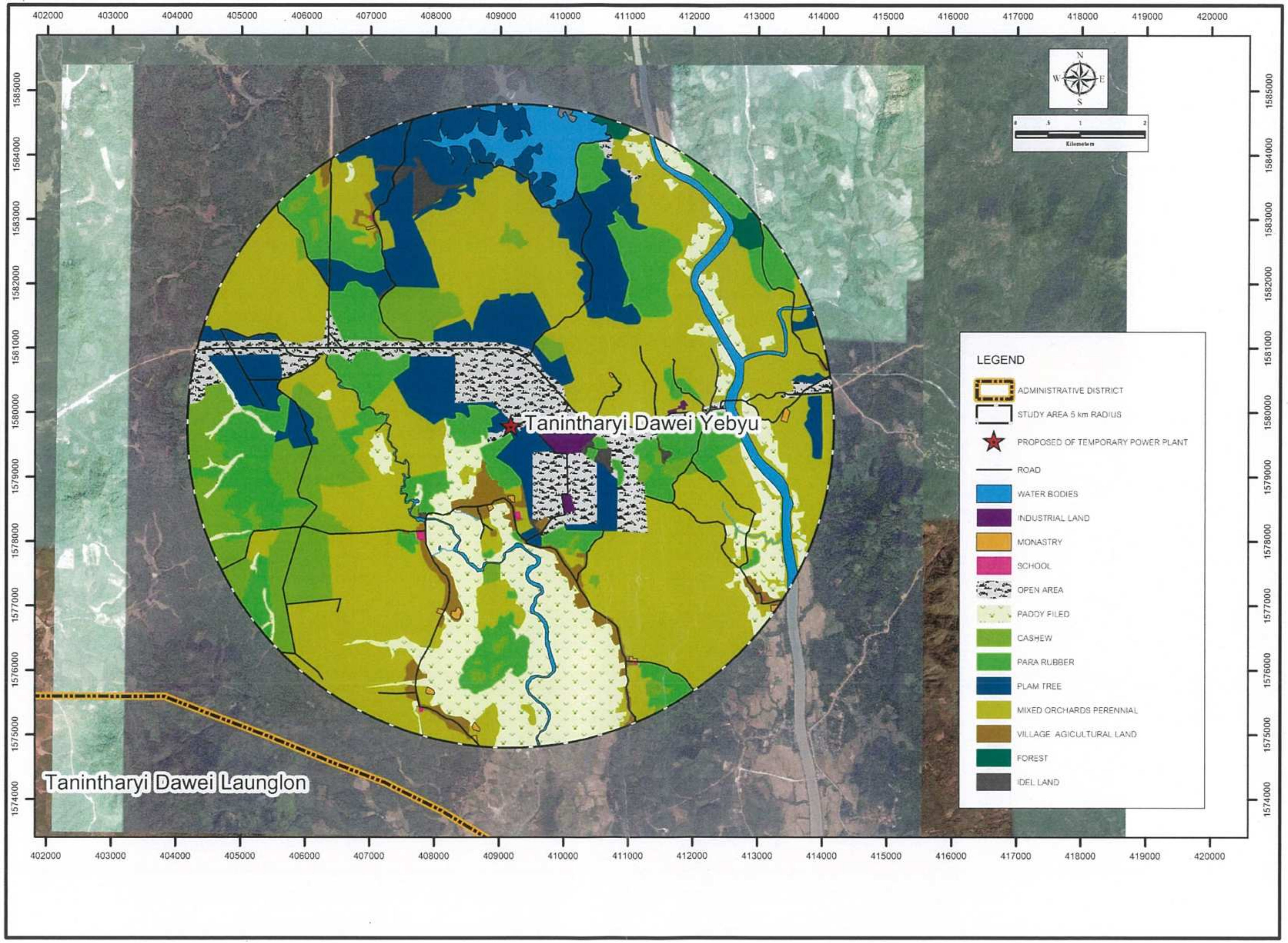


FIGURE 5.4.6-1 : EXISTING LAND USE WITHIN PROJECT STUDY AREA

The temporary power plant site will covers about 6 acres. Within the project site's boundary, there is an open area, identified as an idle land, also one household (hut) with a small pig farm and perennial trees.

(1) Village/Built Up Area and Agricultural Area

The village/built up area and agricultural area cover 593.11 acres or 3.06% of the study area. This type of land use covers the 11 villages, 6 schools, 10 religious places, industrial area, and village agricultural land.

(2) Agricultural Land

Agricultural land covers 16,192.26 acres or 83.43% of the study area. This illustrates local villager's occupation distinctively. Mostly, the areas are composed of mixed orchards perennial (45%), palm tree (15.2%), rubber tree (15.4%), paddy field (14.8%); there is some plantation areas of cashew tree (9.6%).

(3) Forest Area

Forest areas cover 251.34 acres or 1.29% of the study area. The forest areas mostly consist of mixed deciduous forest.

(4) Miscellaneous Area

Miscellaneous areas cover 2,370.39 acres or 12.22% of the study area. Most of this land use type is open land (1,305 acres or 55.1%) and water body (747.61 acres or 31.5%). Also, there is some areas of idle land (134.92 acres or 5.7%) and road (182.86 acres or 7.7%).

5.4.7 Perception of local community on Project development

Result from household interview indicates that most of locals in the study area were noticed on development of 15 MW temporary power plant project via staffs of DSEZ and village committee. Most of interviewed person are agree with development of the Project. However, there are some concerns on environmental issued raised, details are described below,

A. Concerned issues during Pre-construction and Construction phase

- **Positive impacts**

The respondents pointed out that development of the Project in this phase would provide locals on chances of employment and trading particularly in the nearest village to the Project site. The respondents were also expected that the project would support in infrastructure development such as improvement of access road to their village.

- **Negative impacts**

The negative impacts from development of the Project during this phase raised by locals are including increasing of traffic load in the area, dust dispersion and waste from both land clearing and waste generated by construction activity.

B. Concerned issues during Operational phase

- **Positive impacts**

Results from interviewed show that respondents expect the Project would employ locals to work with the Project. The Project is anticipated by locals to support village activities via CSR program. Besides, locals expect the Project support power for public places such as monastery, school and village meeting hall.

- **Negative impacts**

The main concerned issued during operational phase included the increasing of accident by LNG transportation by truck and dust generated by land transportation of LNG. Air pollution by operation of the Project was also raised by respondent

C. Suggestion on development of the Project

The respondents were express variety of suggestions for Project development which are summarized below;

- The Project must fully implement as imposed environmental mitigation measures.
- The Project must give priority on environmental and supports in development of local communities.
- The Project should develop as soon as possible.
- The project should continuously support activities of local communities throughout the Project's life.
- In case of Project implementation caused adverse effects to local communities, the Project has to solve immediately and inform locals on progress of the solving.
- The Project should facilitate communicating channel to riparian communities.

5.5 THE CULTURAL COMPONENTS

(1) Religions and Beliefs

The majority of people in the study area belongs to Dawei ethnic group of Bamar. A very small number of Mon, Rakhine and Karen people is living in the study area. The Dawei people practice Theravada Buddhism and speak the native language of Dawei. The Mon and Rakhine also practice Theravada Buddhism while some Karen are Christians.

(2) Sites of Traditional and Historical Value

All villages in the study area are old settlement communities, over 200 years. This evidences by over 200 year old temple of Yalai (***Photo 5.5-1***).

As the Burmese is strongly religious people, temples exist in every village. It is common for villagers to visit local temples for religious purposes and also for some community social activities. There one important buddhist temple in Pagaw Zoon Village (***Photo 5.5-2***), locals believes that Lord Buddha have visited this place while he was alive. There were also ancient pagodas existed in this temple. Besides, cemetery is also available in nearly every village.

PHOTO 5.5-1 : TWO HUNDRED YEAR OLD TEMPLE OF YALAI

PHOTO 5.5-2 : TEMPLE IN PAGAW ZOON

Nearby, there are an important historical and religious Buddha's footprint and other pagodas in the area of Nabule settlement. Nabule is about 300 years old, covering five villages of Htain Gyi, Lae Shaung, Mayin Gyi, Payadat and Mudu in Yebyu Township. They are cluster type of villages, forming a distinct community different from others. The villagers live a simple and conservative way of life. An outstanding feature of the villages is their temples or monasteries, some of which are substantially built of wood and brick in very large compounds. They have "Thein" (ordination halls) as well as Zayats (rest houses) which serve as meditation centres on Subbath days. All monasteries practice Theravada Buddhism.

The settlement's identity has been created and maintained by the Nabule Settawya Pagoda (foot print pagoda) in Lae Shaung village area, buffalo foot print pagoda and pond near Payadat village, and the memory of Thagara old city whose founding is commemorated in Settawya Pagoda.

(3) Natural Resources Use for Livelihoods

Villagers in these nine villages are mostly relying on agriculture, particularly orchards, for their livelihood. Dominant crops include cashew nut, betel nut, rubber and fruits. The villagers practice simple cultivation methods with minimal use of fertilizers and maintenance. Farm products are sold for cash (***Photo 5.5-3***).

Most of villagers collected mushroom, bamboo shoot, wild vegetables and honey from the forest nearby for food. They usually make charcoal from woods in orchards, and use for cooking. Except Wet Chaung which is close to the forest, the peoples there collect forest woods to make charcoal, and sell for cash.

Livestock is practiced in small-scale mainly for household consumption. Poultry and swine are raised freely around the houses. Some villagers raise cattle, mainly for draft labor.

A. Betel Nut

B. Raising of swine

PHOTO 5.5-3 : USE OF RESOURCE AS A LIVELIHOOD OF LOCALS

(4) Key Institutions and Organizations

Based on the old cluster type of settlement and social structure, the local communities pay respect to their leaders, heads of villages, and the senior monks and abbots in particular. Normally, there are no formal social groups in the study area. Villagers gather to form a group when required for particular activities. For example, they gather to respond to local needs related to religious and funeral activities. Each group is composed of specified members who have the same interest and are normally led by the village elders. These groups are activated occasionally.

Youth groups are active at the community level. The number of members of the youth group varies from village to village, about 40-80 members each. The groups help in community functions when required, such as in religious ceremonies, or when the communities ask for their assistance.

The active community base organization in the study area is Dawei Development Association-DDA, formed by young and active peoples from Dawei Region. The organization is a rights watchdog that monitors the lurching progression of DSEZ. Their foci are on green development, property rights, land rights, natural resource management for sustainable regional development and education.

5.6 THE VISUAL COMPONENTS

Within the study area (5 km. radius of project site), there are concession areas for palm oil plantation project; recently, the project was already ceased. Evidently, there are many palm trees. Also, there are villages scattering in the area and plantation area. On the east of the area, there is the Dawei River. It was found that there is no tourist attraction within the study area. Overviews of the scenery around the project site are illustrated in ***Photo 5.6-1*** below:

5.6.1 Aesthetic

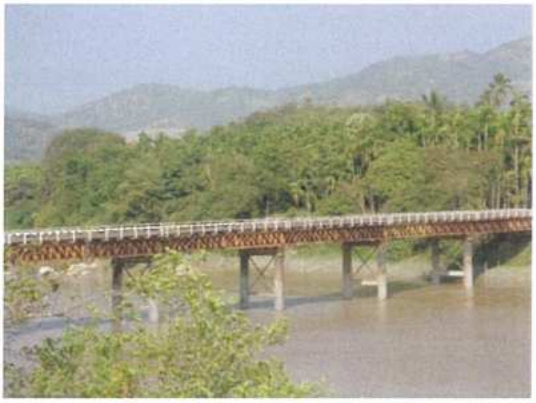
At present, the main aesthetic value of the project area is related to the Dawei River and Mountain range area. However, the scenery is not strikingly beautiful. There is no special aesthetic.

5.6.2 Point of Interests

No points of interests in the project area that would attract visitors.

5.6.3 Landscape

All the natural visual components of the project area do not form a picturesque landscape. The current landscape quality is considered at a moderate level.



A. Scenary of the Dawei River

B. Scenery of mountain range and paddy field in dry season

C. Scenery of village and monastery

PHOTO 5.6-1 : SCENERY OF STUDY AREA

CHAPTER 6

IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES

CHAPTER 6

IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES

6.1 INTRODUCTION

This chapter presents results of impact and risk assessment and mitigation measures for the construction phase, the operation phase of the power plant and its associated facilities, and the decommissioning phase. The impact assessment is focused on relevant environmental and social issues identified in the Final Report. These environmental and social issues will be included in environmental management of the Project.

The content and structure of this chapter follows the requirements prescribed in Article 41 to 73 of the EIA Guidelines as appropriate considering the context of this Project.

6.2 IMPACT ASSESSMENT METHODOLOGY

6.2.1 Impact Assessment

6.2.1.1 Scope of Assessment

Environmental and Social Impact Assessment (ESIA) of a proposed development project is now recognized that it is essentially environmental management planning. In this regard, impact and risk assessment and formulation of mitigation measures are the first stage of environmental management planning. Consequently, the context of ESIA reports is now required by MONREC in its ESIA Procedure and ESIA Guideline to expand beyond the impact assessment and mitigation measures to include a detailed environmental management plan (EMP) covering both the project construction and operation phases. For some types of projects that decommissioning can be clearly planned, for example a mining project, the EMP will also need to cover the decommissioning phase. The EMP will be implemented during project construction and operation to ensure acceptable environmental performance of the project during its construction and operation.

It should be noted that the term "environmental impact" is now generally used to cover not only the natural environment but also social environment or social impacts as well as occupational health and safety. This scope of environmental impact is adopted in the ESIA Procedure as shown below:

Environmental Impact means the probable effects or consequence on the natural environment and people of a proposed Project or businesses or activities or undertaking. Impacts can be direct or indirect, cumulative, and positive or adverse or both. For purposes of this Procedure, Environmental Impacts include occupational, social, socio-economical, community health, and safety issues.

6.2.1.2 Geographical Scope: Study Area Boundaries

The study areas have already been identified and defined in Section 5.1. The impact area of each issue is defined in ***Table 6.2.1-1***.

TABLE 6.2.1-1

DEFINITIONS OF THE IMPACT AREAS

ES Issue	Impact Area
Noise	Area from the noise source to a point at which the noise will attenuate to an acceptable level
Vibration	Area from the vibration source to a point at which the energy wave will attenuate to an acceptable level
Fugitive dust on the construction site	Area around the construction site to a point at which the dust level returns to the level before the construction
Fugitive dust caused by materials transportation	Area along the road to a point at which the dust level returns to the level before the construction
Sites for disposal of construction wastes	The area covering the disposal site area and the sensitive receptors
Background ambient air quality	In the villages near the construction sites
Background ambient noise level	In the villages near the construction sites
Land acquisition	The entire areas of affected land due to project implementation.
Cultural impacts	In the villages near the construction sites
Environmental management areas	The entire construction site during construction. The villages adjacent to the power plant and entire LNG transportation route during operation.

6.2.1.3 Temporal Scope

The assessment of impacts of each ES issue is based on the temporal scope presented in ***Table 6.2.1-2***.

TABLE 6.2.1-2

TEMPORAL SCOPE

ES Issue	Impact Area
Noise	Over the construction duration, hourly and daily average noise level
Vibration	Over the construction duration, peak particle velocity mm/s
Fugitive dust on the construction site	Over the construction duration, hourly and daily average dust level
Fugitive dust caused by transport of materials	Over the construction duration, hourly and daily average dust level
Soil contamination	Over the project life
Background ambient air quality	Over the construction period, hourly and daily averages of air quality parameters
Land acquisition	During the site preparation period
Cultural impacts	Over the construction and operation periods
Environmental management areas	Over the construction and operation periods

6.2.1.4 The Conceptual Framework

A. Impact Analysis

The first major step in conducting an ESIA is "Impact Analysis" as shown in a diagram in ***Figure 6.2.1-1***.The Impact Analysis is essentially a cause-effect analysis based on the following logics.

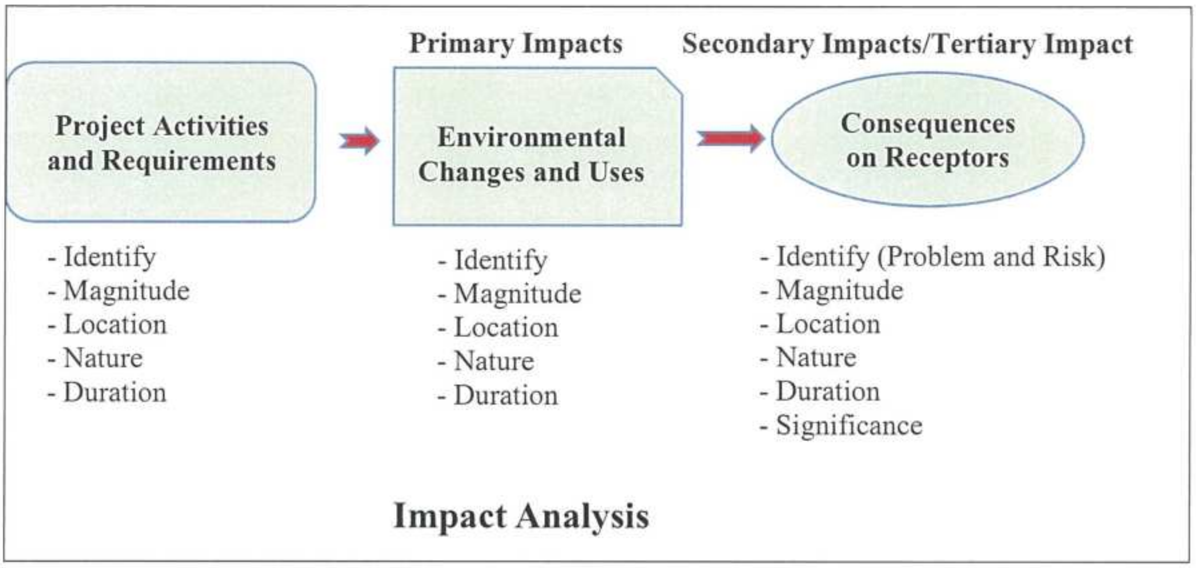


FIGURE 6.2.1-1 : IMPACT ANALYSIS PROCESS

(1) Project construction and operations involve various physical activities and require environmental resources as inputs. Examples:

- Construction activity-filling and compacting a 6.25 acres (25,000 m^2) area of project site
- Operational activity-combustion of Liquefied Natural Gas (LNG) for power generation

(2) Project activities and requirements consume and emitting mass and energy to the environments. They are the sources or root causes of environmental impacts since they will, if not adequately controlled or managed, certainly cause ***significant changes*** or conflicting use of the environmental components. Examples:

- Changes during construction-change in ambient noise level caused by operations of trucks and heavy equipment (project activity).
- Changes during operation-change in ambient air quality caused by emissions of gaseous pollutants in stack gas of power plant (project activity).

(3) Direct impacts of project activities and requirements on the environment could be considered as ***primary impacts***. Ambient environmental standards are applied to the primary impacts while source or emission standards are applied to pollutants (mass and energy) emitted to the environment by project activities.

(4) The magnitude, nature, and duration of the environmental changes or primary impacts will be governed by the location, magnitude, nature, and duration of project activities or requirements. Most primary impacts caused by construction activities and requirements are transient and reversible. Few impacts are permanent and irreversible. Examples:

- Transient environmental changes- increased ambient noise levels and fugitive dust during construction
- Irreversible and permanent environmental changes-conversion of land-use into a project site.

(5) The primary impacts caused by project activities and requirements could have consequences on ***receptors*** which could be ecosystems, communities, or workers in geographical areas that the primary impacts occur. The consequences could be considered as ***secondary impacts.*** In some cases, the secondary impacts could have consequences on another receptors. For example, degradation of the agricultural production (secondary impact) caused by air pollution (primary impact) could have impacts on livelihood of local farmer. The consequences of the secondary impacts could be considered as ***tertiary impacts.***

(6) Secondary and tertiary impacts are ***potential problems*** that need to be solved by reducing the primary impacts through measures applied to causative project activities or requirements. They are considered problems, since based on existing knowledge and experience, they will certainly occur. Example-combustion of fossil-fuel will certainly emit pollutants which will certainly pollute the ambient air. If primary or secondary impacts are uncertain, they are considered as ***risks***. Example-due to lack of established knowledge, it is not certain whether electromagnetic waves from transmission lines have impacts on human health.

(7) A risk in environmental management could also be an undesirable event which may occur, and if it occurs, will render an impact mitigation measure ineffective. An example of risk is fire and explosion in gas generator enclosure due to gas leak.

(8) The level of significance of a secondary impact is assessed from its extent and severity in terms of its magnitude and value of loss. The extent and severity of secondary impacts will depend on: (i) nature and magnitude of the primary impacts; and (ii) sensitivity of the receptors which depends on their nature and characteristics.

(9) The environmental problems and risks will have to be evaluated to assess their significance. Measures and resources to be allocated to address the problems and manage the risks should follow their significance. However, impact sources and primary impacts need to be addressed regardless of the significance of secondary impacts due to the legal requirements for projects to comply with applicable source and ambient standards.

B. Formulation of Measures to Address the Problems

This step is to formulate measures to address the problems. Measures are to be directed at the causes of the problems, i.e. project activities and requirements. Measures could be:

- Engineering measures to be incorporated in the design for implementation by the contractors
- Management measures to be implemented in construction management or operational management of project facilities during the operation phase

It is necessary to design effective implementation arrangements of the measures. Mitigation measures during the construction phase will have to be implemented by the contractors under supervision of construction supervision engineers engaged by the project proponent. The project proponent will oversee the implementation of mitigation measures through its project manager. Mitigation measures during the operation phase will be implemented as part of the operational management by the operational organization to be set up by the project proponent.

It should be noted that the measures will be applied to the project activities and requirements to reduce the primary impacts resulting in reduced secondary impacts. Some measures could be applied directly to the receptors to minimize the impacts on the receptors.

Figure 6.2.1-2 is a diagram showing the mitigation measure concept.

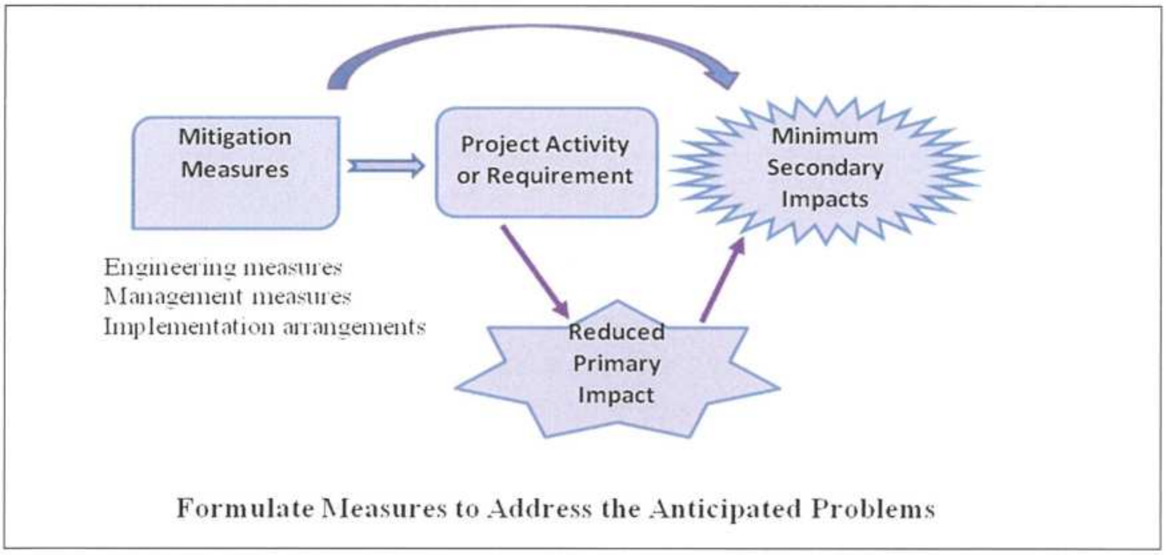


FIGURE 6.2.1-2: MITIGATION MEASURE CONCEPT

6.2.1.5 Methodology for the Impact Assessment of Each Environmental Issue

A. Compliance with Source Environmental Standards

The assessment of impacts of this Project is premised on a requirement that the design, construction, and operation of Project facilities will adopt or implement best practicable measures to minimize the magnitude of resource consumption and wastes discharged into the natural environment. Examples are: (i) the use of small, prefabricated generating unit which is ease for installation and dismantle, this will have cause the lowest impact in construction phase due to no construction of large foundation and structure; and (ii)

water will be frequently sprayed on uncovered construction site to suppress dust. Therefore, the assessment will be on the severity of the residual impacts to determine the need for additional measures to further reduce the residual impacts. For example, if the residual dust levels will cause health risk and discomfort to people in the villages proximate to the construction site, additional measures will be needed to reduce the dust levels at the receptors.

The above principle indicates that all Project activities must comply with applicable source or emission standards or environmental guidelines.

The assessment of impacts will cover (i) impacts on the ambient environment; and (ii) impacts on the receptors.

B. Impact on Ambient Environment

The impacts on the relevant ambient environment will be predicted, if possible, using an appropriate mathematical model.

C. Impacts on Receptors

Each environmental issue will have an impact area. Receptors in the impact area could be people, ecosystem, and properties depending on the nature of the issue. Impacts on the receptors are consequences of the impacts on ambient environment. For example, excessive dust concentration in the ambient air could adversely affect health and daily living of peoples living near the construction area and transportation routes. The significance of the impact will be determined by severity and extent of the impacts which, in turn, will depend on the magnitude of the issue, and natural and socio-economic characteristics of the impact area. For example, the impact of fugitive dust during construction will depend on the amount of dust released into the air, wind speed and direction, and land use and population density of the impact area.

Normally, if the ambient air quality is complied with the standards, impacts on receptors should be negligible.

D. The Methodology

Based on the above conceptual framework, the Consultant has developed a general impact assessment methodology for the impact assessment of each environmental issue. ***Figure 6.2.1-3*** shows a diagram of the methodology. The methodology is explained below:

1) Estimate Magnitude of the Environmental Issue

The first step is to estimate the magnitude of the environmental issue from information on the Project construction and operation presented in ***Chapter 4***. The measurement of the magnitude of an environmental issue depends on the nature of the issue.

Examples: (i) the magnitude of the construction waste disposal issue is the total amount of construction waste that will have to be disposed of; and (ii) the magnitude of the traffic issue is the number of truck loads to be generated during the construction phase.

2) Identify Best Practicable Measures to Minimize the Magnitude of the Issue

Regardless of the level of its impact, the magnitude of the environmental issue must be minimized through best practicable measures to be implemented through design, construction method, or good construction practices.

Examples: (i) a construction method with a low noise level will be used; and (ii) the construction site will be surrounded by fence and frequently sprayed water in order to reduce sound level and suppress fugitive dust.

3) Estimate the Remaining Magnitude of the Issue

The remaining magnitude of the issue can be estimated from the efficiency of the mitigation measures reported in various references.

Examples: the remaining amount of fugitive dust after water spraying can be calculated from reported efficiency of water spraying in suppressing fugitive dust.

4) Compare the Remaining Magnitude of the Issue with Applicable Source Standards

Environmental issues related to pollution such as wastewater issues can be referred to applicable source standards, such as effluent quality standard for the wastewater issue.

If the remaining magnitude of the issue does not meet the applicable source standards, additional measures will be required to further reduce the remaining magnitude of the issue.

Some environmental issues, such as fugitive dust and construction wastes, have no source standards. In this case, the assessment can proceed to the next step.

5) Calculate or Estimate the Impact of the Remaining Magnitude of the Issue on Ambient Environmental Quality

A good example is the air pollution issue. This step will calculate the dispersion of the remaining amount of TSP in the ambient air around the project construction site and quarry site. The results will be increases in TSP value in the ambient air at various locations around the project construction site and quarry site.

6) Compare the Resulting Ambient Environmental Quality with the Applicable Ambient Environmental Quality Standard

An example is the construction noise issue. If the resulting ambient noise levels at the sensitive receptors exceed the maximum permissible noise limits prescribed in the ambient noise standard, it will be necessary to implement measures for noise blocking at the sensitive receptors.

It is also possible that the ambient environment is so severely polluted that the ambient environmental quality standard cannot be met. If this is the case, the project could worsen the pollution problem. Pollution from other sources will need to be reduced or the project moves to other locations.

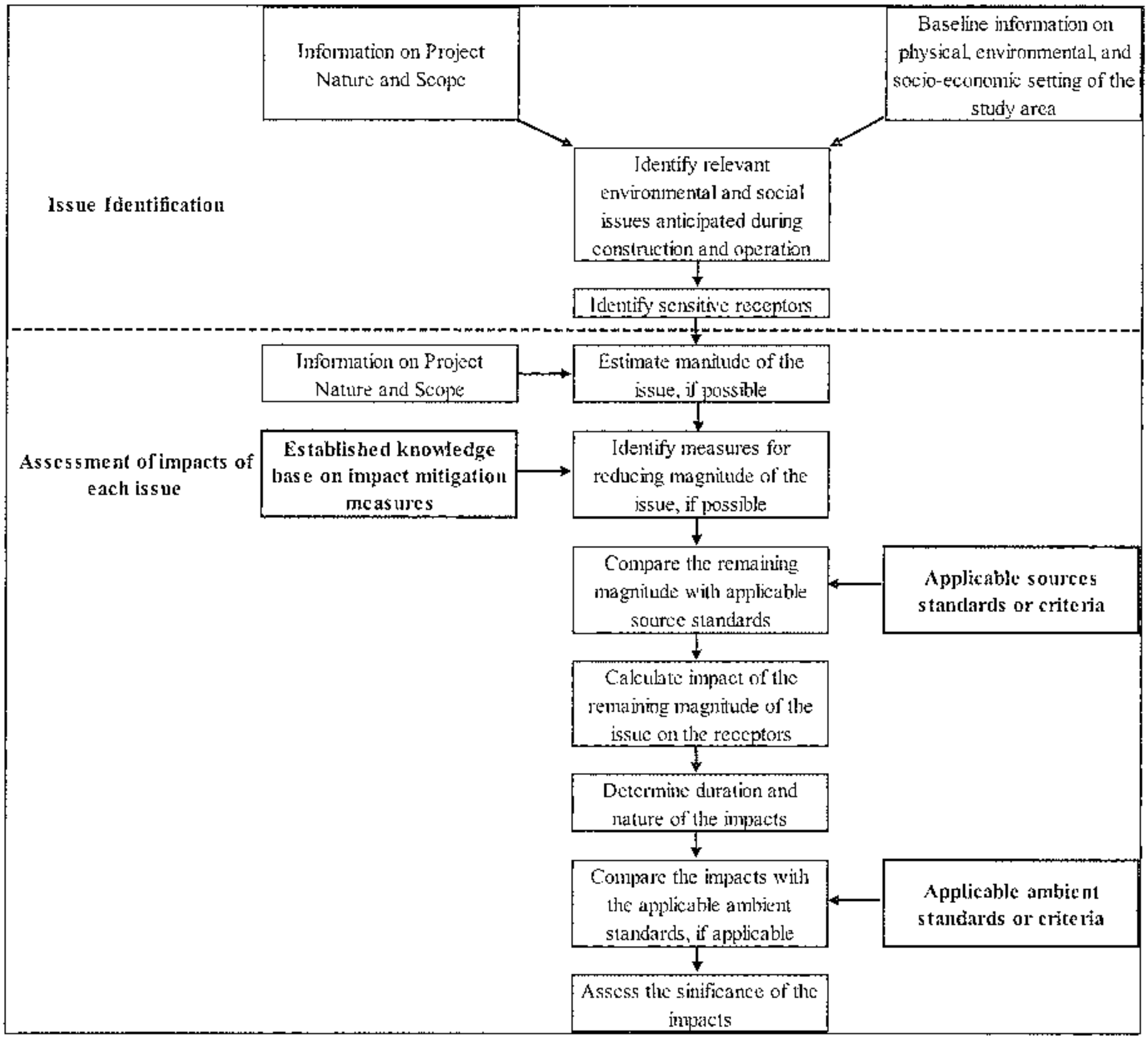


FIGURE 6.2.1-3 : METHODOLOGY FOR THE IMPACT ASSESSMENT OF EACH ENVIRONMENTAL ISSUE

6.2.1.6 Methodology for the Determination of Significance

In environmental management, it is necessary to prioritize key environmental issues. Significance in this context is therefore related to priority that the project environmental management will accord to the issue.

The impact of an environmental issue is divided into 5 levels based on six criteria or considerations as shown in ***Table 6.2.1-3***. The criteria will need to be modified to make them specific and relevant to each environmental issue.

TABLE 6.2.1-3

LEVELS OF IMPACT OF THE ISSUE IN ENVIRONMENT MANAGEMENT

Consideration	Level of Impact or Significance of the Issue in Environmental Management				
	Critical	Major	Moderate	Minor	Insignificant
Magnitude of the issue	Very large	Large	Medium	Small	Very small
Nature of the issue	Irreversible	Irreversible	Reversible	Reversible	Reversible
Duration of the issue	Permanent	Long	Relatively short	Short	Very short
After implementing best available measures					
-the remaining magnitude can meet the source standards	No	No	Yes	Yes	Yes
Impacts of the remaining magnitude on ambient env quality					
-resulting ambient env quality can meet the ambient standards	No	Yes	Yes	Yes	Yes
Sensitivity of the impacted area	Very High	High	Medium	Low	Relatively Low

The impact assessment will be made for the impact without control and the impact with control or residual impact. The five impact levels are:

- ***Level 5-Critical***-the impact is irreversible with extensive and severe ecological damages or socio-economic damages. The issue cannot be resolved. The project plan will need to be changed, relocated or abandoned.
- ***Level 4-Major***-the impact will be substantial but it can be effectively reduced using both engineering and management measures. The residual impact will be minor.
- ***Level 3-Moder***ate-the impact is moderate in terms of extent and severity and it can be effectively reduced using simple measures. The residual impact will be insignificant.
- ***Level 2-Minor***-the impact is small in magnitude and confined to a small area. It can be easily managed through good construction practices. The residual impact will be negligible.
- ***Level 1-Insignificant***-the impact is very small compared to Level 2 impact and can be easily mitigated through good construction practices. The residual impact will be negligible.

6.2.1.7 Monitoring

In environmental management, monitoring of results of the implementation of mitigation measures will have to be carried out during the pre-construction, construction, operational, and decommissioning phases. Parameters to be monitored, frequency of monitoring, method of monitoring, and geographical location of monitoring will have to be clearly stated. The monitoring must be relevant and adequate to provide reliable and accurate data and information as feed back to the management system for taking corrective actions. It should be noted that the proposed monitoring for each key valued environmental component will have to be consolidated and presented in the environmental management plans.

6.2.1.8 Mapping

Maps are used in this ESIA Report to support narrative description of various subjects. They were obtained from various secondary sources, including: (i) site maps prepared by the consultant for using in the Scoping Report; (ii) regional maps presented in various documents; and (iii) Google earth. The available maps are in various scales and they are selected prior using to suit the illustration purposes. No attempts were made in this ESIA study to prepare its own maps based on field surveys.

6.2.1.9 Key Issues and Selection of Valued Environmental Components

Valued Environmental Components (VECs) for the Project are those environmental and social attributes associated with the development of the proposed Project which have been identified to be of concern by the public, government or professional community. The ESIA will cover VECs to be identified based on consideration of Government's ESIA requirements, nature of the Project, construction activities, existing environmental and socio-economic and cultural settings of the areas impacted by the Project, and ongoing and future developments of hydropower projects in the region. The identified VECs and issues of concern will need to be presented to stakeholders and finalized based on comments from the stakeholders.

The preliminary environmental impact assessment made in the scoping study has identified key issues and VECs to be covered in the ESIA as presented below in ***Table 6.2.1-4***. For each VEC, one or more parameters will be selected to facilitate quantitative or qualitative measurement of potential project impacts and cumulative impacts. Results of the measurement will be used to determine the level or magnitude of incremental change in the VEC. If possible, thresholds or standards will be identified for each measurable parameter. The level of change, the applicable standard, and the nature of change (reversible or irreversible) will be the basis for determining the level of significance of the impact.

The ESIA will cover direct impacts of the Project on these VECs and also on direct impacts of the Project coupled with future impacts of planned projects on the VECs, or cumulative impacts.

TABLE 6.2.1-4

VECS DURING PRE-CONSTRUCTION, CONSTRUCTION, OPERATION PHASES AND DECOMMISSIONING PHASE

VEC	Main Concern During Pre-Construction and Construction
Pre-Construction and Construction Phase	
Air quality	Increases in air pollutants caused by fugitive dust and emissions from heavy equipment
Noise	Increase ambient noise level at the construction site and communities near the material transport route
Vibration	Increase vibration at the construction site and communities near the material transport routes.
Traffic and Road Safety	Increases in traffic load and safety along the material transport routes
Operation Phase	
Air quality	Increases in air pollutants caused by natural gas combustion
Soil and water contamination	Disposal of waste lube oil
Road Traffic	Increase in traffic and environmental disturbances
Decommissioning Phase	
Air quality	Increases in air pollutants caused by fugitive dust and emissions from heavy equipment
Noise	Increase ambient noise level at the project site and communities near the material transport route
Vibration	Increase vibration at the project site and communities near the material transport routes.
Traffic and Road Safety	Increases in traffic load and safety along the equipment transport routes

6.2.2 Risk Assessment

6.2.2.1 Conceptual Framework

A. Concept and Definition of Environmental Risk

In most documents on environmental risk assessment, environmental risk is narrowly defined to focus on a hazard from an environmental event which could affect receptors through an environmental pathway. For example:

- Environmental event: disposal of toxic and hazardous wastes on land causing soil contamination which could pollute groundwater
- Environmental pathway: groundwater
- Consequences on receptors: health impacts on communities nearby the disposal site that rely on groundwater for domestic use and consumption

In these environmental risk assessment documents, impacts are easily confused with risks if the risk context is not clearly established. In the above example, if toxic and hazardous wastes are not properly disposed off in the site, soil will be contaminated and pollutants could reach the aquifer. If the disposal site is on the aquifer used by the communities, it is certain that the groundwater will be polluted causing adverse consequences on the communities. In this respect, groundwater pollution is certain and the issue needs to be investigated in the context of ESIA not environmental risk assessment. On the contrary, if the wastes are properly disposed in engineered landfill, there still is a concern that the liner may possibly leak. This concern is a risk that should be investigated in the context of environmental risk management and will have to be managed to minimize the possibility of leak.

The Consultant considers environmental risk within the context and framework of project risk management as environmental risk is one of several categories of project risks, such as technical risk, financial risk, legal risk, and market risk. Environmental risk will need to be managed as part of project risk management, which is an integral part of project management, during the construction phase and the operational phase of a project in parallel with other categories of project risks.

A project risk is variously defined in risk management documents but all definitions share three key words: event, likelihood of occurrence of the event, and consequence of the event, if occurred, on the project. The Consultant defines a project risk in general as:

"A project risk is an undesirable event which may or may not occur, but if it occurs it will have negative consequences on the achievement of project objectives."

In investigating environmental risk of this Project, the Consultant, based on the above definition of a project risk, treats an environmental risk as:

"an event which may or may not occur, but if it occurs it will have negative consequences on the achievement of the Project's environmental management objectives, i.e. compliance with environmental performance requirements prescribed by MONREC and other authorities, and as agreed or committed with the stakeholders, particularly the surrounding communities."

B. Objectives of Environmental Risk Assessment

In line with the objectives of ESIA, the objectives of environmental risk assessment (ERA) are to: (i) identify and assess environmental risks during the construction and operational phases of the Project; and (ii) prepare an environmental risk management plan (ERMP) for the Project covering the construction phase (CERMP) and the operational phase (OERMP). The ERMP will be part of the project risk management plan (PRMP) to be implemented as part of project management.

C. Environmental Risk Management Planning Process

The ERM planning process is similar in principle to the project risk management planning process, and the planning process for the construction phase is similar to that for the operational phase. The project risk management planning is

different from the environmental risk management planning in scope and risk management context.

The ERM planning process adopted for this Project, in general, consists of the following steps:

(1) Establish the Environmental Risk Management Context

The establishment of environmental risk management context is to gain a clear understanding of the following subjects: (i) project management arrangements, especially project risk management; (ii) arrangements for environmental management of the Project during the construction phase; (iii) responsibilities of contractors, project owner, project management team, and supervision consultants; and (iv) linkage between environmental risk management and project risk management, and between environmental risk management and environmental management.

Information on the Project implementation and its environmental impacts will be the basis for forming judgmental views on the potential uncertain events which constitute risks, likelihood of occurrence of the events, and their impacts on the environmental management objectives of the Project.

(2) Risk Identification

Risk identification is to identify various concerns related to possible events that, if occur, could result in the Project being unable to comply with environmental requirements prescribed by MONREC and other authorities and as agreed or committed with the key stakeholders. Such events would consist of external events and internal events.

(3) Risk Analysis

In this step, each identified event will be analyzed to come up with a rational conclusion on its likelihood of occurrence (high medium, low), its impacts on the achievement of the Project's environmental management objectives and direct and indirect on-site and off-site costs, and causative factors related to the occurrence of the event.

(4) Risk Classification

The results of risk analysis are used to prepare a risk classification matrix based on the likelihood of occurrence and the magnitude of impact. ***Figure 6.2.2-1*** shows an example of a simple risk classification matrix[1]. In this example, risks are classified into minor, moderate and major risks.

- Minor risks are characterized by low impact and low likelihood of occurrence. Minor risks can be accepted or ignored.

[1] Modified from the matrix in NASA Risk Management Presentation - Imsworld.org
www.imsworld.org/.../NASA%20risk%20managemnt%20power%20poin...

- Moderate risks are characterized by high impact and low likelihood of occurrence or by low impact and high likelihood of occurrence. Moderate risks will need treatment.

- Major risks are characterized by high impact and high likelihood of occurrence. Major risks will need close attention of the management and significant levels of treatment.

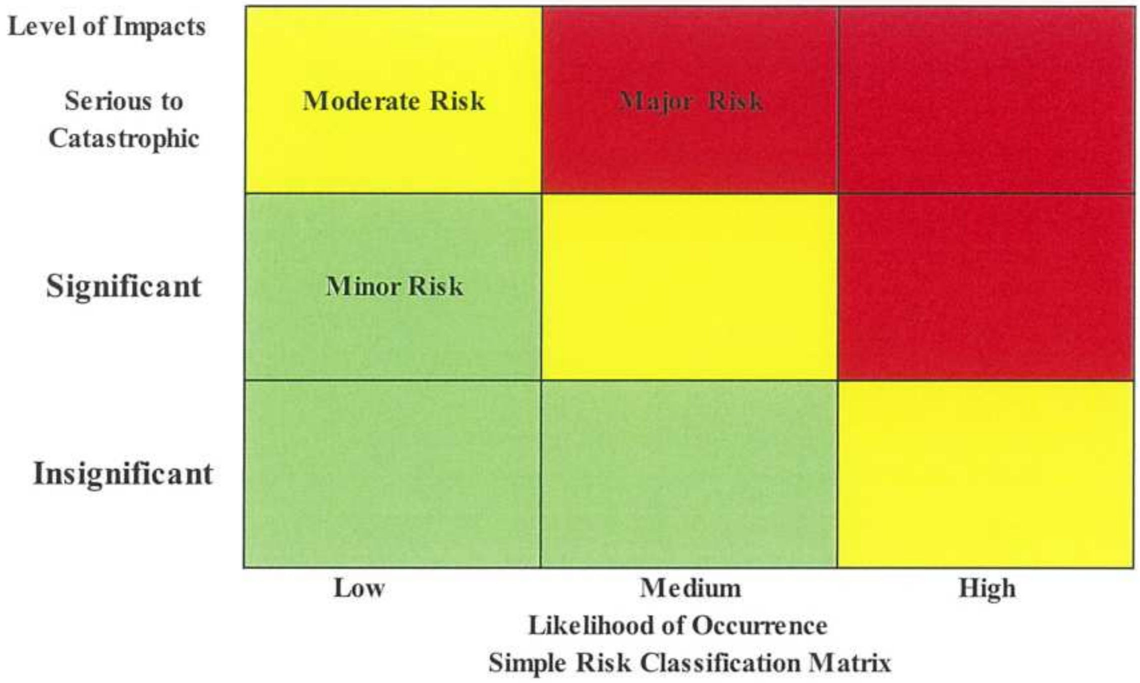


FIGURE 6.2.2-1 : SIMPLE RISK MATRIX

A risk profile should be prepared for each risk to be managed. The risk profile should include:

- A description of the risk;
- Potential cause of the risk;
- Likelihood of the risk occurring;
- Potential effect or consequences of the risk;
- Ranking or severity of the risk;
- The evaluation of the acceptability of the risk.

(5) Formulation of Cost Effective Risk Treatment or Mitigation Measures

For a risk related to uncontrollable external event, such as flooding, risk mitigation measures will either aim at protection or minimizing the impacts or both.

For example, a risk mitigation for flooding in this Project is to fill the power plant site to raise its elevation by about 1.5 m above the existing level.

For a risk related to internal event, the risk mitigation measure to be adopted could be designed to reduce the likelihood of occurrence, reduce consequences if the event occurs; avoid the event by not taking actions that have risks; and transfer the risk. . ***Figure 6.2.2-2*** is a diagram showing the risk management logic. A minor risk would be accepted if the mitigation measure is not financially justified. Designing a cost effective mitigation measure needs to consider the root cause of the event constituting the risk.

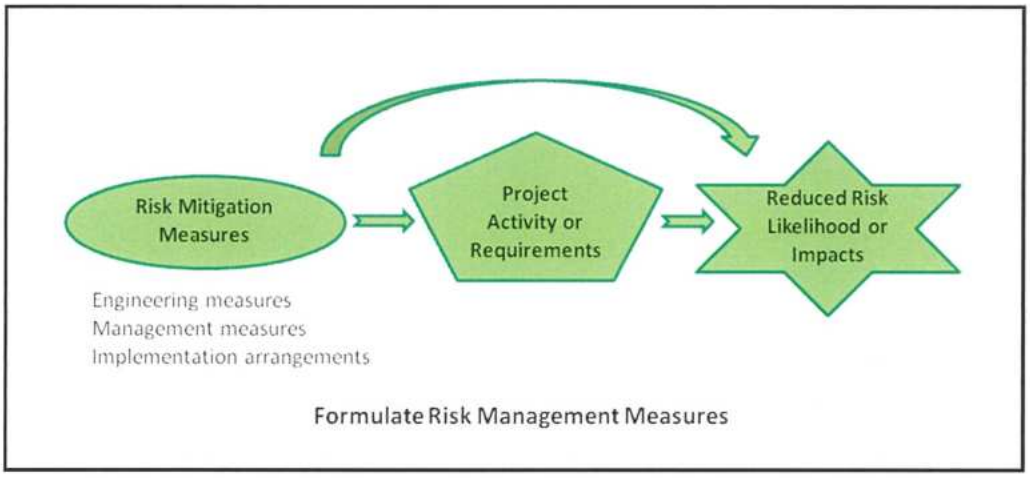


FIGURE 6.2.2-2: ENVIRONMENTAL RISK MANAGEMENT LOGIC

(6) Arrangements for Implementing and Managing the Risk Mitigation Measures

This step will propose arrangements for implementing the proposed risk mitigation measures, including: (i) responsible person for each risk; (ii) organization for environmental risk management; (iii) risk monitoring and evaluation; and (iv) reporting and corrective actions.

The environmental risk management plan will need to be linked with the environmental management plan as well as the project risk management plan to ensure that any dependencies or potential resource conflicts between project and environmental management tasks and environmental risk mitigation are identified and resolved. Managing environmental risk is essentially an element of project risk management. For example, the individual environmental risks will need to be included in the project risk registration process.

Where appropriate, the environmental risk management plan should also be linked to other business plans within the power plant management entity such as the corporate risk management plan.

6.3 PRE-CONSTRUCTION PHASE - IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION

6.3.1 Pre-Construction Phase Activities

There will be only a small number of activities during this phase. These comprise: site selection, contractor selection, engineer design and purchase of gas generator and gas distribution facilities, and site preparation and civil.

The Project will require about 6.25 acres of land for constructing the power plant. Pre-construction activities will include site clearance, site filling and compaction, and transporting filling materials. The pre-construction is carried out in steps as follows:

Site Clearance: The construction site will be cleared of natural vegetation. The impacts on forest at the site will be small as the site is idle land covered with weeds and small plants commonly found in the region and area is relatively small. Site clearance is required a short period of work less than two weeks.

Transporting of Fill Materials: The 6.25 acres construction site will have to be filled and compacted. Filling materials will be transported by trucks into the sites. Assuming the site is to be filled by about 1-2 m above the existing level, the filling would require maximum of 50,000 m^3 (loose volume) of filling materials. Base on assumption of loading capacity of truck is 20 m^3 per trip, the total number of truck trips will be 2,500. The number of truck trips per day will depend on the number of trucks that can be operated per day and the round trip travel time for each truck. Filling materials will be transported via ITD main road which now few public traffic is existed. At this stage, the site filling has not yet been planned.

6.3.2 Impact Assessment

There will be only a small number of activities during this phase. These comprise: site selection, contractor selection, engineer design and purchase of gas generator and gas distribution facilities, and site preparation and civil.

The Project will require about 6.25 acres of land for constructing the power plant. Environmental impacts in this Project phase will be related to site clearance, site filling and compaction, and transporting filling materials.

Considering the nature and magnitude of works and environmental conditions of the construction site and its adjacent areas, relevant environmental impact issues and receptors can be identified and discussed below.

6.3.2.1 Impacts on Ecosystem

A. Impact Identification

The site clearance and filling of project site will permanently eliminate the existing palm tree plantation and some wildlife living in this area. The impacts are permanent and irreversible.

B. Impact Assessment

The surrounding of project site composed of wilderness site and palm plantation only. Another impact is in term of loss of area during site clearance activities. The loss of all vegetation and some wildlife would have some ecological impacts which are unavoidable. The Project will eliminate 6.25 acres of palm tree plantation. This loss of forest area is small.

The impacts of on the three near-threatened species and loss of vegetation cover on ecosystems are evaluated as shown below. The issue deserves low priority during the pre-construction period.

Impact category	Direct impact
Impact duration	Permanent, irreversible impacts
Impact extent	Mostly confined to within the Project site
Impact magnitude	Small
Impact severity	Low
Control priority	Low

C. Impact Mitigation Measures

The following measures should be implemented:

- Survey and record flora and fauna species in the Project site before land clearing. If endangered flora and fauna species are found, they should be moved to protected areas.
- Green buffer zones should be established around the boundaries of the Project site.
- Tree cutting would be proceeded as less as possible and cannot be done without prior permission from the Project Proponent's Project Manager.

6.3.2.2 Biomass Waste Disposal

A. Impact Identification

The clearance of vegetation cover could generate as much as 11.94 (6.25 x 0.404686 x 40.77[2]) tons of biomass waste for project site. This biomass waste must be properly disposed to minimize impacts on soil or water environment near the disposal site.

[2] Nazlin Asari, 2013, Estimation of above Ground Biomass for Oil Palm Plantations Using Allometric Equations: 40.77 tonnes per hectare.

B. Impact Assessment

The Contractor will need to conduct a detailed site survey to make a more accurate estimate of the biomass waste in the project site. The impact of biomass disposal is considered low as shown below.

Impact category	Direct impact
Impact duration	Medium term, reversible impacts as biomass is biodegradable.
Impact extent	Mostly confined to within the disposal site
Impact magnitude	Small
Impact severity	Low
Control priority	Low

C. Impact Mitigation Measures

The biomass wastes will consist of trunks, stems, branches, and leaves. The components that could be used for construction, charcoal making, and firewood should be sorted out. The remaining unusable components should be reduced in size and disposed of in the Project site by land fill. No open burning should be allowed. A biomass removal subplan is proposed in the Environmental Management Plan.

6.3.2.3 Impacts on Livelihood of Villagers

A. Impact Identification

For project site, villagers in Yebyu Township will be adverse affected due to loss of some part of palm tree plantation area.

B. Impact Assessment

Pagaw Zoon village has a total population of 2,289 of which about all of villagers would be adversely affected by the Project. The evaluation is shown below.

Impact category	Secondary impact
Impact duration	Permanent, reversible
Impact extent	About people in Pagaw Zoon village
Impact magnitude	Small
Impact severity	Low
Control priority	Low

C. Impact Mitigation Measures

The Project Proponent should design and implement a long term of livelihood restoration program (LRP) for the affected people in consultation with them and the concerned authorities. The LRP will provide training and initial supports to assist the affected people to enhance their income through increasing efficiency of their current economic activities or creating secondary sources of income through new economic activities. The scope of training may cover the following subjects:

- Crop cultivation techniques
- Product development and marketing
- Food preparation and preservation

6.3.2.4 Environmental Disturbances Caused by Fugitive Dust

A. Sources

Potential sources of fugitive dust in this Project include:

- Site clearing including removal of vegetation and top soil;
- Excavation work, soil stripping and re-grading;
- Handling and transportation of construction materials;
- Movement of heavy vehicles on unpaved roads and surfaces; and
- Deposition of dust from haulage trucks onto local roads.

Fugitive dust is expected in the construction of the 15 MW temporary power plant, the access road, and in transportation of materials. However, the largest source of fugitive dust would be at the 15 MW temporary power plant soil considering the areas of construction. However, measures for fugitive dust control will also be necessary at the construction sites of all facilities to ensure no public complaints.

As the construction site for temporary power plant is the major construction area with the short construction period, fugitive dust at this site will require greatest attention compared to the construction sites of the access roads and the transmission line.

In addition to the control at the construction sites, efforts will need to be made to minimize fugitive dust generated by construction trucks along the transport routes.

B. Sensitivity of Receptors

The receptors of fugitive dust will be workers on site and communities near the project site, is Pagaw Zoon village.

C. Magnitude of Fugitive Dust Emission at Sources

The amount of fugitive dust generated in the construction will depend primarily on the nature of construction works, soil characteristics, soil moisture content, types of construction equipment, and wind speeds.

In principle, the magnitude of fugitive dust emission could be calculated for each step of the construction process. However, considering the lack of detailed information on the construction steps, a global estimate has to be adopted using the Emission Factor in construction area established by the US.EPA (AP-42, US EPA 2005). The emission factor is 1.2 tons per acre (about 2.693 metric tons/ha) of the construction area per month during the construction period.

Based on the above emission factor and the main construction area of the power plant and its facilities of about 6.25 acres, the total amount of fugitive dust is estimated at 7.50 metric tons/month. Assuming 8 working hours per day and 30 days per month, the emission rate will be 0.03125 metric tons per hour or about 8.681 grams per sec (g/s).

D. Proposed Mitigation Measures at Sources

At all the construction sites, measures should be implemented to reduce fugitive dust emission. The most common measures are:

- Spray water at and around the construction areas and access roads during site preparation and grading.
- Enforce a speed limit for vehicles and trucks in the construction sites not to exceed 40 km/hr. Construction activities shall be kept as planned so that the disturbed areas will be minimized at any time.
- Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of construction or disturbance.
- Prohibit the open burning of waste in the construction area.
- Dust masks should be provided (where applicable) to all construction workers.

These measures especially water spraying twice a day together with strict implementation of other dust suppression measures should be able to reduce fugitive dust emission as much as 75% (US.EPA (2006), AP 42, chapter 13.2.2).

It should be noted that the dust suppression efficiency of water spraying will depend on the volume of water use per unit area and the frequency of spraying. A 75% efficiency could be expected.

E. Fugitive Dust Control Targets

The fugitive dust control target will be based on the World Bank's ambient air quality standard. This standard prescribes the concentration of TSP not exceeding 230 $\mu g/m^3$. The TSP level at the receptors will not exceed this limit.

F. Predicted TSP Levels at the Receptors from main construction site

The dispersion of fugitive dust can be calculated using the Box Model recommended by Hanna, Briggs and Hosker (Handbook on Atmospheric Diffusion, 1987).

The Box Model is represented by the following formula:

$$C = \frac{Q}{d \times w \times m}$$

Where: C = concentration of dust (mg/m^3)

d = width of the project construction area perpendicular to wind direction (meteorological data period)

= 250 m.

w = average wind speed

= 0.40 m/s.

(minimum average wind speed was selected as for worst case prediction)

m = average Daytime Mixing Height = 1,500 m

Q = the quantity of dust dispersion into ambient air

= 8,681 mg/s

The calculations were made in two cases-No Control Case and Control Case. The background ambient TSP of 178.56 μg/m^3 was used in the calculations. This background TSP was 24-hr average TSP measured at Pagaw Zoon primary school during the period from January 29 – 1 February 2015. The results of calculations are presented below:

Condition, mg/s		TSP at Site, μg/m^3	Total TSP, μg/m^3
No Control	(8,681)	57.00	235.56
Control 75% suppression	(2,170.25)	14.15	192.81
Standard (WB, 2007)			230

The result from Box Model indicated that total TSP is not compile with the standard, Although the receptors in Pagaw Zoon village is about 1.1 km away to the south of the construction site and the impact of fugitive dust would be smaller than the level at the perimeter of the construction site. Mitigation measures to reduce dust emission must be strictly performed.

G. Recommended Mitigation Measures

No additional mitigation measures would be required at the construction site considering the small magnitude of the emission.

However, fugitive dust along the transport routes should be minimized. Measures to be implemented by the EPC contractor should include:

- Enforce speed limit for trucks not to exceed 40 km/hr when passing the communities.
- Cover construction materials by canvas during transportation, materials should be dampened, if necessary, before transportation.
- Establish a vehicle washing facilities to minimize the quantity of material deposition on public roads.
- Establish a checkpoint at project gate to ensure the vehicles leaving the project site are following the measures prescribed to reduce dust emissions.

H. Evaluation of the Significance of Fugitive Dust Impact

The impact of fugitive dust impact on the nearby communities is evaluated as follows:

Impact category	Direct impact
Impact duration	Throughout the construction period of about 3 months. More visible during the site preparation duration.
Impact extent	Local air pollution, mainly confined to within the construction site and transportation route
Impact magnitude	Medium magnitude with control at sources
Impact severity	Medium, cause annoyance, insignificant impact on the receptors
Control priority	High

The fugitive dust issue should receive high control priority.

I. Proposed Monitoring

Levels of fugitive dust should be monitored daily during the construction at the major construction sites and along the major transport routes. Details are provided in the environmental management plan for the construction phase.

6.3.2.5 Environmental Disturbances Caused by Noise

A. Sources

Typical noise levels of Bulldozers, excavators and graders are around 85 dB(A) measures at 15 m from the source.[3] According to calculation, main concern should be proposed mitigation measures of increase noise level in Pagaw Zoon village.

B. Sensitivity of Receptors

The closest receptor to the power plant construction site is Pagaw Zoon village which located about 1.10 km south of the power plant site. This village has about 563 households. The most sensitive receptor in the village is Pagaw Zoon Monastery and Pagaw Zoon School.

C. Mitigation Measures to Reduce Noise at Sources

Noise of mobile equipment is difficult to control at source. A practical measure is to provide ear muff to workers working in the excessive noise environment. In addition, temporary sound barrier should be setting during land clearance and land filling project site to reduce noise impact to Pagaw Zoon Village.

[3]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

D. Noise Control Targets

The targets of construction noise control at the receptors are dictated by the adopted noise standards. For the Project, the construction noise control will be designed to achieve two conditions:

- The construction noise will not increase the ambient noise level at the designated receptors higher than 70 dB(A) Leq-24 hour (USEPA Standard).
- The increase in the ambient noise level is not more than 3 dB(A) Leq-1 hour (IFC Standard).

E. Predicted Noise Levels at the Receptors

The noise level at the receptors due to the noise source can be calculated using the following equation:

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) \quad \text{.......} 1)$$

Where, Lp_1 = Sound Pressure Level at a distance r_1 from the source

Lp_2 = Sound Pressure Level at a distance r_2 from the source

r_1, r_2 = Distance between source and receiver Lp_1 and Lp_2

= 15 m and 1,100 m, respectively

The resulting ambient noise level will be the net effect of the noise level given by Equation (1) and the background noise level without the Project. The resulting ambient noise level can be calculated using the following equation:

$$\text{Total noise level} \quad (Lp_{total}) = 10\log\left(\sum_{i=1}^{n} 10^{Lpi/10}\right) \quad \text{.......} 2)$$

The ambient noise level measured during January 21-24, 2015 was 51.5-54.4 dB(A) Leq-24 hr. The ambient noise level in Leq.-1hr varied from 46.4 to 60.0 dB(A). These ambient noise levels will be used in the assessment of noise impacts.

The calculations of the net effect of construction noise on the ambient noise levels were made in two cases-No Control Case and Control Case.

No Control Case

Table 6.3.2.5-1 presents the calculated noise levels in Leq-24 hour and Leq-1 hour at the receptors if the noise levels at sources are 85 dB(A). The 85 dB(A), are the noise levels of Bull Dozer. It was assumed that three noise sources would simultaneously operates. Therefore, the source noise levels will be slightly higher than the above figures. For examples, three bulldozer will result in 89.77 dB(A) compared to 85 dB(A) for one machine.

The calculated ambient noise levels at the Pagaw Zoon village clearly indicate that without control, the noise control targets will meet the standard in case noise level at 24 hr. (Leq 24 hr.) low and high combine noise. Therefore, the mitigation measure should be proposed to protect impact from noise level during site preparation.

Control Case

Table 6.3.2.5-1 also presents calculated ambient noise levels at five levels of source control-70,75,80, 85 and 90 dB(A). The figures clearly indicate that the noise levels at the site perimeter will have to be reduced to meet the standard between 70-90 dB(A).

F. Recommended Mitigation Measures

Physical Measures

(1) The noise reduction at the perimeter could be achieved using an acoustic wall or a sound barrier at least 3 m high with adequate length to block the noise emanating to the receptor.

(2) Provide ear plugs or ear muffs to workers operating in the excessive noise areas.

TABLE 6.3.2.5-1

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR

Pagaw Zoon Village		
Receptor, r2	1100	m
Noise source,r1	15	m
Log (r2/r1)	1.87	
Noise level at r2, Lp1	Source-20x(Log(r2/r1)	
Ambient noise level,Lp2	54.4	dB(A) Leq-24 hr.
-High	60	dB(A) Leq-1 hr.
-Low	46.4	dB(A) Leq-1 hr.
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))	
Noise level of sources		

BullDozer	85		89.77	Assume 3 simultaneous operations

PARTICULARS	NO CONTROL	CONTROL LEVEL		
Impact-Leq-24 hr.				
LP0-ambient	54.4	54.4	54.4	54.4
LP1-Source	89.77	*80.0*	85.0	90.0
LP2-Effect of Source	52.5	42.7	47.7	52.7
LOG (LP0)	1.7	1.7	1.7	1.7
LOG (LP2)	1.7	1.6	1.7	1.7
Combined Noise Level	56.5	*54.7*	55.2	56.6
Impact-Leq-1 hr				
High Combined Noise Level	60.7	60.1	60.2	60.7
Increase	0.7	*0.1*	0.2	0.7
Low Combined Noise Level	53.4	47.9	50.1	53.6
Increase	7.0	*1.5*	3.7	7.2

Remark : Italic number is the noise level reduced to compile with the Standard

G. Evaluation of the Significance of Noise Impact

The construction noise issue deserves high control priority. The impact of noise on the nearby communities is evaluated as follows:

Impact category	Direct impact
Impact duration	Throughout the site clearance period
Impact extent	Local confined to areas around the project sites
Impact magnitude	Medium magnitude with control at sources
Impact severity	Medium, cause annoyance, insignificant impact on the receptors
Control priority	High

6.4 CONSTRUCTION PHASE- IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION

6.4.1 Construction Phase Activities

A. Construction Sites

Construction activities of the onsite facilities will concentrate in the Project site. All of works will be largest in scope and magnitude in the construction of power plant and its facilities. Therefore, environmental impacts of the construction phase will mostly concentrate in the Project site.

Construction activities will be specific for each project component. They could be grouped into two categories: (i) civil works (CW); and (ii) mechanical and electrical works (MEW). The mechanical and electrical works will cover only the installation and erection of power generation unit, gas distribution facilities, gas pipeline, control system, and distribution cables. The civil works will cover the remaining facilities.

In addition to these core construction works, there will also be landscaping works and minor civil works.

Filling materials and aggregates for concrete would be obtained from local sources and would be transported by trucks to the construction site. Cement and reinforced steel bars and other construction materials would be imported from Thailand as same as Gas generator and associated equipment, and gas distribution facility which will transported to the construction site by ships or trucks. The sea transport could affect navigation safety of local fishing boats. The land transport alternative would create some traffic and environmental disturbances along the routes in Thailand and the existing access road from the Thai border to the project site. Nevertheless, transportation risk will have to be managed to ensure public safety.

During the construction, the EPC contractor will erect temporary facilities such as fence, equipment shed, water supply, drainage, oil storage, canteen, toilets, etc.

To date, the construction site has not yet been prepared. The preparatory works would include land clearing and leveling, land filling to raise the elevation of the project site to about 1.0 m to 2.0 m above mean sea level.

The construction would require about 50 workers at peak time. Most or all workers would be at ITD worker camps. Potable water for worker at construction area would be served by private sector within nearby project area. Electricity would be obtained from diesel generators. A small volume of wastewater will be generated and could be disposed of in septic tanks. In areas where oil leak could occur, water shall be sent into an Oil/Water separator before its release to the nearby water courses.

6.4.2 Impact Identification

Based on the nature and magnitude of construction works, the Consultant identified in ***Table 6.4.2-1*** environmental issues and related construction works that will need to be managed during the construction. Impact assessment and mitigation measures of each issue are presented in the subsequent sections.

TABLE 6.4.2-1

ENVIRONMENTAL ISSUES TO BE MANAGED DURING CONSTRUCTION WORK

Environmental Issues	Activities / Sources
Fugitive dust	- Site clearing including removal of vegetation and top soil - Excavation works, soil stripping and re-grading - Handling and transportation of excavated materials - Movement of heavy vehicles on unpaved roads and surfaces - Deposition of dust from haulage trucks onto local roads
Gaseous Emissions	- Use of diesel-powered, vehicles and generator sets
Noise	- Soil compaction by heavy graders
Wastewater	- Domestic sewage generated by daily living - Wash waters, mainly from truck wheel washing and concrete wash waters - Surface runoff
Construction waste	- Vegetation from site clearance - Spoils and excavated materials from earth works - Construction material debris - Hazardous waste - Domestic wastes from site workers
Traffic	- Transportation of construction wastes, construction materials, and plant equipment

6.4.3 Impact Assessment

6.4.3.1 Gaseous Emissions

A. Sources

Diesel-powered heavy construction equipment, vehicles and generator sets are the major sources of gaseous emissions during the pre-construction and construction period. The emissions will include typical pollutants such as NO_x, SO_2, CO, and particulate in the exhaust gases discharged from the engines.

B. Sensitivity of Receptors

Gaseous emissions during the construction phase will create local air pollution confined within the construction sites. The receptors will be construction personnel.

Even though the nearest community (Pagaw Zoon Village) is about 1.1 km away from the main construction site, it is unlikely that this community will be affected by the gaseous emissions during the construction considering the small magnitude of the emissions and open space condition of the area.

C. Estimates of Emission Loads

Emission loads of various pollutants could be estimated from information on the number and type of diesel-engine construction equipment and their hours of operation. At this stage of project planning, such information is not available in the Feasibility Study Report. Besides, the pollution load would not be large.

D. Mitigation Measures for Emission Reduction at Sources

The EPC contractor will be required to adopt best practices to minimize gaseous emissions at sources through the following management measures:

- Adopt procedures to avoid construction vehicles idling for excessive periods (e.g. more than 5 minutes) if required to queue to enter the construction sites;
- Maintain all construction equipment in proper working conditions according to the manufacturer's specifications. The engines of the construction equipment fleet must be routinely maintained by qualified mechanics to ensure their proper conditions during operations.
- Provide adequate training to the equipment operators in the proper use of equipment.
- Use the proper size of equipment for the job.
- Use the equipment fitted engines with latest low emission technologies. For example, the diesel generator set to be used must be equipped with modern pollution control equipment.
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).

- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Take measures to manage the movement of construction vehicles entering and leaving the construction sites to avoid, or mitigate and manage the potential for vehicle emissions impacting on adjacent properties, except where such residential or sensitive activities front an arterial road to be used for access to or from the construction site. Measures for construction fleet management are to be provided in the construction vehicle management plan and the construction traffic management plan. Such measures may include avoiding or minimizing queuing on streets approaching the worksites or adjacent to other sensitive activities;
- For stationary plant and equipment powered by diesel motors, take measures to avoid or mitigate and manage the potential impacts of exhaust emissions on adjacent residential or other sensitive activities. For example, ensure all construction vehicles and stationary plant and equipment powered by diesel motors are fitted with emission control measures, and are regularly maintained to manufacturers' specifications.

E. Emission Control Targets

Ambient air quality at the construction site will comply with the applicable ambient air quality standards.

F. Predicted Impacts on Receptors

Considering the low emission loads, the impact of gaseous emission during the construction phase on the construction personnel is expected to be insignificant.

G. Evaluation of the Significance of Impacts

The significance of the impact of gaseous emissions was evaluated as shown below. The issue is considered low priority during the construction period.

Impact category	Direct impact
Impact duration	Throughout the construction period of about 3 months.
Impact extent	Local, confined to within the construction site.
Impact magnitude	Small, short term
Impact severity	Insignificant
Control priority	Low

Gaseous emissions during construction will not create significant air pollution problem. Nevertheless, best management practices must be adopted to minimize gaseous emissions during construction.

Overall the impact from gaseous emission during the construction phase is local in extent, short-term in duration and low in magnitude. The significance of impact from gaseous emissions during construction can be considered low, once mitigation measures are implemented.

H. Proposed Monitoring

Ambient air quality at the main construction site should be measured monthly starting when the construction becomes intensive. If the air quality is found to meet the control target, the monitoring should be terminated or the frequency reduced. Details are provided in the environmental management plan for the construction phase.

6.4.3.2 Noise

A. Sources

Based on construction experience and the nature of construction of this Project, noise will be mostly generated in civil works construction by operations of heavy construction equipment. Construction activities that generate excessive noise include soil compaction by heavy graders and concrete floor by concrete mixer. The construction noise levels will affect construction workers and could also affect the nearby receptors.

Construction activities creating noise and vibration at the construction site are shown in the table below:

B. Sensitivity of Receptors

The closest receptor to the power plant construction site is Pagaw Zoon village which located about 1.10 km south of the power plant site. This village has about 563 households. The most sensitive receptor in the village is Pagaw Zoon Monastery and Pagaw Zoon School.

C. Magnitude of Noise Levels at Sources

Table 6.4.3.2-1 compiles data on noise levels of various construction equipments relevant to the construction of this Project. As a standard, noise levels for construction equipment are referred to the levels measured at 15 m from the sources.

The data in ***Table 6.4.3.2-1*** clearly indicates that trucks generate the highest levels of noise at 88 dB(A) and concrete mixer which generate noise level at 85 dB(A) as same as bull dozer, grader and pneumatic tool. Therefore, truck and concrete mixer will be the most significant sources of noise at the power plant construction site during the earth and foundation work to generator installation which may take around 3 months.

D. Mitigation Measures to Reduce Noise at Sources

Possibilities are limited for reduction of noise levels of construction equipment. The EPC contractor and the subcontractors may rent construction equipment from suppliers and would not be at liberty to improve them. It is difficult to design practicable noise retrofit kits to endure the environment of the construction sites. Therefore, the EPC contractor and his subcontractors should be required to use equipment that has best noise performance.

TABLE 6.4.3.2-1

NOISE LEVELS OF CONSTRUCTION EQUIPMENT RELATED TO THE PROJECT

Equipment	Noise level (dB(A))*
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, Mobile	83
Bull Dozer	85
Grader	85
Trucks	88
Excavator	81
Drilling machine	84
Wheel loader	79
Pneumatic tool	85
Pump	76
Generator	81

Source : U.S EPA, "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances", NTID300.1, December 31, 1971

E. Noise Control Targets

The targets of construction noise control at the receptors are dictated by the adopted noise standards. For the Project, the construction noise control will be designed to achieve two conditions:

- The construction noise will not increase the ambient noise level at the designated receptors higher than 70 dB(A) Leq-24 hour (USEPA Standard).
- The increase in the ambient noise level is not more than 3 dB(A) Leq-1 hour (IFC Standard).

F. Predicted Noise Levels at the Receptors

The noise level at the receptors due to the noise source can be calculated using the following equation:

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) \qquad \text{.......} 1)$$

Where, Lp_1 = Sound Pressure Level at a distance r_1 from the source

Lp_2 = Sound Pressure Level at a distance r_2 from the source

r_1, r_2 = Distance between source and receiver Lp_1 and Lp_2

= 15 m and 1,100 m, respectively

The resulting ambient noise level will be the net effect of the noise level given by Equation (1) and the background noise level without the Project. The resulting ambient noise level can be calculated using the following equation:

$$\text{Total noise level} \quad (Lp_{total}) = 10\log\left(\sum_{i=1}^{n} 10^{Lpi/10}\right) \qquad \text{.......} 2)$$

The ambient noise level measured during January 21-24, 2015 was 51.5-54.4 dB(A) Leq-24 hr. The ambient noise level in Leq.-1hr varied from 46.4 to 60.0 dB(A). These ambient noise levels will be used in the assessment of noise impacts.

The calculations of the net effect of construction noise on the ambient noise levels were made in two cases-No Control Case and Control Case.

No Control Case

Table 6.4.3.2-2 presents the calculated noise levels in Leq-24 hour and Leq-1 hour at the receptors if the noise levels at sources are 88, 85, 85 and 85 dB(A). The first figure, 88 dB(A), is the noise level of trucks, the others three of 85 dB(A) represents noise levels of bull dozer, grader and pneumatic tool. It was assumed that three noise sources would simultaneously operate. Therefore, the source noise levels will be slightly higher than the above figures.

The calculated ambient noise levels at the receptors clearly indicate that without control, the noise control targets will not be met. Therefore, the construction noise at the site perimeter fronting the receptors will have to be reduced.

Control Case

Table 6.4.3.2-2 also presents calculated ambient noise levels at three levels of source control - 80, 85 and 90 dB(A). The figures clearly indicate that the noise levels at the site perimeter will have to be reduced to 80 dB(A), or about 15%. The EPC contractor has to design and prepare sound barrier made by appropriate materials, and installation of the sound barrier must include as a part of the construction contract. The sound barrier could be designed for permanent use as the perimeter walls of the power plant. This requirement will have to be prescribed in the contract. ***Table 6.4.3.2-2*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

G. Recommended Mitigation Measures

Physical Measures

(1) The noise reduction at the perimeter could be achieved using an acoustic wall or a sound barrier at least 3 m high with adequate length to block the noise emanating to the receptor.

(2) Provide ear plugs or ear muffs to workers operating in the excessive noise areas.

Management Measures

The following management measures should be implemented to complement the physical measures.

(3) Major construction activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at night time will need approval of the site engineers, and will need to have adequate noise control equipment or measures.

(4) Speeds of vehicles in the construction site will not be more than 40 km/hr.

(5) Noise performance requirements of construction equipment will need to be clearly stated in contract specifications.

(6) Temporary sound barriers or shielding should be installed for non-mobile equipment.

(7) The EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period such as piling.

(8) The construction environmental management plan will need to include an efficient complaints redress procedure and an efficient corrective action procedure to address the noncompliance of noise performance.

TABLE 6.4.3.2-2

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR

Pagaw Zoon Village				
Receptor, r2	1100	m		
Noise source,r1	15	m		
Log (r2/r1)	1.87			
Noise level at r2, Lp1	Source-20x(Log(r2/r1)			
Ambient noise level,Lp2	54.4	dB(A) Leq-24 hr.		
-High	60	dB(A) Leq-1 hr.		
-Low	46.4	dB(A) Leq-1 hr.		
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))			
Noise level of sources				
Trucks	88		92.77	Assume 3 simultaneous operations
Grader	85		89.77	
BullDozer	85		89.77	
Pneumatic tool	85		89.77	
	92		96.77	

PARTICULARS	NO CONTROL	CONTROL LEVEL		
Impact-Leq-24 hr.				
LP0-ambient	54.4	54.4	54.4	54.4
LP1-Source	96.8	*80.0*	85.0	90.0
LP2-Effect of Source	59.5	42.7	47.7	52.7
LOG (LP0)	1.7	1.7	1.7	1.7
LOG (LP2)	1.8	1.6	1.7	1.7
Combined Noise Level	60.6	*54.7*	55.2	56.6
Impact-Leq-1 hr				
High Combined Noise Level	62.8	60.1	60.2	60.7
Increase	2.8	*0.1*	0.2	0.7
Low Combined Noise Level	59.7	47.9	50.1	53.6
Increase	13.3	*1.5*	3.7	7.2

Remark : Italic number is the noise level reduced to compile with the Standard.

H. Evaluation of the Significance of Noise Impact

The impact of construction noise on the nearby communities is evaluated as follows:

Impact category	Direct impact
Impact duration	Throughout the construction period of about 3 months. More significant during the site preparation and structure work
Impact extent	Local confined to areas around the construction sites
If no control - **Impact magnitude**	 Resulting ambient noise levels fully met the applicable standard
- **Severity**	Negligible
Control priority	High

The construction noise issue deserves high control priority.

6.4.3.3 Wastewater

A. Sources

During the construction phase, the following wastewaters will be generated and need to be controlled:

- Domestic sewage generated by daily living activities of about 50 construction personnel at peak of the construction
- Wash waters in the construction site, mainly from truck wheel washing and concrete wash waters
- Surface runoff

These wastewaters will need proper management to minimize their environmental impacts when they are discharged from the construction site into receiving waters.

B. Sensitivity of Receptors

The wastewaters will be treated and most of the treated effluent will be reused in the construction site. The remaining volume will be collected in ditch and holding pond of the temporary power plant construction site with no discharge to nearby natural water courses

C. Estimates of Wastewater Volume

Domestic Sewage: The domestic wastewater was estimated at about 3.2 m^3/day based on 80% of daily use of domestic water for 1 worker (80 litre).

Wash Waters-Concrete Wash Waters: Concrete wash waters are generated in washing concrete mixers, delivery trucks, and related equipment (chutes, pump lines, drums, barrows, etc.). For a large construction site, typical volume of wash waters produced per week could be about 2,000 liters (2.0 m^3).[4/]

Wash Waters-Wheel Wash Water: For truck wheel washing, the volume of wash water to be disposed will depend on the method selected for wheel washing. For this Project, the EPC contractor would use the flooded basin for truck wheel washing. This method is simple and would be practical for this Project. The Consultant made a rough estimate of the volume of wheel wash water using the following assumptions: (i) 1 flooded basins; (ii) each flooded basin is 4 m wide, 10 m long and 0.5 m water depth; (iii) the wash water will be daily replaced. Therefore, the daily volume of wheel wash water will be 20 m^3/day.

Surface Runoff: The volume of surface runoff will depend on the total daily amount of rainfall. For a daily maximum rainfall of 41.90 mm[5/] over the 6.25 acres (25,000 m^3) construction site, the total volume of surface runoff will be 1,047.5 m^3.

D. Mitigation Measures for Waste Water Reduction at Sources

Domestic sewage and wash water will be appropriately treated by on-site aerated septic tank. 4 unit of 2,000 liter aerated septic tank would be completely installed at site before implementing construction phase. The aerated septic tank could treat BOD_5 of effluent to below 20 mg./L. which is complied with Myanmar standard.

Wastewater in the septic tank must be monitor and pumped to treat outside the construction area by authorized contractor. Wash waters will be treated to remove suspended solids and neutralize, if necessary. The treated effluent will be reused for spraying on site to suppress dust without discharged outside.

Storm water will be collected in temporary drainage ditch and holding pond. This water will be reused in construction activities, some water will need to be drained outside the construction site.

E. Wastewater Control Target

The wastewater control targets are to ensure that: (i) the quality of the treated effluent will comply with the applicable effluent quality standards; and (ii) there will be no public complaints related to effluent discharge.

F. Anticipated Impacts on Receptors

The domestic sewage will be treated by on-site aerated septic tank and pumped to treat outside the construction area. This water would cause no impact to natural water cause nearby to the project site.

[4/] Environment Agency, U.K., Regulatory Position Statement, Managing concrete wash waters on construction sites: good practice and temporary discharges to ground or to surface waters, *https://www.gov.uk/government/.../RPS_107_Concrete_washwaters.pdf*

[5/]Calculate from Average rain fall data from 1999-2014, the highest was in July as 1,299 mm.

The concrete wash water will have a high pH and contain high suspended solids. However, considering its small volume of about 2 m^3 per week or around 0.33 m^3/day, it will not have significant impacts on the surface water around the project area. However, it will be treated to remove suspended solids and adjust the pH as necessary.

Surface runoff will contain high suspended solids as it flows past the uncovered land surface. It may be contaminated by oil spills on some areas. Considering its large volume, the impact of surface runoff from the construction site on the surface water quality of nearby natural water courses would be insignificant because the construction site will be surrounded by sedimentation ditch which will collected stromwater to the retention pond.

It is considered that only surface runoff which would not generate some effect to quality of nearby water courses. Consequently, the receptors-the nearby watercourses-would not be sensitive to the wastewater from the construction site.

G. Impact Mitigation Measures

The EPC Contractor will be required to prepare detailed design of a wastewater management system for the power plant construction site. The wastewater management system will consist of a collection system and a simple treatment system. The proposed design concept is based on the principle of wastewater segregation, treatment and reuse as briefly described below:

Surface Runoff

- The site preparation activities, including land clearing and site filling and compaction, should be carried out during the dry season to avoid the problem of surface runoff with high turbidity discharging into the nearby water courses, if exist.
- The temporary power plant construction site should be surrounded by sedimentation ditches to trap the sediment and limit the amount of sediment that could be washed from the construction area to outside area.
- To prevent contamination of the surface runoff, potential contamination sources will be covered with roof. The surface runoff would contain only suspended solids washed out from the open area.
- Construct a temporary drainage system to collect the surfaced runoff from the construction area to avoid the discharging into nearby water courses.
- The collected storm water will be drained into a retention pond for removal of suspended solids before discharging into the holding pond. After the construction, the retention pond and holding pond will be retained and used for others purposes during the operational phase.

Domestic Wastewater

- Toilet wastes will be discharged into a septic tank and soak away pit, number of toilet must be sufficient for worker at rate of 1 toilet per 15 workers (4 unit of toilets would be installed before construction).
- Wastewater in the septic tank must be collected and treated outside the construction area by authorized contractor.

Wash Waters

- The concrete wash water and the wheel wash water will be discharged into a concrete settling basin. The effluent will be treated to adjust the pH, if necessary, and reused. The remaining effluent will be discharged into the retention pond.
- Water in the retention pond will be used for dust suppression on unpaved areas in the construction site, watering of the green area, concrete washing, and wheel washing.

H. Evaluation of the Significance of Impact

The impact of the treated effluent discharge on the surface water quality was evaluated as shown below. The wastewater management issue deserves medium priority during the construction period.

Impact category	Direct impact
Impact duration	Throughout the construction period of about 3 months. More significant during the site filling period and the concreting work
Impact extent	Mainly on nearby natural water courses
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.4.3.4 Construction Wastes

A. Sources

During the construction of Project facilities, the following waste materials will be generated:

- Vegetation from site clearance
- Spoils and excavated materials from earth works (rocks, soil)
- Construction material debris (concrete, wood, scrap metal)
- Hazardous waste (empty fuel drums, used oil filters, batteries, spent solvents, oils)
- Domestic wastes from site workers (food waste, waste paper, packaging)

For the purpose of waste management, wastes generated in the construction can be divided into three categories:

(1) ***Construction, demolition, and land-clearing (CDL) waste***: Includes all non-hazardous solid wastes resulting from site clearing, excavation, concrete works, installation of equipment, and construction of buildings. CDL wastes for this Project will

consist of vegetation removed from the site before site preparation works, excavated materials particularly top soil, construction debris, and packaging materials.

(2) ***Non-construction waste***: Includes wastes generated in from worker such as paper, food and beverage containers, food wastes, and other domestic items.

(3) ***Hazardous waste***: Includes such wastes as spent lubricating oil, paints, and chemicals used in the construction. Most of the hazardous wastes are in liquid form.

These waste materials will need to be adequately managed to minimize their environmental impacts.

B. Sensitivity of Receptors

The receptors in this case will be soil and ground water at the disposal sites.

C. Estimates of Waste Quantities

Construction Wastes

The amount of construction wastes can be estimated using the quantity of waste per unit area quoted in various documents as shown in ***Table 6.4.3.4-1*** below. The best rates of the three references are similar, i.e. about 1.90-1.963 tons/100 m^2. For conservative estimates, 2 tons per 100 m^2 was used in the estimation of construction waste quantity.

The Project will use 6.25 acres (25,000 m^3) of land for the power plant and its associated facilities. Assuming that this area will be concrete floor, the total amount of construction wastes to be generated in the construction was estimated at 500 tons. For the construction period of about 3 months, the average daily amount of waste would be about 6.67 tons/day based on 25 construction days per month.

TABLE 6.4.3.4-1

AMOUNT OF CONSTRUCTION WASTES FOR NON-RESIDENTIAL BUILDINGS

Reference	Amount of Construction Wastes
Zender Environmental, www.zender-engr.net, 2016	3.89 lb/ft^2 (1.90 tons/100 m^2)
www.steelconstruction.info/Construction_and_demolition_waste	Ranging from 11.1 to 1.9 tons/100 m^2 gross internal areas depending on the level of management performance.
thegreenestbuilding.org	4.02 lb/ft^2 (1.963 tons/100 m^2)

Non-construction Wastes

Non-construction wastes will be generated in daily living of construction workers and project personnel. At the peak of construction activities, about 50 people will be working on the Project site. Assuming that all construction personnel will work on site, each will generate about 0.8 kg/day.

The total amount of non-construction wastes was estimated at about 40 kg/day at peak, which is much lower than the construction wastes.

Hazardous Wastes

A waste may be considered hazardous if it exhibits one or more of the following characteristics:

- Ignitability - a liquid with a flash point below 140 °F (solvents, mineral spirits, etc.)
- Corrosivity - a water-based liquid with a pH of less than or equal to 2.0 or a pH of greater than or equal to 12.5 (battery acid, alkaline cleaning solvents, etc.)
- Reactivity - an unstable substance that readily undergoes violent chemical reactions with water or other substances (hydrogen sulfide, bleach, etc.)
- Toxicity - a harmful substance due to the presence of metals or organic compounds (lead paint, adhesives, etc.)

Examples of hazardous wastes generated in construction include:

- Used oil, hydraulic fluid, or diesel fuel;
- Waste paints, varnish solvents, sealers, thinners, resins, roofing cement, adhesives, machinery lubricants, and caulk;
- Cleanup materials (such as rags) contaminated with the items listed above;

D. Mitigation Measures for Waste Reduction at Sources

Reduction of construction wastes at sources could be achieved through good design and best practices in construction management.

Design and Planning

There are four key principles that design teams can use during the design process to reduce waste. They are summarized below together with questions the design team should address to design out waste.

1) Design for reuse and recovery

Design for reuse of material components and/or entire buildings have considerable potential to reduce the environmental burdens from construction. Much of this is common sense as, with reuse, the effective life of the materials is extended and thus annualized burdens are spread over a greater number of years. Reuse, in the waste

hierarchy is generally preferable to recycling, where additional processes are involved, some of which will have their own environmental burdens.

2) Design for materials optimization

Good practice in this context means adopting a design approach that focuses on materials resource efficiency so that less material is used in the design, i.e. lean design, and/or less waste is produced in the construction process, without compromising the design concept.

Three main areas offer significant potential for waste reduction. They are:

- Minimization of excavation
- Simplification and standardization of materials and component choices
- Dimensional coordination.

3) Design for waste efficient procurement

Designers have considerable influence on the construction process itself, both through specification as well as setting contractual targets, prior to the formal appointment of a contractor/constructor. Designers need to consider how work sequences affect the generation of construction waste and work with the contractor and other specialist subcontractors to understand and minimize these. Once work sequences that cause site waste are identified and understood, they can often be 'designed out'.

4) Design for deconstruction and flexibility

Designers need to consider how materials can be recovered effectively during the life of the building when maintenance and refurbishment is undertaken or when the building comes to the end of its life.

Best Practices in Construction Management

The construction will adopt the following practices to minimize waste quantities at sources: waste segregation, waste collection and storage, waste reuse and recycling, waste disposal, and on-site record keeping.

Waste Segregation

- The Contractor will design and implement a waste segregation system and procedure and communicate it to all construction personnel to strictly adhere to the segregation procedure;
- An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories.

Waste Collection and Storage

- Daily collection and transport will be organized and carried out for each sub-category of segregated wastes;
- A roofed storage area with adequate space will be provided for storing the segregated wastes waiting for the on-site or off-site reuse or recycling;
- The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil.

Waste Reuse and Recycling

- Chipping and mulching of vegetation cleared during construction and reuse of mulched material for landscaping purposes;
- Reuse of excavated material as fill at approved fill sites;
- Topsoil free of weeds to be stockpiled and stored for re-use, if possible;
- Collection and return of packaging materials (e.g. pallets) to suppliers wherever practicable;
- Use of recycled materials to the limits of design in concrete, road base, asphalt and other construction materials;
- Remove any contamination inadvertently deposited in recyclable waste material containers. Provide cleanup of excessive contamination at recycling vendor locations when such contamination is not controlled at the project site;
- Collection and recycling of used oils by a licensed contractor;
- Collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities.

E. Waste Control Targets

There are no quantitative standards for construction waste management on site. However, the control targets should be on soil and groundwater quality standards if the construction wastes are to be disposed in the Project area.

The performance of construction waste management will be evaluated by the following qualitative indicators:

- No wastes are haphazardly dumped inside or outside the construction site;
- No public complaints related to the management of construction wastes.

F. Predicted Impacts on Receptors

It is not possible to predict the impacts of construction wastes on soil and ground water at the disposal sites. Considering the small quantities of wastes that could cause pollution, insignificant impacts are most likely.

G. Impact Mitigation Measures

The remaining wastes that cannot be reused or recycled will have to be properly disposed off properly to minimize environmental impacts. The following approach should be considered:

General Requirements

- An efficient construction waste management system should be established and implemented. Construction waste will need to be classified and sorted out at source for disposal. The disposal methods will depend on the types of wastes: direct reuse in the construction, sale and recycling of materials, land filling for inert materials and specific treatment method for each type of hazardous materials.
- Haphazard disposal of construction waste in or off the construction site will be prohibited.
- No burning of wastes will be allowed.

Construction and Land Clearing Wastes

- Site preparation waste should be disposed at a suitable land fill site to be selected by contractors with approval of concerned authority.
- Construction wastes should be handled by the existing municipal solid waste collection and disposal services. If such service is not possible, the construction wastes would need to be disposed off in the Project site. They may be buried in areas designated for green areas.

Non-construction Wastes

- Non-construction wastes will be disposed outside with the construction wastes.
- Provide adequate number of refuse bins or containers with tight covers, daily collection of disposal.

Hazardous Wastes

- Hazardous wastes will be handled by a licensed hazardous waste contractor. If this service is not available, the Contractor will need to find appropriate arrangements for incineration, safe permanent storage, or other appropriate methods of disposal.
- A Hazardous Waste Management System covering waste classification, separation, collection, storage, transfer and disposal should be set up and operated. The waste management system will comply with applicable regulation of the government, if any.

H. Evaluation of the Significance of Impacts

The impacts of construction wastes on the natural environment are assessed in the table below. The issue is considered medium control priority.

Impact category	Direct impact on soil and water environment
Impact duration	Throughout the construction period of about 3 months
Impact extent	Local soil and ground water pollution, mainly confined to within the disposal sites of the Municipality
Impact magnitude	Small magnitude considering the waste quantities
Impact severity	Minor, insignificant impact on the natural environment
Control priority	Medium

6.4.3.5 Road Traffic

A. Sources

During the construction period of 3 months, the construction of temporary power plant and its facilities will necessitate the need for transportation of construction wastes, construction materials, and plant equipment. Consequently, traffic loads will be increased on existing roads headed to construction area, ITD main road, the access road to the power plant construction site. Due to the maximum of worker for this project is 50 which can transport by two (2) trucks, therefore traffic related to personnel transport will not be considered. Traffic related impacts during the construction phase would be congestion of local roads and increased risk of accidents.

B. Sensitivity of Receptors

ITD main road-This road is the main road linking the Dawei SEZ to Thailand border. The traffic load on this road is currently in the range of 320 and 287 vehicles per day for working day and holiday respectively. The majority of vehicles are motorcycles (see ***Section 5.4.4.4***). The traffic condition is similarly all days. The carrying capacity of this road is 2,000 while the total PCU are 373.74 and 321.01 PCU/day for working day and holiday respectively (see ***Table 5.4.4-5***). Most land areas along this road are agricultural area and idle land.

C. Estimates of Traffic Loads

A traffic load is expressed as the number of truck trips per hour. It will depend on the total quantity of materials that will need to be transported into and out of the construction site. As the site preparation will not involve much excavation, the traffic load will be governed by the quantity of materials to be transported into the construction site. The traffic load related to the transport of materials into the power plant construction site will be much higher than the traffic loads related to the construction of transmission line and gas pipeline. The assessment of construction impacts on local traffic is therefore focused only on the power plant construction.

Traffic Loads Related to Transport of Site Filling Material

It has no data on the total quantity of site filling materials to be transported into the power plant construction site. The Consultant, therefore, has to make estimates.

The total volume of filling materials required is estimated based on the following data and assumptions:

- The construction site will be filled up to about 1-2 m above the existing level.
- The filling period will be about 60 days.
- Operation hour of truck for transport fill materials to the site is 10 hours per day.
- The entire area of 6.25 acres (25,000 m^3) of the power plant construction site will be filled.
- Sand will be used as fill material. Density of wet sand = 3,100 lb/cubic yard = 1,839 kg/m^3
- Compacted volume of the fill material = 0.85 of loose volume
- Capacity of a dump truck = 20 tonnes

Based on the above data, the total number of truck trips for filling the power plant construction site will be about 5,409 trips (= (25,000×2×1.839)/ (0.85×20)).

The traffic load will be about 91 trips per day or 10 trips/hr.

In addition, the number of truck trip has to be calculated in terms of inbound and outbound. Therefore, the number of truck trips will be about 182 trips/day or 20 trips/hr.

Traffic Loads Related to Transport of Construction Materials

It has no data on the quantities of construction materials. The Consultant made a rough estimate of the quantities of cement, sand, and gravel (coarse aggregates) based on the following assumptions:

- Area of concrete floor = 6,000 m^2
- Thickness of concrete = 8 inches
- Concrete mix = 1:2:4

The calculation results are given in ***Appendix 6A***. The key findings are:

Total weight of cement	510	tonnes
Total weight of sand	1,084	tonnes
Total weight of coarse aggregate	2,168	tonnes
Total weight of materials	3,762	tonnes

If the concrete works will take 30 days, the number of truck trips would be around 3 trips/hour on average.

Including steel bars for concrete works and power plant building, the number of truck trips would be not over than 10 trips/hour. At this stage of project

preparation, the exact number of truck trips is not available. However, the number will definitely be lower than the number of truck trips for land filling.

It is then clear that the traffic loads created by the land filling will be much greater than the traffic loads created by the concreting works which will be carried out after the land filling. Therefore, the traffic impacts will be more intense during the land filling period.

D. Mitigation Measures for Reduction of Traffic Loads

The number of truck trips per hour can only be reduced if the fill up level was change to 1 meter. Due to the site is slightly slope, land filling by material from the project site is possibly, the number of truck trip will be reduced.

E. Traffic Management Targets

The traffic management should aim at the following targets:

- There will be no accidents related to construction traffic in the identified impact areas.

F. Predicted Impacts

As indicated by the V/C ratios presented in ***Section 5.4.4.4*** traffic on ITD Main Road was congested at Station TC1. The transportation of fill material will increase the existing traffic loads by about 38.2 PCU/hr. The V/C ratio at TC1 will be increased as shown in ***Table 6.4.3.5-1***. The traffic at TC1 will be good traffic flow. However, the traffic management will have to be more focus at TC1 in order to prevent the accident.

TABLE 6.4.3.5-1

IMPACTS OF TRANSPORT OF FILL MATERIALS ON EXISTING TRAFFIC

PARTICULARS	TC1
Existing total PCU/hr.	7.676
Carrying capacity, PCU/hr	2,000.00
Existing V/C ratio	0.02
Existing traffic condition	Very good traffic flow
During the site filling period	
Truck trips per day	182
Truck trips per hour based on 10 hrs	19
Truck traffic in PCU equivalent/hr (PCU for truck-2.5)	39.9
Total traffic during the site filling period, PCU	755.6
Carrying capacity, PCU/hr	2,000.00
New V/C ratio	0.3788
Expected traffic condition	Good traffic flow

G. Management Guidelines and Impact Mitigation Measures

Management Guidelines shall be applied as follows:

- Take reasonable and practicable measures to avoid, or mitigate and manage the potential construction traffic impacts on communities near the worksites, including local parking.
- Minimize as far as reasonably practicable, potential traffic disruptions to the operation of the road network and the public transport network due to the transport of materials to and from the construction sites.
- Maintain safe access near all project work areas for road users, including pedestrians and cyclists. In particular, develop local access strategies in consultation with stakeholder groups to maintain safe, convenient and efficient access to community facilities such as schools, child care facilities, churches, health care, shops, and local markets, if any.
- Implement traffic management measures near worksites and other project works to avoid conflicts between construction traffic, and pedestrians and cyclists.
- Take reasonable and practicable measures to inform the local and broader communities about the timing and scale of changes to traffic conditions on roads in the vicinity of worksites and construction works.
- Monitor traffic flows near construction works and take corrective action in response to traffic impacts as a consequence of construction works.

Impact Mitigation Measures shall be applied as follows:

Truck routes and construction site access

- In consultation with the concerned authorities at the national, regional, and township levels, develop and implement a Construction Traffic Management Plan to address the following issues:
  - Use of established truck routes and arterial roads for the haulage of construction materials and spoil;
  - Where practicable, provide direct access from worksites to arterial roads to minimize truck traffic in local streets;
  - Avoid haulage tasks during peak traffic periods as far as practicable. Where haulage in peak periods is unavoidable, such activities are to be managed in accordance with specific traffic management sub-plans provided to the relevant agencies in advance.
  - Control heavy vehicle movements on ITD Main Road to avoid interference with major events, if any;
  - Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles servicing the construction worksites;

- Prepare and implement a comprehensive construction traffic management plan to control truck movements to avoid, or mitigate and manage the impacts of heavy vehicle traffic on the road network, except in exceptional circumstances, and after consultation with the local community;
- Exceptional circumstances would arise when no suitable alternative routes are available for specific construction tasks.

- Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan to include:
  - Management of truck speed and position to avoid queuing on the approaches to the spoil handling and loading facilities;
  - Management of traffic signals on nominated spoil haulage routes in night-time hours to achieve optimum performance of the truck fleet and to minimize impacts on communities along the routes;
  - Maintain all vehicles transporting material to and from the construction sites to a high standard (ADR28/01) with regards noise emissions, exhaust emissions, traffic safety and operational safety;
  - Ensure all vehicles leaving a construction site pass over or through devices designed and maintained to remove soil and other materials.

Construction Traffic Hazards

- Heavy trailer trucks use for transporting heavy and large plant equipment will have to be directed by a traffic police car.

Local Traffic

- Implement management measures to avoid, or minimize increase in traffic caused by the project works in local streets as practicable;
- Notify the local community about proposed changes to local traffic access arising from construction activities, and provide clear signage of changed traffic conditions and take other measures to ensure safe traffic movement;
- Prepare and implement an employee parking policy for the construction worksites to manage the impacts on car parking in the vicinity of worksites and help avoid project parking in local streets;

Traffic Management at the Intersection of ITD Main Road

Provide a traffic police or relevant officer to control traffic at the intersection during the transport period.

Pedestrians and Cyclists

- Notify the local community, and in particular, local schools, about changes to pedestrian and cycle access during construction near construction works;
- Provide traffic notice board and traffic controls designed for the safe movement of pedestrians and cyclists near the worksites.

H. Evaluation of the Significance of Impacts

The impact on traffic was evaluated as shown below. The traffic management deserves high priority during the construction period.

Impact category	Direct impact
Impact duration	Throughout the construction period of about 6 months. More significant during the site filling period of about 2 months.
Impact extent	Mainly on ITD main road and along the routes from the material sources to the power plant construction site
Impact magnitude	Heavy traffic congestion at TC1 will be heavier.
Impact severity	Significant, cause annoyance
Control priority	High

6.4.3.6 Impact on Local Communities

The construction activities could have some impacts on local communities, mainly on the following aspects: (i) local economy; (ii) infrastructure and services; (iii) culture and tradition; and (iv) community health, safety and security.

(i) Local Economy

A. Impacts

The Project construction will require about 50 workers at construction peak. These workers will require local services, particularly foods and sundries. Therefore, there will be a cash injection into the local economy, thereby creating livelihoods related to services. Thus local economy will be boosted up.

If most of the construction workers are locals, the Project construction will generate direct employment opportunities in addition to the employment opportunities related to the provision of services. The employment creation will create social benefit in addition to the economic benefit described above.

However, the likely positive social and economic impacts of the Project construction will be realized only over the construction period. Their magnitudes would be much less than the similar impacts that would be created by Initial Phase Development of DSEZ in the near future. Nevertheless, measures should be implemented to enhance the positive impacts are suggested below. The significance of the positive impacts is considered moderate, once the suggested measures are implemented.

B. Enhancement Measures

- Priority should be given to local employment, especially the villages close to the construction site; e.g. Pagaw Zoon, Min Dut, Pale Gu, and Yalai villages.
- The recruitment process should be fair and transparent and wage rates are commensurate with experiences and qualifications.

- The employment conditions will need to comply with the requirements in the national labor law, the social security law and standard wage rate, and other applicable laws and regulations.
- The Project Proponent should establish good relationship with the locals and provide the locals with timely information about the project, likely impacts and mitigation measures, and procedures to address local concerns and grievances.
- Disclose relevant information before the construction of major components and during the construction through such methods as:
  - Information billboard
  - Information disclosure via village headmen or village community leaders
- Conduct attitude surveys to collect information on local concerns, issues, and problems of the communities (200 samples within 5 villages).

(ii) Infrastructure and Services

A. Impacts

The Project construction could compete with the communities in using limited local infrastructure and services. This competing use could put an extra demand pressure on the already inadequate infrastructure and services. Two areas of concern will be roads and medical services.

Road: Transport of materials into the project construction site will have some impacts on the ITD main road, the access road to the power plant construction site. An increase of traffic volume will affect to the locals. However these roads are constructed by the ITD, not the public road. Therefore it should not be significant impacts on the local people. Nevertheless, mitigation measures should be put in place to minimize the impacts.

Medical Services: The Project would need to use Yebyu hospital or go far to Dawei hospital for providing medical services to its construction personnel, particularly for emergency cases. However these hospitals give priority to the local residents with limited resources. In order to prevent the competing use of medical services by the Project, the power plant should put mitigation measures in place to minimize the impacts.

B. Mitigation Measures

- Transportation of construction materials must avoid peak traffic hours.
- Speed limits should be imposed on heavy vehicles traveling in the public road to lessen the damage caused to the main road.
- Services including water supply, waste disposal, sewage treatment and health services should be provided within the construction site.
- Roads damaged by the construction related traffic will have to be repaired as soon as possible by the Project.

- Consultation with villagers to inform them about an increase of traffic and duration of transportation works
- Establish safety rules and regulations, and practice accordingly.
- Establish First Aid service at the construction site.

(iii) Culture and Tradition

A. Impacts

There are no known sites of cultural or archaeological significance in the construction sites. The construction will therefore have no direct impacts on the local cultural and archaeological heritages.

However, construction personnel, who are not local, could have conflicts with locals related to differences in cultural and traditional practices and value. As the majority of workers would be the locals, this potential impact would be small.

B. Mitigation Measures

- All project personnel should be made aware of local cultures, traditions and norms.
- A code of conduct should be put in place for workers to strictly observe when interacting with the locals, including restriction to movement outside of the campsite after designated time.
- The Project Proponent should establish good relationship with the locals and actively support and participate in traditional and cultural events.
- During the construction, the concerned authorities will be immediately informed if archaeological artifacts are found.

(iv) Community Health, Safety and Security

A. Impacts

The construction may have some impacts on community health, safety and security. The health and safety issues related to gaseous emission, noise and traffic during the construction phase are discussed in ***Sections 6.4.3.1, 6.4.3.2*** and ***6.4.3.5***. This section will cover the remaining issues of health risk and security.

Health Risk: Without proper management, the influx of construction workers could pose health risks to the communities. Communicable diseases such as sexually transmitted diseases, tuberculosis and hepatitis are areas of concern. The EPC contractor will need to design and implement an effective program for control of communicable diseases among the workers.

Security Risk: The influx of workers could also pose security risks to the communities in terms of crimes and drug abuses.

However, as the workers will be mostly hired from the locals, the health and security risks would be small. Nevertheless, mitigation measures will need to be implemented to minimize the risks.

B. Mitigation Measures

Health Risks

- All recruited workers should receive health examinations for screening of major communicable diseases before employment. Subsequently, annual check-ups should be provided.

- Symptoms of major communicable diseases, if noted, should be immediately reported to the district medical officer for proper treatment.

- Provide health awareness training to workers on hygiene and sanitation, communicable and infectious diseases.

Security Risks

- All workers should be cleared with the local security authorities regarding criminal records before employment.

- The EPC contractor will be required to establish and implement a site security system and appropriate measures, including prevention of drug abuse.

6.4.4 Risk Assessment

A. Environmental Risk Management Context

For this Project, the EPC contractor would be contractually responsible for: (i) preparation of detailed designs and specifications of all equipment and facilities; (ii) procurement and construction; and (iii) testing and commissioning the power plant and associated facilities before handling over to the Project Proponent. The environmental performance requirements of the Project construction and operation will need to be adequately incorporated in the designs, specifications, and construction. All environmental mitigation measures recommended in this Final ESIA Report and accepted by the Project Proponent and MONREC will be implemented by the EPC contractor and his subcontractors under the supervision of construction supervision consultants of the Project Proponent. Monitoring of the environmental performance of the EPC contractor will be carried out by the project management team of the Project Proponent.

The environmental risk management will be carried out by the project management team as part of the overall project risk management. The environmental risk mitigation measures will be implemented by the project management team within the scope of and procedures for project risk management.

B. Risk Identification

During the construction phase, two uncertain events or two environmental risks would be of concern to the Project Proponent:

- The Project may not be able to comply with environmental requirements prescribed by MONREC or other concerned authorities.
- The Project may be opposed to by stakeholders, especially the nearby communities.
- Fires and explosions may occur during the testing and commissioning period. However, this risk is similar to the operational risk, and it will therefore be included in the operational risks.

The first two uncertain events could have the following consequences on the Project:

- The authorities may order the Project to suspend the construction or in the worst case they may revoke the construction permit.
- Public complaints could be filed against the Project and could lead to litigations.
- Bad publicity to the Project
- Physical damages or body damages on-site or off-site with cost to be incurred by the Project.

C. Risk Assessment

The two identified risk events could be caused by the following:

Risk 1-Failure to comply with the environmental requirements

Potential causes:

- the EPC contractor and subcontractor have inadequate understanding of the environmental performance requirements of the Project
- the EPC contractor and subcontractor unintentionally omit the environmental requirements due to ambiguity of the environmental requirements in the contract
- inadequate supervision and monitoring of environmental mitigation activities of the EPC contractor and subcontractors
- changes in designs or construction methods without revising the originally proposed mitigation measures
- changes in the environmental requirements during the construction without the revision of the originally proposed mitigation measures

Risk 2-Public opposition to the Project

Potential causes:

- misunderstanding or misinformed of the nature, severity and extent of impacts of the Project
- rough relationship between the Project and the surrounding communities

D. Risk Classification

Figure 6.4.4-1 shows a risk matrix for the construction phase.

Risk 1 is considered medium risk as it would have a high level of likelihood of occurrence and significant of impacts.

Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a significant of impacts.

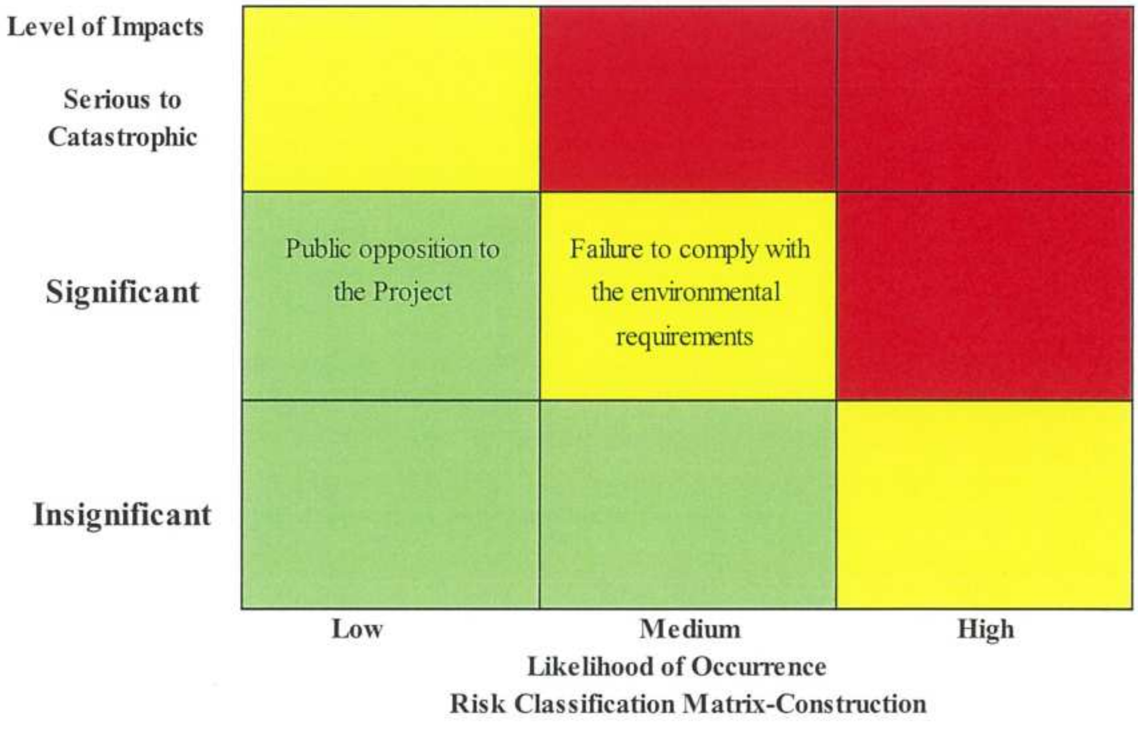


FIGURE 6.4.4-1 : RISK MATRIX FOR THE CONSTRUCTION PHASE

E. Risk Mitigation Measures

Risk mitigation measures need to address the identified causes of the risk. Mitigation measures for the two identified risks correspond to the identified causes are presented in ***Table 6.4.4-1***. The measures will be implemented through contractual arrangements and stakeholder engagement.

TABLE 6.4.4-1

MITIGATION MEASURES FOR ENVIRONMENTAL RISK MANAGEMENT DURING CONSTRUCTION PHASE

Cause	Mitigation Measures
EPC contractor and subcontractor have inadequate understanding of the environmental performance requirements of the Project.	1.Require the EPC contractor to: --prepare a CEMP based on the EIA report and the associated CEMP, detailed design and construction plan and schedule. The CEMP must clearly define: --the Project's environmental requirements and obligations --physical measures that are needed to comply with the requirements and obligations --construction measures that are needed to comply with the requirements and obligations --assignment of responsibilities to each subcontractors 2. Require the EPC contractor to clearly incorporate environmental requirements and mitigation measures in the Project Understanding, the Statement of Criteria, and the Basis of Designs-these three documents would be required by the Project Proponent as part of the design risk management.
Ambiguity of environmental requirements in the EPC contract.	1. TOR for procurement of the EPC contract must clearly state the Project's environmental requirements during the construcion phase that the EPC contractor must ensure that the Project construction will meet the requirements. 2. The EPC contract must clearly prescribes environmental management responsibility of the EPC contractor
Inadequate supervision and monitoring of environmental mitigation activities of the EPC contractor and subcontractors.	1. The supervision consultant will be required to submit a supervision and monitoring plan that clearly indicates the environmental tasks to be supervised and monitored. This supervision and monitoring plan for the implementation of the environmental mitigation measures would be part of an overall project supervision and monitoring plan. 2. Weekly and monthly reviews of the EPC contractors environmental performance. 3. Close supervision of truck operations especially during the site filling period.
Changes in designs or construction methods without revising the originally proposed mitigation measures accordingly.	Changes in designs or construction methods may be initiated by the EPC contractor or the Project Proponent. The request for changes must be subject to the change procedure in project management. The request for changes must be accomodated by an analysis of environmental implications and revised mitigation measures.
Changes in the environmental requirements during the construction without revising the originally proposed mitigation measures.	Changes in the environmental requirements may be initiated by MOECAF or the Project Proponent with approval of MOECAF. The changes must be subject to the change procedure in project management. The EPC contractor will analyse environmental implications of the changes and revise the originally proposed mitigation measures accordingly.
Misunderstanding or misinformed of the nature, severity and extent of impacts of the Project.	1. Pay attention to the clarity and adequacy of the information on impacts of the Project using non-technical language that could be easily understood by villagers. Information in audio visual forms should also be prepared. 2. Design an effective public information program to ensure the intended information reaches the target groups. 3. Ensure that the tripartite committee (proposed in the CEMP has a clear understanding of the Project's impacts). 4. Organize a study tour to other similar power plants in Myanmar or some neighbouring.
Rough relationship between the Project and the surrounding communities	1. Establish a village development fund in consultation with the Electricity Board. Representatives of the villages should participate in the management of the fund. 2. CSR activities should be initiated as soon as possible in the construction phase. 3. The Project management team should visit as often as possible the villages located within the area of influence of the Project.

Remark : CEMP = Construction phase environmental Management Plan

F. Implementation Arrangements

(1) Responsible Persons and Organization

Environmental risk management needs to be an integral element of environmental management of the Project. Therefore, the organization for environmental management proposed in the CEMP will also implement the environmental risk mitigation measures in cooperation with the construction supervision manager.

(2) Risk Monitoring and Evaluation

Risk monitoring involves periodic monitoring of risk triggers. A risk trigger is an event which could lead to the occurrence of the risk event. For example, a risk trigger for a flood risk is the intensity and frequency of rain falls in the catchment area. The rainfall data will be analysed to evaluate the likelihood of occurrence of the flood.

Risk monitoring and evaluation in environmental risk management will be carried out as part of the environmental monitoring program for environmental management. Some data could serve both risk monitoring and environmental monitoring.

Risk 1-Failure to comply with the environmental requirements

The monitoring and evaluation should cover the following risk triggers:

- inadequacies of the CEMP prepared by the EPC contractor and the timeliness in correcting deficiencies in the CEMP found by the project management team;
- trend of the EPC contractor and subcontractors not conform with the construction requirements related to the CEMP;
- response of the EPC contractor to the instructions of the supervision engineers and the EHS manager regarding the implementation of environmental impact mitigation measures and monitoring of the environmental management performance; and

Risk 2-Public opposition to the Project

The monitoring and evaluation should cover the following risk triggers:

- trend of public complaints-the increasing trend would suggest the increasing likelihood of occurrence of the risk event; and
- monthly surveys of public views and opinions on the Project-the frequency of surveys would be reduced if the public opinions are positive.

(3) Reporting and Corrective Actions

The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management.

6.5 OPERATION PHASE- IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION

6.5.1 Natural of Project Operation

The operation of a natural gas combined temporary power plant is cleaner and simpler than a coal-fired power plant. For this Project, the following features of temporary power plant operation which have environmental implications are noted:

(1) Natural gas fuel will be supply from PTT LNG (Thailand) via land transportation.

(2) Supplementary fuel will not be used. No provision for diesel firing of the gas turbines-they will be operating on natural gas only. Back feed from the grid shall be needed to start up the static frequency convertor of the gas turbines.

(3) 2 unit of 2,000 liters aerated septic tank would be install in order to treat wastewater from the power plant

These design features will eliminate most environmental impacts associated with coal-fired power plants and other conventional natural gas-fired power plants.

6.5.2 Relevant Environmental Issues

Based on information on the Project operation and Project area, and on established knowledge of environmental aspects of temporary power plants, during the operational phase of this Project, the temporary power plant management will have to manage the following issues:

(1) Emissions of air pollutants generated by combustion of natural gas, including NO_X, CO, and particulates.

(2) Excessive noise of gas engine generators and large fans of the air-cooled condenser.

(3) Wastewaters from power plant personnel, plant washing and cleaning activities.

(4) Wasted lubricating oil and coolant from maintenance of generator.

(5) Increasing of traffic load on ITD road by LNG transporation.

(6) Occupational health and safety of the power plant personnel, particularly excessive noise in the working areas inside and outside the power plant.

(7) Public safety of communities near the temporary power plant.

(8) Abstraction of about 1.8 m^3/day (12 person@ 150 litre/person) of ground water from tube wells to be constructed inside the temporary power plant premise.

These environmental (and social) issues have to be adequately managed to minimize their impacts to fulfill legal and social obligations.

Visual pollution caused by the temporary power plant and the transmission line will not be an issue as the Project area is flat and has no places of natural beauties. The appearance of the Project's tall structures, particularly the power plant stack would not create an unsightly view of the Project area.

Similarly to issues of culture or archaeology which are no known of significance sites in the study area. The operation of temporary power plant together with a rather small number of about 12 workers will therefore have no direct impacts on the local cultural and archaeological heritages.

6.5.3 Impact Assessment

6.5.3.1 Gaseous Emissions

A. Sources

During the operational phase of the Project, the temporary power plant will continuously emit air pollutants generated by combustion of natural gas in the gas engine generators. For typical natural gas-fired power plants, the main air pollutant in the flue gas is nitrogen oxides (NOx). Sulfur dioxide (SO_2) is normally not significant due to very low content of sulfur. CO_2 is not an air pollutant but it receives attention due to its global warming effect.

NO_x formed in the combustion of natural gas will be thermal NO_x, i.e. NO_x naturally formed in high temperature combustion. Nitrogen gas in the natural gas will not contribute to the formation of thermal NO_x. In solid and liquid fuels, such as coal and oil, fuel-bound nitrogen in these fuels are chemically bound nitrogen in various chemical compounds. The fuel-bound nitrogen in these fuels will contribute significantly to the total NO_x emission.

B. Receptors

Gaseous emissions from the power plant will affect a wide area depending on climatological conditions and terrain of the air-shed, and stack height. In this study, the investigation of the impacts of gaseous emissions on ambient air quality covered a 10 km x 10 km square area with the power plant site at its center. Within this study area, about 34 receptors were identified, including the air quality sampling stations A1 at Pale Gu Village and A2 at Pagaw Zoon Village (***Table 6.5-1***).

C. Mitigation Measures for Pollutant Reduction at Sources

The selection of gas generator by the Project is lean-burn designed engine which can employ higher compression ratios and thus provide better performance, efficient fuel use and low exhaust hydrocarbon emissions, the low NOx burner technology is also consider to minimize NOx emission for gas generator.

Heavy-duty lean-burn gas engines admit twice as much air than theoretically needed for complete combustion into the combustion chambers. The extremely weak air–fuel mixtures lead to lower combustion temperatures and therefore lower NOx formation.

The low NOx burners reduce NOx by accomplishing the combustion process in stages. Staging partially delays the combustion process, resulting in a cooler flame which suppresses thermal NOx formation. NOx emission reductions of 40 to 85 percent have been observed with low NOx burners.

TABLE 6.5-1

RECEPTORS WITHIN 10 KM × 10 KM SQUARE AREA WITH THE POWER PLANT SITE AT ITS CENTER

Receptors	Coordinate (UTM (WGS84))		Distance and Direction from Project site (km)
	E (X)	N (Y)	
Wet Chang School	407045	1583054	3.90
Pagaw Zoon School	409319	1578467	1.31
Yalai School	407731	1578083	2.24
Tha Prae Zoon School	411124	1576131	4.14
Thit to Taut School	407764	1575411	4.60
Ka nyin gauk School	413066	1577121	4.71
Dauk Lauk School	413517	1581545	4.67
Pale Gu School	412658	1578425	3.73
Wet Chaung	407090	1582917	3.75
Dauk Lauk	413392	1579978	4.21
Ka Nyin Gauk	413211	1576967	4.93
Thit to Daung1	408625	1575193	4.62
Thit to Daung2	408679	1574856	4.95
Thit to Taut	407965	1575712	4.26
Yalai 1	408409	1576874	3.02
Yalai 2	408040	1576891	3.12
Pagaw Zoon 1	408852	1578466	1.37
Pagaw Zoon 2	409250	1578608	1.19
No Name	410750	1580540	1.73
Tha Prae Zoon	411080	1576182	4.07
Pale Gu	412607	1578391	3.70
Kin Ywar	412071	1581482	3.44
Min Dut	409545	1578246	1.60
Thit to Tauk Village	407411	1575627	4.53
Thit to Daung Village	408292	1575143	4.73
Tha Byay Zun Village	411014	1575635	4.54
Min Dut Village	410236	1577508	2.51
Yalai Village	407831	1577627	2.55
Pagaw Zoon Village	409117	1578738	1.06
Pale Gu Village	412634	1578667	3.63
Dauk Lauk Village	413570	1581358	4.65
Kin Ywar Village	412054	1581262	3.22
Lain gra ywa Village	413173	1581604	4.38
Wet Chaung Village	406887	1582810	3.78

D. Control Targets

The gaseous emission control will aim at complying with IFC's EHS Guidelines for Thermal Power Plants relevant to: (i) emission standards; and (ii) ambient air quality standards. The emission standards are presented again herein for ready reference (***Table 6.5-2***). It should be noted that the applicable emission standards do not include SO_2 and particulates as the natural gas has no sulfide and particulates.

TABLE 6.5-2

EMISSION STANDARDS FOR NATURAL GAS FIRED COMBUSTION TURBINE

Combustion Technology	Parameter	Standard[1/]
Combustion Turbine	Nitrogen Oxides (NO_X)	51 mg/Nm^3 at 15% O_2
Reciprocating Engine	Nitrogen Oxides (NO_X)	200 mg/Nm^3 at 15% O_2

Note: [1/] IFC Environmental, Health, and Safety Guidelines Thermal Power Plants, 2008 Table 6(B), page 21.

It should be noted that the IFC guideline has no emission standards for SO_2 and particulate matters. This would be due to the very low sulfur and particulates in natural gas. In addition, the Consultant also checked and prepared follow WHO ambient air quality standard adopted by IFC as shown in ***Table 6.5-3***.

TABLE 6.5-3

WHO AMBIENT AIR QUALITY STANDARD ADOPTED BY IFC

Parameter	Averaging Period	Guideline Value[1/] (μg/m^3)
Sulfur dioxide (SO_2)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline) 150 (guideline)[2]
	10 minute	500 (guideline)
	1-year	80 (guideline)[2/]
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
	24-hour	150 (guideline)[2/]

TABLE 6.5-3

WHO AMBIENT AIR QUALITY STANDARD ADOPTED BY IFC (CONT'D)

Parameter	Averaging Period	Guideline Value[1/] ($\mu g/m^3$)
Particular Matter PM10	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 30 (Interim target-3) 50 (guideline)
Particular Matter PM2.5	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
TSP	24-hour	230 (guideline)[2/]
	1-year	80 (guideline)[2/]
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

Source: [1/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

E. Prediction of Impacts of the Gaseous Emissions

The ground level concentrations (GLCs) of NOx within the study area related to the emission of NOx from the power plant were predicted using the AERMOD model and the basic data in ***Table 6.5-4***. The predictions adopted the default values of NO_2/NO_X ratio of the AERMOD model. The 1-hour and annual NO_2/NO_X ratios are 0.8 and 0.75, respectively.

TABLE 6.5-4

EMISSION DATA USED IN AIR QUALITY MODELING

Phase / **Stacks**	**Unit**	**1 (Stack GEPP#1) GEPP#1**
Coordinate of Stack (UTM (WGS84) Zone 47N)		409202E 1579765N
Stack Height	m	5
Stack Diameter	m	0.3
End of Stack Velocity	m/s	0.014
End of Stack Temperature	deg C	460
Total Flue Gas Volume	Nm^3/s	0.001
Concentration (@15%O_2, dry)		
NOx	mg/Nm^3	200
Emission Rate[1/]		
NOx	g/s	0.0002
IFC Standard of NO_X (mg/Nm^3) [2/]		**200**

Source: DAWEI POWER GENERATING COMPANY LIMITED, 2015

Remark: [1/] Model GE Jenbacher JGS 320
[2/] IFC, Guidelines for Emissions for New Thermal Power Plant, 2008 (calculated at dry gas, 0°C, 1 bar & 15% Excess O_2)

Air Quality Modeling Methodology

(a) Study Area

The study area covered an area of 10×10 km^2 as already discussed above in the receptor section.

(b) Mathematical Model

The mathematic model AERMOD, developed for prediction of air pollution distribution by U.S.EPA was selected for this study due to its capability to give real time estimates of air pollutant concentrations in the atmosphere using hourly meteorological data. For this study, the variable grid resolution was employed as follows:

- 100 m grid resolution for 1.5 km distance from fence line
- 250 m grid resolution for 1.5-3.0 km distance from fence line
- 500 m grid resolution for 3.0-5.0 km distance from fence line

(c) The Input Data Used for the AERMOD Model

Meteorological Data

In this study, meteorological data of the year 2014 from the nearest meteorological stations were collected and used as inputs for AERMOD. The data included:

Surface data: The surface data, including wind direction, wind speed, dry bulb temperature and relative humidity, were collected from the meteorological station of ITALIAN-THAI Development Public Company Limited (ITD) which located at 14°15' N latitude, 98°02'E longitude, about 4.4 km north of the project site. The cloud cover, ceiling height data were not available at this ITD station. Therefore, they were collected from Thong Phaphum meteorological station in Thailand which has similar climatic conditions to Dawei region. It was located at 14°44'32.0" N latitude, 98°38'11.0" E longitude, about 84.7 km northeast of the project site.

Upper meteorological data (UMD): The available nearest upper meteorological station at Bang Na Agromet., Bangkok in Thailand (Source: NOAA; http://esrl.noaa.gov/raobs/) was employed. This station was located at 13°39'59.0" N latitude, 100°36'22.0" E Longitude, about 281 km southeast of the project site. The UMD are measured at different standard pressures at heights from 100 m to 20 km. The data needed by AERMOD are at 3,000 m. The data need to be arranged as FSL Radiosonde Database including station location, pressure data, height, temperature, wind speed and direction.

Surface Characteristics Data

The surface characteristics data, including the surface roughness length, Bowen ratio and albedo, were determined for the purpose of processing meteorological data for use with the AERMOD model. The calculation of the surface characteristics data followed the recommendations presented in U.S.EPA AERSURFACE User's Guide (Revised 01/16/2013). These recommendations are summarized below:

Surface roughness length based on an inverse distance weighted geometric mean for a default upwind distance of 1 kilometer from the center of the project site. Surface roughness length was varied by 8 sectors to account for variations in land cover near the project site.

Bowen ratio based on unweighted geometric mean for a representative domain with a default domain defined by a 10 km x 10 km region centered on the project site.

Albedo based on unweighted arithmetic mean for the same representative domain as defined for Bowen ratio, with a default domain defined by a 10 km × 10 km region centered on the project site.

Terrain Data

The terrain data of the study area were used for determining base elevation of the emission sources as stacks and elevation of the study area. The terrain data used in this study were derived from the Digital Elevation Model (DEM) data of the latest version of Seamless Shuttle Radar Topography Mission (SRTM3) with a resolution of 90x90 m.

(d) Emission Source Data

The emission source data used as input for AERMOD was taken from the Feasibility Study Report and is presented in ***Table 6.5-4***. The data included;

- Stack location
- Stack height, m
- Stack diameter, m
- Exit temperature of flue gas, K
- Exit velocity, m/s
- Emission rate of pollutants, g/s

(e) Studied Cases

Impacts from emission under 15 units (GE Jenbacher JGS 320) operation condition at the stack height of 5 m.

(f) Calculation Results

There are two sets of calculation results.

- The first set is the predicted GLC of NO_2-1 hr, NO_2-24 hr and annual NO_2 caused by the emissions from the power plant in the dispersion study area. The results are also presented in contour lines.
- The second set is the predicted total GLC of the above taken into account the background GLC of the pollutants. The background GLC data used were the maximum concentrations of NO_2-24 hr of the air samples collected during January 29-February 24, 2015.

The background level in NO_2-1 hr was estimated with a concentration-time relationship equation (Wark, K. and C. Warner, 1998. Air Pollution: Its Origin and Control, 3rd Edition, Harper Collins Publishers) as follows;

$$C2 = C1(t1/t2)^{q}$$

Where; C2 is the desired concentration of NO_2-1 hr,

C1 is the concentration of NO_2-24 hr
(maximum concentration from sampling during January 29-February 24, 2015=18 $\mu g/m^3$)

t1 and t2 are the sampling time period (t1=24, t2=1)

q has a value between 0.17 and 0.20 (the value of 0.20 was selected for a conservative predicted results)

$$C_{(NO_2\text{-}1\ hr)} = 18\ (24/1)^{0.20}$$

$$= 34\ \mu g/m^3$$

Figure 6.5-1 shows an example of the net GLC contours. The calculation results are summarized and also presented in ***Tables 6.5-5***. Details of the result of air modelling are presented in ***Appendix 6B***. ***Table 6.5-5*** summarizes the overall results of predictions of maximum GLC of NO_2 of the project operations compared with the permissible maximum value in the ambient air quality standards (AQQS). The prediction was made at various distances and at the sensitive receptors under the normal and emergency operations of the power plant.

The data in ***Table 6.5-5*** clearly show all the predicted values of NO_2 below the permissible maximum value in the AQQS. Therefore, it can be concluded that the emissions of NOx from the power plant will have insignificant impacts on ambient air quality.

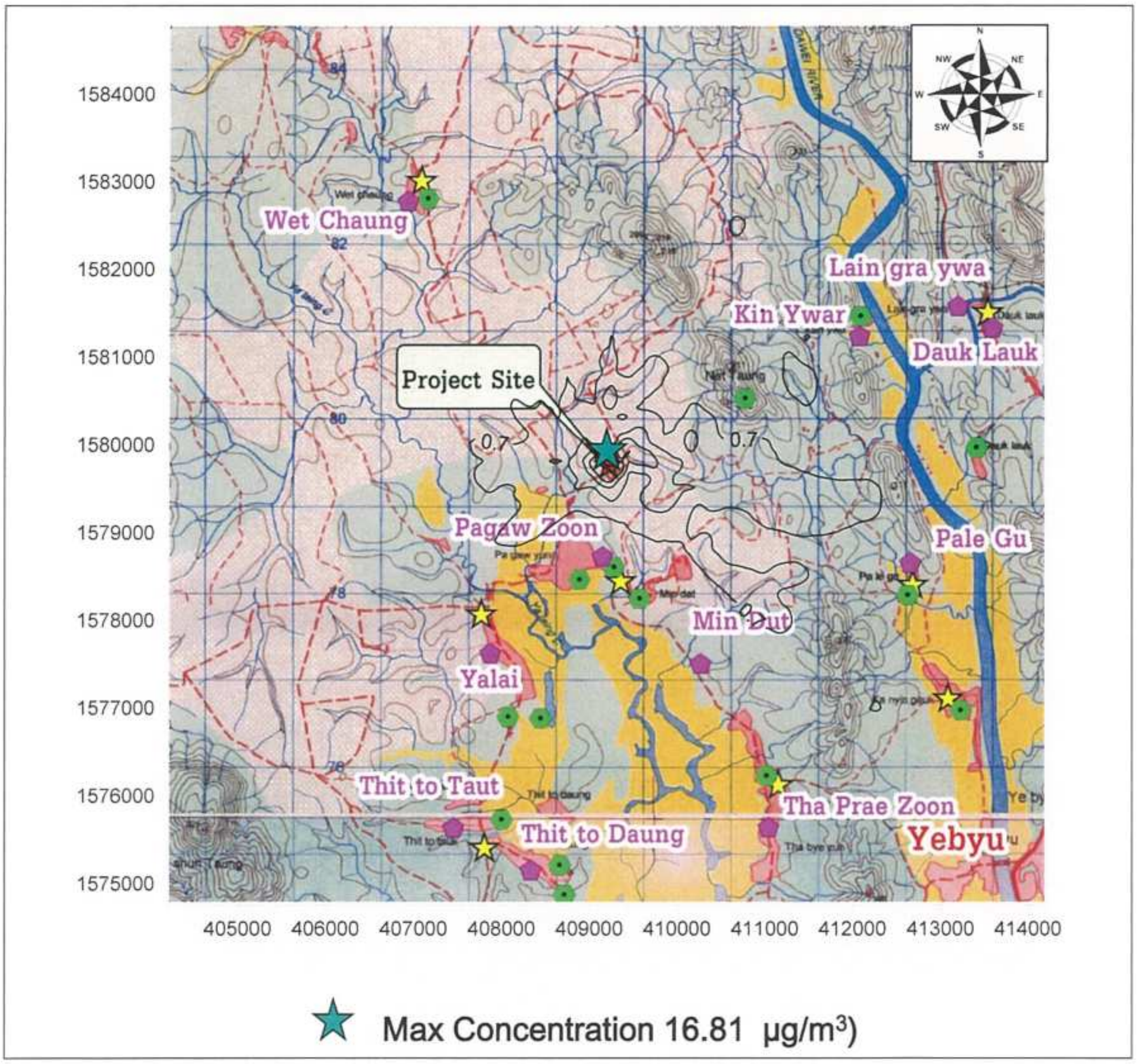


FIGURE 6.5-1 : AN EXAMPLE OF THE NET GLC CONTOURS OF 1-HOUR AVERAGE CONCENTRATION OF NO_2
(Operation of 15 Units of model Jenbabacher JGS 320)

TABLE 6.5-5

SUMMARY OF AIR QUALITY MODELING RESULTS

Results	15 Units		
	NO_2 (µg/m³)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	16.81	1.58	0.57
-location of the maximum value	Project site	Project site	Project site
-Coordinate (UTM(WGS84))	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	50.81	19.58	0.57
-% of ambient air quality standard	25.41	13.05	1.43
In only sensitive areas			
-ranges of concentrations	0.04-0.56	0.002-0.043	0.0002-0.0089
-net maximum concentration including background level	34.04-34.56	18.002-18.043	0.0002-0.0089
-% of ambient air quality standard	17.02-17.28	12.00-12.03	0.0004-0.0223
Standard	**200[1/]**	**150[2/]**	**40[1/]**

Remark: [1/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007.

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998.

The following conclusions may be drawn from the calculation results:

The maximum ambient concentration of NO_2 that was generated from emission under normal and emergency operation conditions will be below the permissible maximum of ambient air quality standard (AAQS). Therefore, the emissions will have insignificant impacts on ambient air quality.

- **Ambient NO_2 concentration from emission under 15 Units operation condition**

The maximum ambient concentrations of NO_2 - 1 hr including the background level concentration, found at the project site. The NO_2 - 1 hr concentrations was 50.81 µg/m³ (25.41% of AAQS). For the concentrations of NO_2 - 1 hr at the sensitive receptors, the values were between 34.04-34.56 µg/m³ (17.02-17.28% of AAQS) which are below the permissible maximum of 200 µg/m³.

The maximum ambient concentrations of NO_2 - 24 hr including background level concentration, found at the project site. The NO_2 - 24 hr concentration was 19.58 µg/m³ (13.05% of AAQS). For the concentrations of NO_2 - 24 hr at sensitive receptors, the values were between 18.002-18.043 µg/m³ (12.00-12.03% of AAQS) which are below the permissible maximum of 150 µg/m³.

The maximum ambient concentrations of annual NO_2 from stack emission (not including background concentration of annual NO_2 due to the data are not available),

found the project site. The annual NO_2 concentration was 0.57 μg/m³ (1.43% of AAQS). For the concentrations of annual NO_2 at sensitive receptors, the values were between 0.0002-0.0089 μg/m³ (0.0004-0.0223% of AAQS) which are below the permissible maximum of 40 μg/m³.

- **Prediction of Greenhouse Gases (GHGs) Emission**

The greenhouse gases emitted during operation period of the power plant is mainly including Carbon Dioxide (CO_2), Nitrous Oxide (N_2O) and Methane (CH_4). These gas generated from combustion of natural gas in gas engines. GHG Emission can be calculated based on an emission factor approach.

Calculation of GHG Emission for this study is used the following factors:

Emission Rate = (Emission Factor) x (Activity Data)

GHG Emissions = (Fuel consumption) x (Fuel Heating Value) x (Emission Factor) x (Global [Tonne CO_2e] Warming Potential Value)

TABLE 6.5-6

ESTIMATION OF GREENHOUSE GAS EMISSION DURING OPERATION

Component		Value	Remark
Natural Gas Consumption	kWh/kWh	2.43	1 unit of 1 MW gas engine generator (model GE JGS 320 GS)
	Btu/hr	8,291.51	
	MMBtu/yr	1,089.50	estimation from 15 units of 1 MW gas engine generators
	TJ/yr	1.15	
CO_2	EF (kg/TJ)[1/]	56,100.00	
	Global Warming Potential [2/]	1	
	tonne CO_2eq/yr	64.54	
CH_4	EF (kg/TJ)[1/]	1	
	Global Warming Potential [2/]	25	
	tonne CO_2eq/yr	0.03	
N_2O	EF (kg/TJ)[1/]	0.1	
	Global Warming Potential [2/]	298	
	tonne CO_2eq/yr	0.030	
Total (tonne CO_2eq/yr)		64.6	

Remark: *1 Kw = 3412.142 BTU/hr.*

Source: [1/] *Table 2.2 default emission factors for stationary combustion in the energy industries, 2006 IPCC guideline for national greenhouse gas inventories*

[2/] *Global Warming Potential (GWP), the Fourth Assessment Report (AR4) in 2007, IPCC, 2007*

GHG emitted from temporary power plant operation can be calculated as shown in ***Table 6.5-6***. It is estimated that the overall quality of three greenhouse gases emitted during operation activities would be 64.54 tonne of CO_2e. This contribution is very small, accounting for less than 0.000065% of GHG emissions generated in Myanmar as a whole in 2012 (98.93 Mt of CO_2e total GHG emissions excluding land use change and forestry[5]).

[5] http://cait.wri.org/profile/Myanmar, CAIT Climate Data Explorer, World Resources Institute.

F. Impact Mitigation Measures

The reduction of NO_2 at source using catalytic converter system or the Low NO_2 burner will be adopted to meet the emission standard. There will be no need for further reduction of NO_2 in stack gas using such technology as SCR.

G. Valuation of the Significance of Impacts

The impact of gaseous emission of the power plant on ambient air quality was evaluated as shown above. Although the impact would not be significant, the issue deserves high priority in the design and operation of the power plant considering the public attention.

Impact category	Direct Impact
Impact duration	Throughout the operation life of power plant (2 years)
Impact extent	Mainly on the receptors about 4.53 km from the power plant site
Impact magnitude	Insignificant
Impact severity	Insignificant
Control priority	High

6.5.3.2 Ambient Noise

A. Sources

During the operation phase of the temporary power plant, the major noise sources will be from Gas Engine Generators;

Other minor noise sources will also require noise mitigation to ensure that the nighttime noise limit at the property boundary will be met.

B. Sensitivity of Receptors

The closest receptor to the temporary power plant construction site is Pagaw Zoon village. This village is located about 1,100 m in the south of the power plant site. This village has about 563 households. The most noise sensitive receptor in the village is Pagaw Zoon Primary School and Pagaw Zoon Monastery.

C. Magnitude of Noise Levels at Sources

Table 6.5-7 compiles data on noise levels of major process equipment and facilities similar to those of this Project.

TABLE 6.5-7

NOISE LEVELS OF EQUIPMENT AND FACILITIES OF POWER PLANTS

Component		**Measure**	
Noise			
Sound Power	dBA (Lw)	104 (Est)	107 (Est)
Sound Pressure at 1 metre	dBA	87	90
Sound Pressure at 7 metres	dBA	80	84
Sound Pressure at 15 metre	dBA	73	77

D. Noise Control Targets

The noise control targets will follow the guidelines in ***Table 3.6-1*** of IFC's General EHS Guidelines, April 30, 2007.

Based on the guidelines, the noise control targets are:

1) Noise emission from the temporary power plant will not cause the following impacts at the nearest receptor location off-site:

- Not exceeding 70 dB(A) both during day time (07.00-22.00) and nighttime (22.00-07.00); or
- An increase in the background noise level not greater than of 3 dB(A).

2) Ambient noise level outside the temporary power plant building not exceeding 85 dB(A) on a condition that no plant personnel will be exposed to this maximum noise level more than 8 hours per day without hearing protection.

E. Mitigation Measures to Reduce Noise at Sources

The EPC contractor will be required to achieve the noise level outside the temporary power plant building not exceeding 85 dB(A) as indicated in the above stated control targets. This could be achieved though: (i) plant layout and siting of process equipment with consideration of distances from the receptors; and (ii) incorporating the most noise control techniques in the designs such as equipping gas generator and its related equipment in ISO container; selecting structures according to their noise isolation effect to envelop the building; using mufflers or silencers in intake and exhaust channels; using sound absorptive materials in walls and ceilings. Some examples of noise control at sources are given below:

F. Predicted Impacts on the Receptors

The noise levels at the nearest receptor, Pagaw Zoon village, were calculated using the same method as that used in the study of noise impacts during the construction phase presented in ***Section 6.4.3.2***. The calculations were based on the following plausible assumptions:

- The EPC contractor will design and install effective noise control facilities at sources to achieve the ambient noise level in the temporary power plant site not exceeding 85 dB(A).
- The ambient noise level in the temporary power plant site at 3 m from the boundary walls will not exceed 80 dB(A).

The calculation results for various noise levels at the boundary are presented in ***Table 6.5-8***. The results give the following conclusions:

1) At the control level of 75 dB(A) at the boundary, the power plant would increase the noise level at the receptor by about 45.3 dB(A). With the background noise level of 61.5 dB(A), the impact of the power plant would result in the total noise level of 61.6 dB(A) compared with the control target of 70 dB(A) for 24 hours noise exposure.

2) At the control level of 75 dB(A), the power plant would increase the background hourly noise level at the receptors by not more than 0.63 dB(A), thus meeting the noise control target of less than 3 dB(A).

3) The standards can still be met at the level of 80 dB(A). Therefore, setting the control level at 75 dB(A) will give a safety margin of about 5 dB(A).

(7) Mitigation Measures

No additional measures would be required. However, it would be prudent to grow trees along the boundary facing the receptors to further reduce the temporary power plant noise.

(8) Evaluation of the Significance of Impacts

The impact of the temporary power plant noise was evaluated as shown below. The noise control deserves medium priority in the design and operation of the temporary power plant.

Impact category	Direct impact
Impact duration	Throughout the operational life of the temporary power plant
Impact extent	Local, confined to area around the power plant
If no control **- Impact magnitude**	Resulting ambient noise level above the applicable standards
- Severity	Medium
If control **- Impact magnitude**	Resulting ambient noise level fully met the applicable standards
- Severity	Negligible
Control priority	Medium

TABLE 6.5-8

CALCULATIONS OF NOISE LEVELS AT THE RECEPTOR

Pagaw Zoon village			
Receptor, r2	1,100	m	
Noise source,r1	3	m	
Log (r2/r1)	2.56		
Noise level at r2, Lp1	Source-20x(Log(r2/r1)		
Ambient noise level,Lp2	54.4 dB(A) Leq-24 hr.		
- Low	46.4 dB(A) Leq-1 hr.		
-High	60 dB(A) Leq-1 hr.		
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))		
Noise level of sources at 3 m from the boundary			
Control level	1		85.0
Control level	2		80.0
Control level	3		75.0
Control level	4		70.0

PARTICULARS	NOISE LEVEL AT BOUNDARY			
Impact-Leq-24 hr.				
LP0-ambient	*60.0*	60.0	60.0	60.0
LP1-Source	*85.0*	80.0	75.0	70.0
LP2-Effect of Source	*33.7*	28.7	23.7	18.7
LOG (LP0)	*1.8*	1.8	1.8	1.8
LOG (LP2)	*1.5*	1.5	1.4	1.3
Combined Noise Level	*60.0*	60.0	60.0	60.0
Impact-Leq-1 hr				
High Combined Noise Level	*60.0*	60.0	60.0	60.0
Increase	*0.01*	0.00	0.00	0.00
Low Combined Noise Level	*46.6*	46.5	46.4	46.4
Increase	*0.23*	0.07	0.02	0.01

Remark : Italic number is control level of noise at 85 dB(A) at the power plant

6.5.3.3 Waste Waters

A. Sources

The gas generator of temporary power plant is equipped with close circuit cooling system with radiator. Therefore, no water is require for cooling water makeup.

Waste waters in operation phase of the power plant will be from:

- Domestic sewage
- Plant wash water

B. Sensitivity of Receptors

Wastewater from consumption of staff will be treated on-site by septic tank. In areas where oil leak could occur, water shall be sent into an Oil/Water separator before its release to the holding pond. All clean surface (oil free) waters collected in paved areas. Outside paved areas, rain and firewater will be drained by percolation through the soil. It does not have the receptor in this project.

C. Estimated Wastewater Volume

Only the domestic sewage has organic pollutants measured as BOD. Based on a BOD load of 50 gm/capita/day, the total BOD load of the domestic sewage from 12 persons would be about 0.6 kg/day. The contribution of the domestic sewage will be very small.

D. Mitigation Measures for Waste Water Reduction at Sources

It is not technically feasible to reduce the volume of these wastewaters from power plant operation at sources.

E. Control Target

The treated effluent will meet the following standard limits at least 95% of the times the effluent quality is tested over six consecutive months.

• pH	6-9
• Temperature, °C	<40
• TSS, mg/l	<50
• Fats, Oil, and grease, mg/l	<10
• Residual chlorine, mg/l	<0.2
• BOD5*, mg/l	<20
• COD (Cr), mg/l	<100

**The amount of dissolved oxygen consumed in five days by biological processes breaking down organic matter.*

The above standards are prescribed in the IFC/WB Environmental, Health, and Safety Guidelines. However, the IFC/WB guidelines do not include BOD and COD. The given limits are normal limits for power plants in Southeast Asia.

F. Predicted Impacts on the Receptors

The domestic sewage from the temporary power plant will have negligible impact on the dissolved oxygen level that the domestic sewage will be generated by not more than 12 staff of the power plant-an extremely small population. Therefore, the domestic sewage, even without treatment, will not have any impact.

G. Wastewater Management Measures

The EPC contractor will prepare detailed design of wastewater treatment facilities based on the following design concept:

(a) The wash water contaminated with oil will be segregated for oil removal in an oil separator. The oil-free wash water will then be stored in holding pond or ditch. Some water would be used in power plant for cleaning or gardening.

(b) Domestic sewage will be treated in septic tank and soak away pit. These wastewater would be collected by authorized subcontractor to discharge outside the area.

(c) A drainage system will be provided to collect surface runoff and discharged into the holding pond. Surface runoff from open areas contaminated by oil will be separately drained into an oil separator before discharging into the main drainage system.

E. Evaluation of the Significance of Impacts

The impact of the treated effluent discharge on the river water quality and aquatic ecosystem was evaluated as shown below. The wastewater management issue deserves medium priority during the operational phase.

Impact category	Direct impact
Impact duration	Throughout the operational life of the temporary power plant
Impact extent	Mainly on the nearby natural water courses
Impact magnitude	Very small
Impact severity	Insignificant
Control priority	Medium

6.5.3.4 Waste Management

A. Sources

During the operation phase, the following waste will be generated and need to be controlled:

- 380 litres of waste lubricating oil from each engine generator (at 200 working hour or 6 months)
- Coolant agent (480 liters of jacket water and 200 liters of LTA (lowtemp after cooler)) from each engine generator (at 2,000 working hour or 24 months)

B. Sensitivity of Receptors

Routine and scheduled maintenance of each engine generator of temporary power plant will generate a small volume of waste lubricating oil. Maintenance of the engine generator will generate waste lubricating oil and waste coolant agent which could contaminate and deteriorate soil quality of surrounding area if lack of appropriate waste collection and storage measure.

C. Estimated Waste Quantities

Each engine would generate approximately 380 liters of waste lubricating oil at every 200 working hours (or 3 months) and Coolant agent (480 liters of jacket water and 200 liters of LTA (lowtemp after cooler)) at 2,000 working hour (or 24 months)

D. Mitigation Measures for Waste Reduction at Sources

Contamination of waste lube oil and spent coolant water to surrounding soil could be prevented through good storage and best practices in maintenance management. These two liquid wastes is needed to be separately stored and shipped to Yangon together with hazardous waste from others factories in DSEZ for regeneration.

Best Practices in Maintenance Management

The maintenance will adopt the following practices to minimize liquid waste quantities at sources: waste segregation, waste collection and storage, waste reuse and recycling, waste disposal, and on-site record keeping.

1. Waste Segregation

- The operator will design procedure and implement a liquid waste segregation system and communicate it to all relevant personnel to strictly adhere to the segregation procedure;
- An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories.

2. Waste Collection and Storage

- Collection and transport will be organized and carried out for each sub-category of segregated wastes at every 6 months;
- The storage area for liquid waste will need to be specially designed to prevent spills or leaks onto surrounding area.

3. Waste Reuse and Recycling

- Collection and recycling of used waste lube oils;
- Collection by a licensed contractor and other containers for return to recycling facilities.

E. Waste Control Targets

There are no quantitative standards for liquid waste management from maintenance of the power plant. However, the control targets should be on soil and groundwater quality standards if the liquid wastes are to be disposed in the power plant area.

The performance of liquid waste management will be evaluated by the following qualitative indicators:

- No liquid wastes are haphazardly dumped inside or outside the power plant area;
- No public complaints related to the management of liquid wastes

F. Predicted Impacts on Receptors

Approximately 380 liters of waste lubricating oil and Coolant agent (480 liters of jacket water and 200 liters of LTA (lowtemp after cooler)) from each generator will be separately stored and shipped to Yangon for regeneration.

G. Waste Management Measures

- Liquid waste will need to be classified and sorted out at source for stored and shipped to Thailand for regeneration.
- Haphazard disposal of liquid waste in or off the power plant area will be strictly prohibited.
- Provide adequate number of bins or containers with tight covers for collection of liquid waste.

H. Evaluation of the Significance of Impacts

The impact of contamination of liquid waste on soil and groundwater in surrounding area would be evaluated as shown below. The wastewater management issue deserves medium priority during the operation phase.

Impact category	Direct impact
Impact duration	Throughout the operational life of the temporary power plant
Impact extent	Mainly on the soil and groundwater near the maintenance and waste storage area
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.5.3.5 Road Traffic

A. Sources

During the operation period of 24 months, the operation of temporary power plant will necessitate the need for transportation of LNG fuel. LNG will supply from PTT LNG Terminal located at Map Ta Phut, Rayong Province Thailand and transport to the power plant by land transport via Phu Nam Ron border check-point. A distance between PTT LNG Terminal and DSEZ is approximately 750 km. Consequently, traffic loads will be increased especially on ITD Main Road from Border to the power plant. Traffic related impacts during the operation phase would be congestion of existing roads and increased risk of accidents.

Due to small number of power plant staffs is required during operation period, therefore traffic related to personnel transport will not be considered.

B. Sensitivity of Receptors

The main road within the study area is two traffic lanes unpaved laterite road with approximately 10 m wide. This road is mainly used by ITD in purpose of transport fuel from Thailand to project area.

C. Estimates of Traffic Loads

A traffic load is expressed as the number of truck trips per day. It will depend on the total quantity of LNG fuel that will need to be transported into the temporary power plant. As it is no data on demanding of electricity, daily quantity of LNG gas to be transported cannot be calculated.

In this case, the consultant made a rough estimate daily requirement of LNG at 144 m^3(total storage of LNG at the power plant is 720 m^3 which can use for 5 days at 75% load factor, quantity of LNG use for one day is 144 m^3). This quantity of LNG could be transported by 11 heavy truck, each truck capacity in transportation of LNG is 13 m^3

In addition, the number of truck trips have to be calculated in terms of inbound and outbound. Therefore, the number of truck trips will be about 22 trips/day.

D. Mitigation Measures for Reduction of Traffic Loads

It is not technically feasible to reduce the number of truck trips per day due to it depend on requirement from the power plant.

E. Traffic Management Targets

The traffic management should aim at the following targets:

- There will be no accidents related to operation traffic in the identified impact areas.

F. Predicted Impacts

As indicated by the V/C ratios presented in ***Section 5.4.4.4*** traffic on ITD was congested at Station TC1. The transportation of LNG fuel will increase the existing traffic loads by about 2.5 PCU/hr. The V/C ratio at TC1 will be increased as shown in ***Table 6.5-9***. It's expected that the traffic condition at TC1 still in very good traffic flow. However, the traffic management will have to be more focus at TC1 due to more potential in the accident.

TABLE 6.5-9

IMPACTS OF TRANSPORT OF LNG ON EXISTING TRAFFIC

PARTICULARS	TC1
Existing maximum average traffic, PCU/hr	7.676
Carrying capacity, PCU/hr	2,000.00
Existing V/C ratio	0.0038
Existing traffic condition	Very good traffic flow
During the Transportation of LNG	
Truck trips per day	22
Truck trips per hour based on 10 hrs	2.2
Truck traffic in PCU equivalent/hr (PCU for truck-2.5)	5.5
Total traffic during the transportation of LNG, PCU	390.54
Carrying capacity, PCU/hr	2,000.00
New V/C ratio	0.1953
Expected traffic condition	Very good traffic flow

G. Management Guidelines and Impact Mitigation Measures

Management Guidelines shall be applied as follows:

- Take reasonable and practicable measures to avoid, or mitigate and manage the potential operation traffic impacts on communities near the power plant, including local parking.
- Minimize as far as reasonably practicable, potential traffic disruptions to the operation of the road network and the public transport network due to the transport of LNG fuel to and from the Thailand.
- Maintain safe access near all project work areas for road users, including pedestrians and cyclists. In particular, develop local access strategies in consultation with stakeholder groups to maintain safe, convenient and efficient access to community facilities such as schools, child care facilities, monastry, health care, shops, and local markets, if any.
- Implement traffic management measures near worksites and other project works to avoid conflicts between operation traffic, and pedestrians and cyclists.
- Take reasonable and practicable measures to inform the local and broader communities about the timing and scale of changes to traffic conditions on roads in the vicinity of worksites and operation works.
- Monitor traffic flows near power plant and take corrective action in response to traffic impacts as a consequence of operation works.

Impact Mitigation Measures shall be applied as follows:

Traffic Management at the Intersection of ITD Road

Provide a traffic police or relevant officer to control traffic at the intersection during the transport period.

H. Evaluation of the Significance of Impacts

The impact on traffic was evaluated as shown below. The traffic management deserves high priority during the operation period.

Impact category	Direct impact
Impact duration	Throughout the operation period.
Impact extent	Mainly on ITD main road and along the transportation routes of LNG from Thailand to the 15 MW temporary power plant.
Impact magnitude	Heavy traffic congestion at TC1 will be heavier.
Impact severity	Significant, cause annoyance
Control priority	High

6.5.3.6 Occupational Safety and Health

A. Areas of Concern

Occupational Safety and Health (OSH) issues during the operational phase of Project are relevant to health and safety of operational personnel. They are issues of concern common to operational personnel in all types of industries but their natures depend on types of industries. They are not issues for the impact assessment but the issues that must be managed in compliance with applicable laws and regulations of the government. Consequently, the Project Proponent will establish an OSH policy and an OSH management system which would be similar to those implemented in the other gas power plants in Thailand operated by the Project Proponent.

All natural gas power plants share common OSH issues that have to be effectively addressed during the operational phase. The OSH management system and procedures to be established will need to cover the following issues:

- Heat
- Noise
- Confined spaces
- Electrical hazards

B. Management Measures

OSH management measure to be adopted should follow applicable guidelines in IFC's General EHS Guidelines: Occupational Health and Safety, April 30, 2007, and IFC's EHS Guidelines: Thermal Power Plants, Section 1.2-Occupational Health and Safety, December 19, 2008. Based on these two documents, the Consultant recommends the Project Proponent to take the following actions:

Plant Design and Equipment Selection

(1) Incorporate in the EPC contract, all OSH requirements that the EPC contractor will in the design of the temporary power plant and associated facilities, including equipment selection; give due consideration to, but not limited to, the following OSH requirements: (i) integrity of workplace structures; (ii) standard operating procedures for process shutdown, including evacuation plan; (iii) work space and exit; (iv)fire precautions; (v) toilets and showers; (vi) potable water supply; (vii) clean eating area; (viii) lighting; (ix) safe access; (x) first aid; (xi) air supply and ventilation; (xii) work environment temperature; (xiii) noise and vibration; (xiv) electrical safety; (xv) fire and explosions; and (xvi) confined working space.

(2) The EPC contractor will be required to prepare for consideration of the Project Proponent an OHS management plan and implementation procedures specific to the temporary power plant of this Project and in line with the Owner's OSH policy and procedures. The OSH management plan and implementation procedures will be submitted not later than one month before commissioning of the temporary power plant and associated facilities.

(3) The OSH management plan and implementation procedures will cover but not limited to the following subjects:

- Organization and responsibilities of OSH management
- Training plan
- Communication plan
- Contractor responsibilities
- Safety measures for the power plant's O&M, including-safety in operations of gas generator, fire and explosion.
- Emergency response procedures.
- Task-specific work requirements Compliance monitoring and evaluation plan
- Audit plan
- Reporting system
- Documentation system

During Plant Commissioning

During plant commissioning, the EPC contractor will be required to conduct necessary orientation and training to the Owner's power plant operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures.

During Operations

The Plant Manager will implement the OSH plan and procedures as part of his operational control and management.

The EHS Manager will monitor the implementation of OSH procedures to comply with relevant requirements.

6.5.3.7 Community Health, Safety and Security

A. Issue

The IFC's document on Performance Standards on Environmental and Social Sustainability, January 1, 2012, prescribes *Performance Standard 4-Community Health, Safety and Security* for its clients to follow. The document requires its client to identify and evaluate the risks and impacts to the health and safety of the affected communities during the project life-cycle and propose mitigation measures that are commensurate with their nature and magnitude. These measures will favor the avoidance of risks and impacts over minimization.

For community health and safety, Performance Standard 4 identifies the following five areas that could be related to community health and safety.

(1) Infrastructure and Equipment Design and Safety

(2) Hazardous Materials Management and Safety

(3) Ecosystem Services

(4) Community Exposure to Disease

(5) Emergency Preparedness and Response

These five areas will be investigated to identify and evaluate risks or impacts relevant to the operation of the temporary power plant.

For community security, Performance Standard 4 emphasizes risks to the communities posed by the security arrangements made by the project proponent. Records and conducts of security personnel are two risk areas.

B. Assessment

Infrastructure and Equipment Design and Safety

This area of concern is most relevant to the operations of the power plant. The major concern is fire and explosion risks related to the gas supply system and gas turbine operations. Fire and explosion incidents have occurred in a number of gas-fired power plants. This subject is studied and presented in ***Section 6.5.4*** on Risk Assessment.

Hazardous Materials Management and Safety

Hazardous materials for the power plant of this Project would be chemicals used in water treatment and cleaning, natural gas, and oils. As the natural gas will be supplied by truck, the Project will have no gas storage tanks. Considering the nature of their use, chemicals and oils would not be stored in large quantities. The possibility of the communities being exposed to these hazardous materials will be very low. This subject is also discussed in the section on risk management.

Ecosystem Services

In the context of this Project, this issue is relevant to only the impact of the temporary power plant operation on the terrestrial ecosystem. As the impact on water quality will be negligible, the ecosystem services will not be an issue.

Community Exposure to Diseases

The temporary power plant operation will need only 7 to 12 staff. This small number of staff will not pose any health risks to the local communities.

Emergency Preparedness and Response

This area of concern is relevant only to accidental fires and explosions in the temporary power plant already pointed out. An emergency preparedness and response system will need to be established and ready for operation when the emergency situation arises. This is one of the main risk management or mitigation measures in the risk management system of the temporary power plant. The subject is elaborated in the section on risk management.

It can be concluded that fire and gas explosion are major risk events of the temporary power plant operations and that emergency preparedness and response will be one of the major risk management measures that will need to be established and ready to operate when the need arises. The subject is included in the risk management.

6.5.3.8 Groundwater Abstraction

A. Issue

The operational phase, the temporary power plant will require about 1.8 m^3/d of clean water for domestic use. This water will come from groundwater to be supplied by tube wells to be constructed within the temporary power plant site.

As communities near the temporary power plant site rely on groundwater for their daily living, an issue may be raised whether the groundwater abstraction by the temporary power plant could deplete the water table in shallow and deep wells in the communities.

B. Recommended Actions

Considering the small volume of groundwater abstraction by the temporary power plant, it is unlikely that the nearby wells would be affected. However, the Project Proponent should commission a groundwater investigation including pumping test of the test well. The main purpose of this test will be to examine the cone of depression from long term pumping to ground water level. A number of observation wells will be required around the test well for monitoring changes in the water table. If possible, most of the observation wells should be located nearby the surrounding villages. If the impact is confirmed, the abstraction by the temporary power plant would need to go deeper to avoid the aquifers that supply the village wells.

6.5.3.9 Community Development Supports

A. Issue

During the operational phase, the impacts of the temporary power plant both positive and negative on the nearby communities will be much less than those during the construction. The main reasons are: (i) only 7 to 12 persons will work in the temporary power plant compared with 50 persons in the construction; and (ii) transport of LNG fuel into and out of the temporary power plant will be very small compared to the construction related transport. Therefore, the only positive impacts of the Project during the operational phase will have to come from the provision of community development supports under a corporate social responsibility (CSR) program of the Project Proponent.

B. Recommended Action

In the public consultation meetings, several participants requested supports for electricity supply, water supply, road, and education. The Project Proponent should consider a CSR program to provide community assistance in line with these needs. The CSR program would need to be designed and implemented in consultation with the authorities concerned and the community leaders.

6.5.4 Risk Assessment

A. Environmental Risk Management Context

During the operational phase, the temporary power plant operational team will routinely implement, as part of the temporary power plant operations, all environmental mitigation measures recommended in this Final ESIA Report and accepted by the Project Proponent and MONREC. It is essential that the environmental performance requirements of the operational phase will need to be adequately incorporated in the designs, specifications, and construction. Monitoring of the environmental performance of the power plant operation will be carried out by the temporary power plant team as discussed in the OEMP section in ***Chapter 8***.

The environmental risk management during the operational phase will be carried out by the EHS unit as part of the overall temporary power plant risk management. The environmental risk mitigation measures will be implemented by the temporary power plant management team within the scope of and procedures for the temporary power plant risk management.

B. Risk Identification

(1) Operational Risks

During the commissioning and operational phases, the major concerns are on possible hazardous events which, if occur, would seriously damage the temporary power plant and could cause injuries and fatalities to operational personnel and people in the nearest communities. The hazards in the natural gas power plants are generally well understood resulting in numerous standards and codes of practice to cover the design, construction, installation, testing, commissioning, operation and maintenance of the power plant facilities.

Recognized major hazards in gas power plants include gas leakage, internal explosions, and failure of rotating machinery. Although these hazardous incidents are very rare for natural gas power plants but they did occur.

Past Incidents

Two catastrophic accidents of natural gas-fired power plants are briefly described below[6]:

- ***Kleen Energy's Combined Cycle Natural Gas Fired Power Plant:*** A serious explosion occurred in a combined cycle power plant in Connecticut on 7 February 2010. The accident occurred during the planned cleaning of fuel gas piping that was part of the commissioning and start-up phase of the power plant that resulted in six fatalities, 50 reported injuries and significant damage to the $1billion project. The accident was preventable if an inert gas had been used for cleaning and purging (US CSB, 2010).

[6] Taken from: More on Vapor Cloud Explosions and Fires - AristaTek, www.aristatek.com/Newsletter/NOV10/NOV10ts.pdf

- ***Calpine Wolfskill Power Plant, Fairfield California:*** This incident occurred on 26 January 2003 during pre-commissioning of the Wolfskill Energy Center natural gas power plant in Fairfield, California. High-pressure natural gas at approximately 630 psig was used to flush out the gas lines of debris and vented through four-inch open-ended pipe directly to the atmosphere. Seven people were at the site, either directing the operations or observing as in the case of the local fire department. Non-essential personnel were cleared from the area. Fortunately no one was injured when the explosion occurred, which shattered windows a quarter of a mile away and was heard up to ten miles from the site. The debris was projected over the heads of the people at the site and did not hit anyone. The ignition source was not determined, but Calpine's investigation concluded that the explosion was most likely ignited by static electricity. Calpine concluded that the use of natural gas to purge piping while convenient has risks. Calpine facilities now do not allow the use of natural gas to clean piping and instead use compressed air.

Nature of Key Operational Risks

Gas Leakage

Gas leakage in natural gas power plants is a category of the *loss of containment* which is defined as "an unplanned or uncontrolled release of any material from primary containment, including non-toxic and non-flammable materials". The gas leakage often occurs as a result of:

- mechanical failures such as defective materials, defective welding;
- errors in operation and maintenance;
- natural events such as earth quake, lightening strikes; and
- explosion or fire from other parts of the temporary power plant.

The gas leaked could cause fire and/or explosion. Types of natural gas explosions are described in **Appendix 6C** for information.

The risk area will be the gas metering station. Gas leakage within the temporary power plant will be included in the internal explosion.

Internal Explosion

Internal explosion is a recognized risk event for thermal power plants. For a natural gas power plant like the Project, the sources of internal explosion could be as follows:

- internal explosions within flare systems due to ingress of air and subsequent ignition (e.g. due to contraction of the unburnt gas in the stack following flaring or system leakage);
- internal explosion in gas generator due to incorrect start-up procedures (e.g. due to a fuel leak and failure to purge before attempting ignition); and
- internal explosion in other parts of the plant due to ingress of air (e.g. following maintenance) and subsequent ignition.

(2) Pollution Control Risks

Other risks would include the concerns on non-compliance with environmental requirements related to: (i) gaseous emission control, including emission standard, ambient air quality standard, and monitoring requirements; and (ii) wastewater management, including treated effluent standard. These concerns are minor for the Project as these two environmental issues are minor and would not have adverse consequences on the temporary power plant or the surrounding communities. Nevertheless, risk factors causing the non-compliance should be managed as the non-compliance could raise public complaints and

C. Risk Analysis

(1) Operational Risks

Consequences

If a serious accident occurs, the damages would be contained within the temporary power plant site as the nearest community is about 1,100 m away.

Underlying Causes

Several studies of failures of chemical and temporary power plants traced the incidents to the following root causes or underlying causes: (i) faulty designs; (ii) defective equipment and improper equipment installation and construction; (iii) inadequate and/or improper operation and maintenance procedures; and (iv) human error in the operations and maintenance.

Likelihood of Occurrence

The likelihood of occurrence of the operational risks would be low if: (i) technical specifications and performance requirements are clearly prescribed in the contract; (ii) equipment suppliers have good track records in safety; (iii) close supervision and quality control of the installation and construction; (iv) rigorous training of operators; (v) clear and adequate operational procedures for all operations and maintenance; and (vi) efficient plant safety management.

(2) Gaseous Emission Control Risks

Consequences

The Project's power plant will generate only small amounts of NOx and very small for SO_2. Therefore, non-compliance with the emission standards and monitoring requirements, if occurs, will not create a significant impact on local air quality. Nevertheless, the non-compliance, when detected, will need to be rectified as soon as possible.

Underlying Causes

Non-compliance with the gaseous emission control requirements may be caused by the following:

- the CEMS may malfunction, thus being unable to collect emission data to meet the monitoring requirement;
- the actual efficiency of the installed low NO_x burner is lower than the 30% level used in the calculation of emission standard;

Likelihood of Occurrence

Considering the above possible causes, the likelihood of occurrence of the non-compliance with the gaseous emission control requirements would be low.

(3) Wastewater Control Risk

Consequences

The wastewater generated in the temporary power plant operation, even without treatment, will contribute only insignificant amounts of non-toxic pollutants into nearby natural watercourses. Therefore, non-compliance with the treated effluent standards and monitoring requirements, if occurs, will not result in a serious degradation of surface water quality. Nevertheless, the non-compliance, when detected, will need to be rectified as soon as possible.

Underlying Causes

Non-compliance with the wastewater control requirements may be caused by the following:

- Inadequate operational management of the wastewater collection and treatment facilities resulting in a part of wastewater bypassing the treatment facilities, poor performance of the treatment facilities, and negligence of monitoring tasks;
- Inadequate maintenance of the collection and treatment facilities;

Likelihood of Occurrence

Considering the possible causes, the likelihood of occurrence of the non-compliance with wastewater control requirements would be low.

D. Risk Classification

(1) Operational Risks

Although the operational risks could have serious consequences on the temporary power plant, their likelihood of occurrence is low. Therefore, they are classified as moderate risks.

(2) Pollution Control Risks

Gaseous Emission Control

The risk related to the compliance with the gaseous emission control requirements is rated as minor or insignificant risk.

Wastewater Control

The risk events related to the wastewater control requirements could also be rated as minor risk. A simple risk matrix for the operational phase is shown in ***Figure 6.6-1***.

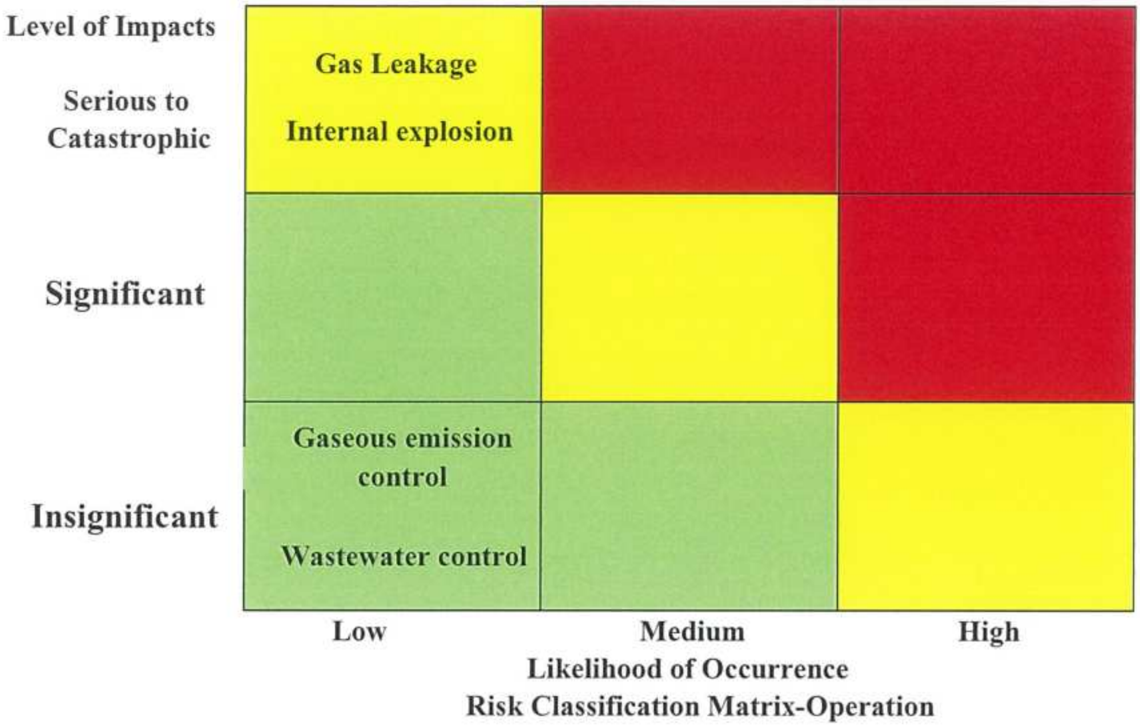


FIGURE 6.6-1 : RISK CLASSIFICATION MATRIX-OPERATION PHASE

E. Risk Mitigation Measures

(1) Operational Risks

Measures for managing the operational risks will be divided into two groups. The first group will aim at minimizing the possibility of faulty design and defects in the equipment, equipment installation, and construction. The second group will aim at minimizing inadequacies in the operation and maintenance procedures, and human error in the operations and maintenance. The first group of measures will be mainly related to the EPC contractor and his design consultant and subcontractors. The second group of measures will be related to both the EPC contractor and the temporary power plant operational team.

Measures for Addressing Faulty Design and Defects in the Equipment, Equipment Installation, and Construction

- The EPC contractor should be required to adopt the RAMS process in the design and construction of the temporary power plant and its associated facilities.

- The EPC contractor will ensure that the design, selection of equipment, installation and construction will follow the safety guidelines in the Health and Safety Executive (HSE)'s Guidance Note on "Control of Safety Risks at Gas Turbines Used for Power Generation" (Guidance Note PM 84), as well as applicable supplementary guidelines or standards of other recognized technical organizations such as the American Society of Mechanical Engineers (ASME), the American Gas Association (AGA), the US National Fire Protection Association (NFPA), and the American Society of Testing Materials (ASTM).[7]

- The design will include installation of gas leakage detection system as advised in HSE's Guidance Note PM 84.

- The EPC contractor will be required to clearly incorporate operational risk management requirements and proposed designs of mitigation measures in the Project Understanding, the Statement of Criteria, and the Basis of Designs-these three documents would be required by the Project Proponent as part of the design risk management.

- A safety review of the design, proposed equipment, methods of installation and construction should be conducted by the project management team of the Project Proponent.

- The EPC contractor will be required to submit a detailed quality control system for the design, equipment installation and construction focusing on such key operational risk areas as the gas distribution facilities, and gas generator enclosure. The quality control system will need to clearly show the interaction between the EPC contractor and the design consultant and the subcontractors.

- Conduct a detailed hazard and operability study (HAZOP) after the detailed design and specifications are completed. Results of the HAZOP study would support the safety review suggested above.

Measures for Addressing Inadequacies in the Operation and Maintenance Procedures, and Human Error in the Operations and Maintenance

The Project Proponent will, as part of the contract, require the EPC contractor to carry out the following tasks:

- Submit a detailed plan for testing and commissioning of the temporary power plant. This provisions prohibit the use of flammable gas during cleaning procedures while safeguarding a range of activities related to cleaning systems. The EPC

[7] The HSE's Guidance Note PM 84) is primarily aimed at manufacturers, suppliers and operators of gas turbines (GTs) used for generating electrical power. but is also applicable to their use in oil and gas pumping and compression plant and similar applications. The new edition has been extensively revised since its original publication in 2000, providing much additional information, including; the design of enclosure ventilation; further guidance on selecting equipment for use in potentially explosive atmospheres; and risks from the use of liquid fuels. The guidance will help in drawing attention to hazards associated with gas turbines and describes ways in which the associated risks can be eliminated or reduced to an acceptable level.

contractor must prepare a gas-blow procedure for review by the Project Proponent and conduct a training of personnel to ensure correct implementation of the procedure.

- Submit detailed working procedures for the operation and maintenance of various units or facilities of the power plant, including the gas distribution facilities and the generators, etc. The procedures will include safety aspect of high risk areas of operations such as flare system, and gas turbine combustors. The working procedures must be certified by qualified engineers with extensive experience in temporary power plants. The work procedures will be included in the safety review of the Project Proponent.

- Organize and conduct training of the power plant operational team to be nominated by the Project Proponent in the operation and maintenance and risk management of the Project temporary power plant. The training will use the work procedures prepared by the EPC contractor. The EPC contractor will submit a detailed training program and implement the training not later than two weeks before commencing the testing and commissioning of the temporary power plant. After the training, the EPC contractor will conduct a rigorous test of the trainees to evaluate their technical competencies required for efficient and safe operation and maintenance of the temporary power plant.

In addition, the Project Proponent would also adopt a risk transfer measure through taking an insurance against the cost of damages to properties, injuries and fatalities, and loss of revenue should the operational risk events occur.

In addition to the insurance, the Project Proponent should require the EPC contractor to prepare an emergency response plan to enable the temporary power plant operational team to promptly cope with the consequences if the operational risk events occur. The content of such plan should include, but be limited to the following:

- Background and Purpose of the Emergency Response Plan
- Types, Nature and Locations of Emergencies (on-site and off-site)
- Emergency Response Organization
- Emergency Response Process and Work Procedures
- Notification Procedures and Communication Systems
- Damage Assessment Process
- Process and Procedures for Returning to Normal Operations
- Emergency Equipment and Facilities Available
- Training, Simulation and Mock-Drills
- Regular Tests of Emergency Organization and Procedures
- Review of Plans and Updates
- Detailed Operating Manuals

(2) Pollution Control Risks

No special risk mitigation measures will be required. Careful selection of the low NOx burner will be adequate to minimize the risk. Other possible causes of the risks will be minimized by efficient environmental management.

F. Implementation Arrangements

(1) Responsible Persons and Organization

Environmental risk management needs to be an integral element of environmental management and risk management of the operational phase. Therefore, the organization for environmental management proposed in the CEMP will also be responsible for environmental risk management.

However, the proposed measures for managing the operational risks will need to be implemented by project management team during the design and construction phase and by the temporary power plant management team starting from the testing and commissioning through the operational phase.

The temporary power plant management organization should have a risk management committee to be chaired by the temporary power plant manager and participated by the operational manager and the EHS manager. Other members of the safety management committee would be head of various units of sections of the power plant. These unit heads will be responsible for the operation and maintenance of the units in strict adherence to the applicable work procedures. The risk committee will be involved in operational and environmental risks, including safety aspect. The risk committee will consistently review and evaluate the operational risks of the temporary power plant, and recommend necessary improvements of the work procedures to ensure the risks are minimized or avoided.

(2) Risk Monitoring and Evaluation

Operational Risks

For the operational risks, the following risk triggers should be considered for routine monitoring and evaluation:

- number of reported incidents of gas leakage and its trend;
- response time to address the reported leakage and its trend; and
- number of reported incidents of non-conformance with the work procedures and its trend.

The incidents should be decreasing and the response to the reported leakage should be prompt and effective. The opposite trend suggests increasing of the likelihood of occurrence of operational risk events.

The monitoring and evaluation of the risk triggers should be the responsibility of the EHS unit.

Pollution Control Risks

The monitoring and evaluation should cover the following risk triggers:

- number of CEMS malfunction incidents and the period of down time;
- number of non-compliance of the effluent standards and the compliance trend; and
- number of non-compliance with the effluent quality standards of the treated effluent and the compliance trend.

(3) Reporting and Corrective Actions.

The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management. The monitoring and evaluation results will be reviewed by the risk management committee for taking corrective actions.

6.6 DECOMMISSIONING PHASE IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION

6.6.1 Decommissioning Phase Activities

Decommissioning of the temporary power plant will be carried out at the end of its working life. The decommissioning will be the reverse of construction process and will have to be carried out in accordance with prevailing legislation and industry best practicable technologies available at that time. All process equipment, tanks, and pipes will be cleaned before dismantling and disposed off as scraps. The concrete floor would be left on the ground unless the land is to be reclaimed for agricultural use. The site would be used for other purposes.

The timing and activities undertaken during the decommissioning phase will not be planned until closer to the end of field life. Detailed decommissioning plan will be prepared and submitted to the relevant authorities prior to commencement of activities. This plan should be prepared at least 6 months before the decommissioning. An EIS would be required for environmental clearance of the decommissioning plan.

6.6.2 Impact Identification

If the power plant is decommissioned, i.e. taken out of operation, it would need to be demolished and dismantled. During the decommissioning phase, major activities will be removal of generator set facility (maximum of 15 units) and associate electrical equipment, removal of gas distribution facility air evaporizer and pipeline, cleaning the equipment and pipes, and removal of control building and relevant instruments. The main environmental issues are fugitive dust and gas emission caused by heavy machines and equipment, noise, disposal of waste and hazardous waste.

The potentially affected environmental components to be considered during decommission phase are air quality, noise, residue and unused waste, and land reclamation, (***Table 6.6.2-1***).

TABLE 6.6.2-1

ENVIRONMENTAL ISSUES TO BE MANAGED DURING DECOMMISSION PHASE

Environmental Issues	Activities / Sources
Air Quality	- Dust diffusion during dismantle of power plant facilities and land reclamation
Noise	- Increase noise level from heavy equipments and vehicles.
Waste Management	- Residue from dismantle activities - Hazardous waste - Domestic wastes from site workers
Land Reclamation	- Change condition of area for other use.

6.6.3 Impact Assessment

6.6.3.1 Environmental Disturbances Caused by Dust and Noise

As Pagaw Zoon village which is located at distance of 1.1 km on the south from the project site, the effects of dust diffusion and noise during the decommission period will not reach the village if control during dismantle and land reclamation activities.

Typical noise levels of heavy truck and heavy machine are around 88 dB(A). Bulldozers, excavators and graders are around 85 dB(A) measures at 15 m from the source.[8] According to calculation, main concern should be proposed mitigation measures both dust and noise level on Pagaw Zoon village.

Article 6.3.2.4 presents the calculations of fugitive dust dispersion and Article 6.3.2.5 presents calculations of noise propagation. The environmental disturbances will be confined mostly within the decommission site.

The impacts of these environmental disturbances are considered significant and their control priority should be high in order to protect the workers.

[8]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

Recommended Mitigation Measures

Fugitive dust will be generated most during the land reclamation. Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust (US.EPA (2006), AP42, chapter 13.2.2).

Noise of mobile equipment is difficult to control at source. A practical measure is to provide ear muff to workers working in the excessive noise environment. In addition, temporary sound barrier should be setting during dismantle and land reclamation of temporary power plant area to reduce noise impact to Pagaw Zoon village.

6.6.3.2 Waste Management

The increase of solid wastes generated during the decommission phase are as follows:

- Solid waste from worker and demolition area such as garbage, glass, and food waste.
- Residue such as wood scrap, steel, cement etc.
- Hazardous waste such as used lubricant, chemicals agent and its container etc.

Even through the decommission phase are short period (approx. 2 months) with low quantity of waste, unsuitable management on waste may generate source of habitat for vector such as mosquito, fly, and rat. This situation can affect locals at nearby villages. With suitable management on waste and implementation of impact mitigation measures, the level of impact would be low.

Mitigation Measures

- The Contractor will design and implement a waste segregation system and procedure and communicate it to all worker to strictly adhere to the segregation procedure;
- An appropriate number of containers with adequate volume and appropriate materials will be provided at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories.

6.6.3.3 Land Reclamation

During decommission phase, the land use will be change from power plant area to open area after demolition complete. Therefore, developer, in consultation with concerned authority and local communities, should prepare a plan to manage this land.

Mitigation Measures

Developer should brainstorm with with concerned authority and local villagers in order to design and manage the use of open land after completion of dismantle process. Typical utilization on these type of area, in the industrial zone is included recreational park, museum or demonstration of clean energy area, or factory for light industrial.

6.6.4 Risk Assessment

In case of dismantle of small power plant, impacts that are typically occur included dust dispersion, noise, water contamination and occupational health.

The identified risk events could be caused by the following:

Potential causes:

- the EPC contractor and subcontractor have inadequate understanding of the environmental performance requirements of the Project
- the EPC contractor and subcontractor unintentionally omit the environmental requirements due to ambiguity of the environmental requirements in the contract
- inadequate supervision and monitoring of environmental mitigation activities of the EPC contractor and subcontractors
- changes in designs or decommission methods without revising the originally proposed mitigation measures
- changes in the environmental requirements during the decommission without the revision of the originally proposed mitigation measures

Figure 6.6.4-1 shows a risk matrix for the decommission phase.

Risk during decommission phase is considered major risk as it would have a medium level of likelihood of occurrence and a medium level of impacts.

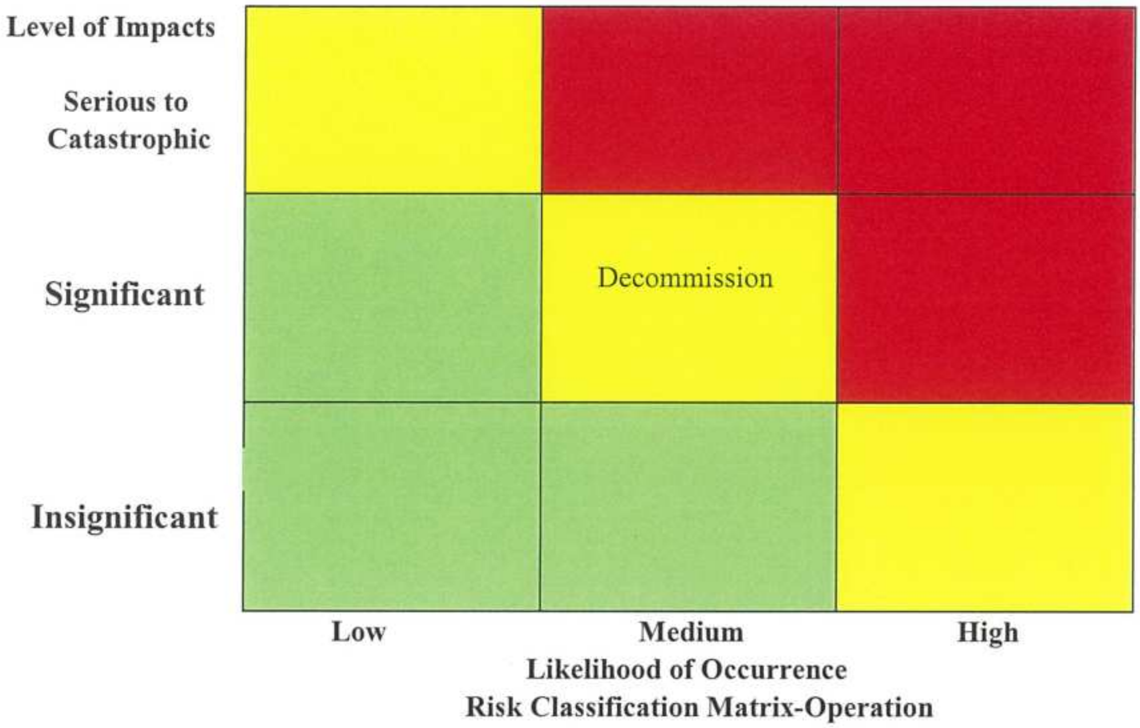


FIGURE 6.6.4-1 : RISK CLASSIFICATION MATRIX-DECOMMISSION PHASE

6.6.4.1 Mitigation Measure

A. Mitigation Measures to Reduce Fugitive Dust

At the decommissioning sites, measures should be implemented to reduce fugitive dust emission. The most common measures are:

- Spray water at and around the decommissioning areas and access roads during site demolishing and dismantling.
- Enforce a speed limit for vehicles and trucks in the decommissioning sites not to exceed 40 km/hr. Decommissioning activities shall be kept as planned so that the disturbed areas will be minimized at any time.
- Prohibit the open burning of waste in the decommissioning area.
- Dust masks should be provided (where applicable) to all construction workers.

These measures especially water spraying twice a day together with strict implementation of other dust suppression measures should be able to reduce fugitive dust emission as much as 75%.

It should be noted that the dust suppression efficiency of water spraying will depend on the volume of water use per unit area and the frequency of spraying. A 75% efficiency could be expected.

B. Mitigation Measures to Reduce Noise

(1) Physical Measures

- The noise reduction at the perimeter could be achieved using an acoustic wall or a sound barrier at least 3 m high with adequate length to block the noise emanating to the receptor. However, this would not be necessary as the nearest community is 600 m from the decommissioning site.

- Provide ear plugs or ear muffs to workers operating in the excessive noise areas.

(2) Management Measures

The following management measures should be implemented to complement the physical measures.

- Major activities which generate loud noise should be limited to only during the day time. Activities that are necessary to be carried out at night time will need approval of the site engineers, and will need to have adequate noise control equipment or measures.
- Speeds of vehicles in the decommissioning site should not exceed 40 km/hr.
- Temporary sound barriers or shielding should be installed for non-mobile equipment.

C. Mitigation Measures for Waste Management

- The contractor is required to prepare and provide a waste segregation system and procedure and communicate it to all worker to strictly adhere to the segregation procedure.
- An appropriate number of waste containers with adequate volume and appropriate materials will be to support the segregation. Each waste category will be segregated into recycles, reuse and disposal sub-categories.

CHAPTER 7

CUMULATIVE IMPACT ASSESSMENT

CHAPTER 7

CUMULATIVE IMPACT ASSESSMENT

7.1 INTRODUCTION

The ESIA Procedure prescribes Cumulative Impact Assessment (CIA) as one chapter in the Final ESIA Report consisting of two sections: (i) methodology and approach; and (ii) cumulative impact assessment. The ESIA Procedure does not provide guidelines on the required content of the CIA chapter.

Numerous definitions of cumulative impacts or effects exist with slight differences in meaning. In general, cumulative impacts are defined as:

"The changes to the environment caused by a proposed project in combination with other past, present, and reasonably foreseeable projects or human activities".

It should be noted that baseline environmental quality, such as baseline ambient air quality, in an area is the results of current economic activities and projects already in operations. Therefore, the predicted ambient air quality presented in ***Chapter 6*** is cumulative impact of the Project and other existing activities in the area. In this regard, the CIA for this Project should consider only potential or approved future projects and anticipated future developments in the influence areas. At present, information on future projects and development activities in the Project area is not available. The CIA in the context of this Project will not give practical or meaningful results if it is based on very broad scenarios of future development of the region.

Dawei Power Generating Company Limited planned to establish a temporary power plant on 15 MW Temporary Power Plant to support construction activities in the Initial Phase Development of Dawei Special Economic Zone (DSEZ) over the period from 2016-2018. The temporary power plant will be taken out of service when the proposed boil-off gas power plant starts to operate.

This chapter presents results of the CIA based on the above premise.

7.2 METHODOLOGY AND APPROACH

7.2.1 Scope of the CIA

Due to the 15 MW temporary power plant is developed to support the initial phase Dawei SEZ. Main activities in this phase of Dawei SEZ is to construct infrastructures such as accommodation area, power supply etc. to support the settle of industrial in near future. According to results of impacts assessment, it can be concluded that the Project will have insignificant impacts on water quality, therefore cumulative impacts of initial development of Dawei SEZ will be mainly on ambient air quality and traffic safety especially on the construction period. The CIA will assess impacts of an increase in construction on fugitive dust and traffic safety during construction phase of the project Furthermore, an assessment of increase in power generation capacity on ambient air quality in the Dawei SEZ is also performed.

The CIA, on construction phase will focus on the impact on fugitive dust and traffic safety. For operation phase, impact on NO_2 concentrations in ambient air will be focused as NO_2 is the only major pollutants for natural gas-fired power plant.

7.2.2 Assumptions

The CIA has to adopt the following assumptions:

Construction phase:

- New township with total area of 25 acres (250x400 m.) is allowed to be located near the project site.

Operation phase

- One new temporary power plant identical to this Project will be allowed to be located near the Project site.

7.2.3 Impact Assessment

Construction phase

The assessment of cumulative impact on fugitive dust and traffic safety use the same methodology and same basic data in **Section 6.4.3**. The impact of the new township on fugitive dust and traffic safety are assessed on basis of construction of the 15 MW power plant and the new township is implement concurrently.

Operation Phase

The assessment of cumulative impacts on air quality uses the same methodology for air quality impact assessment and the same basic data on terrain and climatological factors used in ***Section 6.5***. The impacts on ambient air quality of the second power plant are assessed on the basis of concurrent operations of the two power plants.

7.3 CUMULATIVE IMPACTS

7.3.1 Construction phase

A. Fugitive dust

The cumulative impacts on fugitive dust were predicted in two cases-No Control Case and Control Case. The predicted concentrations of fugitive in the study area are given in ***Table 7.3-1***.

The prediction on concentrations of fugitive dust clearly indicates that impact will be considerable if the construction of the 15 MW power plant and the township is run simultaneously. Mitigation measures to reduce dust emission must be strictly performed.

TABLE 7.3-1

PREDICTED IMPACT FROM CONSTRUCTION OF THE 15 MW POWER PLANT AND THE NEW TOWNSHIP ON FUGITIVE DUST

Condition	TSP (Power Plant), µg/m^3	TSP (Township), µg/m^3	Total TSP µg/m^3	Standard TSP[1] µg/m^3
No Control	57.00	144.68	380.24	230
Control 75% suppression	14.15	36.17	228.98	

[1] WHO Ambient Air Quality Guideline stated on Environmental, Health and Safety Guidelines : Air Emission and Ambient Air Quality of International Finance Corporation-IFC (April 30, 2007)

B. Traffic safety

The cumulative impacts on traffic safety were predicted at pre-construction phase in order to transport the size filling material. The estimated total volume of filling materials required is based on the following data and assumptions:

- The construction site will be filled up to about 1 m above the existing level.
- The filling period will be about 90 days.
- Operation hour of truck for transport fill materials to the site is 10 hour per day.
- The entire area of 25 acres (100,000 m^3)

The total number of truck trip for transportation of filling material for the 15 MW power plat and the new township will increase the existing traffic loads by about 43 trips/hr. However, the traffic on ITD main road is still in good condition as satisfactorily traffic flow.

TABLE 7.3-2

PREDICTED TRAFFIC CONDITION FROM CONSTRUCTION OF THE 15 MW POWER PLANT AND THE NEW TOWNSHIP

PARTICULARS	TC1
Existing total PCU/hr.	7.676
Carrying capacity, PCU/hr	2,000.00
Existing V/C ratio	0.02
Existing traffic condition	Very good traffic flow
During the site filling period	
Truck trips per day	423
Truck trips per hour based on 10 hrs	43
Truck traffic in PCU equivalent/hr (PCU for truck-2.5)	90.3
Total traffic during the site filling period, PCU	1262.04
Carrying capacity, PCU/hr	2,000.00
New V/C ratio	0.6310
Expected traffic condition	satisfactorily traffic flow

7.3.2 Operation Phase

- **Cumulative Impact on Air Quality**

The cumulative impact on NO_2 concentration in the ambient air was predicted at the stack height of 5 m. The predicted concentration of NO_2 at various location in the study area are given in ***Appendix 6B***. ***Table 7.3-3*** shows the maximum concentration of NO_2 and the locations.

The predicted maximum concentration of NO_2 clearly indicates that the study area could have two temporary power plant with total of 30 gas generator units of 1 MW each without significant impacts on ambient air quality. Details on NO_2 concentration from emission under 30 Units operation condition are shown below.

The maximum ambient concentrations of NO_2-1 hr including background level concentration, found at the project site. The NO_2-1 hr concentration was 67.62 $\mu g/m^3$ (33.81% of AAQS). For the concentrations of NO_2-1 hr at sensitive receptors, the values were between 34.08-35.11 $\mu g/m^3$ (17.04-17.56% of AAQS) which are below the permissible maximum of 200 $\mu g/m^3$.

The maximum ambient concentrations of NO_2-24 hr including background level concentration, found at the project site. The NO_2-24 hr concentration was 21.15 $\mu g/m^3$ (14.10% of AAQS). For the concentrations of NO_2-24 hr at sensitive receptors, the values were between 18.005-18.087 $\mu g/m^3$ (12.00-12.06% of AAQS) which are below the permissible maximum of 150 $\mu g/m^3$.

The maximum ambient concentrations of annual NO_2 from stack emission (not including background concentration of annual NO_2 due to the data are not available), found at the project site. The annual NO_2 concentration was 1.13 $\mu g/m^3$ (2.83% of AAQS). For the concentrations of annual NO_2 at sensitive receptors, the values were between 0.0003-0.0178 $\mu g/m^3$ (0.0008-0.0446% of AAQS) which are below the permissible maximum of 40 $\mu g/m^3$.

TABLE 7.3-3

PREDICTED IMPACTS OF THE OPERATION OF 30 UNITS OF 1 MW GAS GENERATOR ON NO_2 CONCENTRATION IN AMBIENT AIR IN THE STUDY AREA

Results	30 Units		
	NO_2 ($\mu g/m^3$)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	33.62	3.15	1.13
-location of the maximum value	Project site	Project site	Project site
-Coordinate (UTM(WGS84))	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	67.62	21.15	1.13
-% of ambient air quality standard	33.81	14.10	2.83
In only sensitive areas			
-ranges of concentrations	0.08-1.11	0.005-0.087	0.0003-0.0178
-net maximum concentration including background level	34.08-35.11	18.005-18.087	0.0003-0.0178
-% of ambient air quality standard	17.04-17.56	12.00-12.06	0.0008-0.0446
Standard	**200**[1/]	**150**[2/]	**40**[1/]

Remark: [1/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

For convenience in the use of EMPs during Project implementation and as prescribed in the ESIA Guideline 2014, the construction phase EMP and the operational phase EMP are presented in Volume 2 of this ESIA Report. This Chapter presents the conceptual framework of EMPs and a summary of each EMP.

8.1 THE CONCEPTUAL FRAMWORK

8.1.1 Scope of Environmental Management Plans

The results of ESIA investigation lead to 2 implementable environmental management plans (EMPs): one EMP for implementing in the construction phase of the Project (CEMP) and another EMP for implementing in the operational phase of the Project (OEMP).

The two EMPs are defined in the ESIA Procedure as follows:

Construction Phase EMP *means a detailed and comprehensive Environmental Management Plan (EMP) for the construction phase of a Project. Such plan shall present all relevant commitments, Emission Limit Values, Environmental Quality Standards and other environmental requirements and include a description of the construction works, present an overview of Adverse Impacts, present mitigation measures and monitoring programs together with time schedules, overview maps, images, aerial photos, satellite images, site layout plans, cross-sections, transects, environmental management and monitoring sub-plans for each construction site, thematic sub-plans, and management procedures as appropriate.*

Operational Phase EMP *means a detailed and comprehensive EMP for the operational phase of a Project. Such plan shall present all relevant commitments, Emission Limit Values, Environmental Quality Standards and other environmental requirements. The plan shall include a description of the Project operations, installations, and infrastructure, and shall present an overview of Adverse Impacts, present mitigation measures together with time schedules, overview maps, images, aerial photos, satellite images, site layout plans, cross-sections, transects, environmental management and monitoring sub-plans for each Project site, thematic sub-plans, and management procedures as appropriate.*

The above definitions make clear that the two EMPs required by MONREC will need to be comprehensive and have more details than very brief EMPs presented in ESIA reports of the past.

It should be noted that the two EMPs prepared as part of this ESIA study are invariably framework plans as they are based on outline designs of the Project. They are

therefore intended to provide framework and prescribe requirements for the preparation of detailed CEMP and OEMP by the appointed EPC contractor (Contractor). Consequently, they could be considered and referred to as the Project Proponent's or Owner's EMPs to distinguish them from the Contractor's EMP after the ESIA during project implementation.

In case of decommission phase, the EMP are similar to those recommended for the construction phase. The EMP during decommission phase depened on decision of the Concerned Authorities confirm to remove of all components at the end of concession.

8.1.2 Application of the Owner-EMPs

The Project Proponent will require in the EPC contract (Contract) to prepare a detailed CEMP in due course before commencing the construction. The Contractor CEMP; The Contractor will use the Owner-CEMP as the basis for preparing a detailed Contractor-CEMP. The Contractor-CEMP will be based on the Contractor's final designs, construction methods, and construction schedule. The scope and content of the Contractor-CEMP will not be less than the scope and content of the Owner-CEMP. The Contractor-CEMP shall be contractually binding. During the construction, the Contractor will implement the Contractor-CEMP under the supervision of a Project Manager to be appointed by the Project Proponent.

As the Contractor will also be responsible for the design, supply, installation, testing, and commissioning of the gas-fired power system and its associated facilities, the Project Proponent will require in the Contract the Contractor to prepare a detailed Contractor-OEMP in due course before the commissioning. The Contractor will use the Owner-OEMP as the basis for preparing the Contractor-OEMP based on the actual construction and final operational procedures to be prepared by the Contractor. The Contractor-OEMP may need to be refined based on results of the commissioning. The Owner's Power Plant Operation Team will review and revise the Contractor-OEMP as appropriate to prepare the Final OEMP for implementation in the operational phase.

For clarity, the application of the Owner-EMPs as above described is shown as a diagram in ***Figure 8.1-1***.

8.1.3 Scope of Project Environmental Management

Environmental management during the construction and operational phases of the Project is based on the same basic principle of management in each project phase thus consists of four related tasks (***Figure 8.1-2***):

(i) Plan (P) – what need to be done to minimize the anticipated impacts;

(ii) Do (D) – implement the plan;

(iii) Check (C) – monitor and evaluate the results of implementation

(iv) Act (A) – taking corrective actions to improve the results, if found inadequate

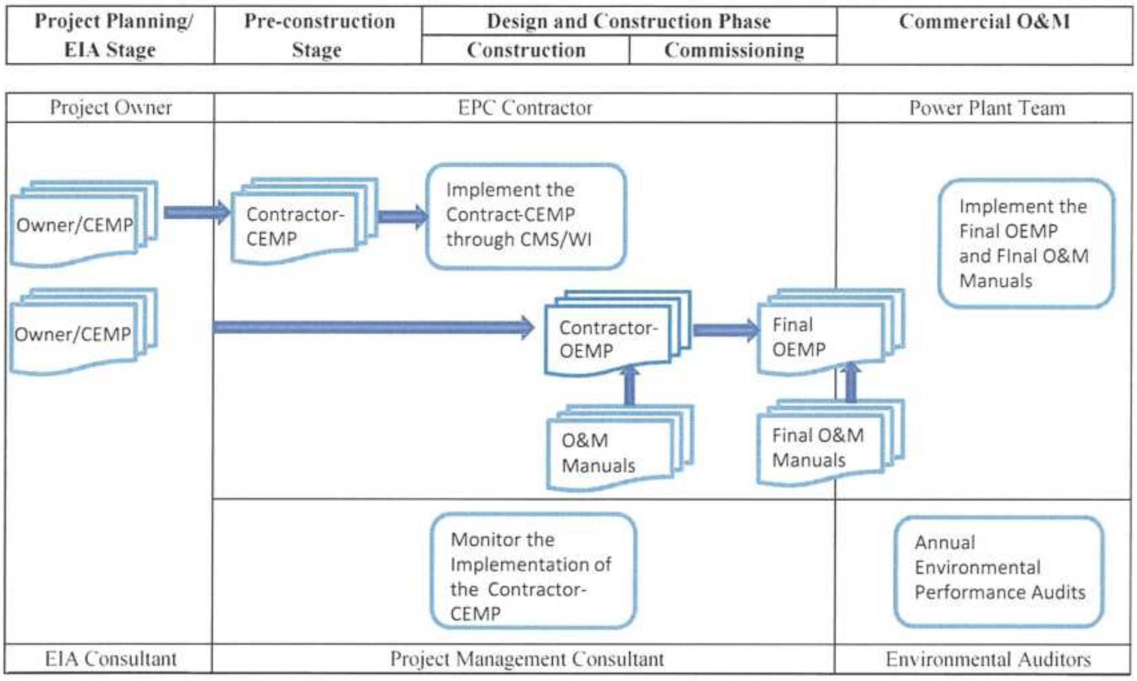


FIGURE 8.1-1 : APPLICATION OF THE EIA-EMP

FIGURE 8.1-2 : PDCA CYCLE FOR ENVIRONMENTAL MANAGEMENT

Therefore, the CEMP and OEMP will need to cover the following subjects: (i) mitigation measures to be implemented; (ii) arrangements for the implementation of mitigation measures; (iii) monitoring, evaluating and reporting of the implementation of mitigation measures to provide feedback information on whether the environmental performance deviates from the prescribed benchmarks; (iv) corrective actions process if the environmental performance below the benchmarks, environmental incident response, and emergency plan; (v) arrangements for operating the EMS, including organizational structure, responsibilities, documentation, training, communication, and management review; and (vi) involvement of stakeholders or affected people in environmental management, including public grievance redress mechanism.

8.2 PROJECT'S EHS POLICY AND COMMITMENTS, AND LEGAL REQUIREMENTS

The Owner's EHS policy and commitments and legal requirements will set the levels and targets of environmental performance of the Project both during construction and operation.

8.2.1 Owner's Policy

The Project Proponent is committed to the sustainable development principle. In this regard, the Project Proponent will manage environmental aspects of the Project in accordance with the ISO 14001 environmental management system. Consequently, the Project Proponent will establish an environmental management system (EMS) for the project and will operate the EMS to meet the requirements of ISO 14001.

As the first step towards meeting the requirements of ISO 14001, the Project Proponent will formulate an environmental and social management policy to guide its environmental and social management during the construction phase and the operation phase of the Project. Such a policy will support the following activities:

- Develop a comprehensive Environmental, Health, and Safety (EHS) Management System for implementing the environmental management plan (EMP) to be prepared as part of the ESIA of the Project;
- Implement the EMP and as part of project and operational management with due diligence audit to be conducted at appropriate interval during the construction and operational phases of the Project;
- In implementing the EMP during the project construction, the nominated EPC contractors will be required to prepare and implement contract specific EHS measures for the construction of the 15 MW temporary Power Plant Project;
- During the operational phase, EHS management will be an integral part of the operational management of the 15 MW temporary Power Plant Project;
- Establish adequate environmental and social safeguards capabilities;

- Encourage public participation in the EHS management as related to the surrounding communities; and
- Maintain information generated in the EHS management and prepare EHS performance reports as required by the corporate management and the concerned authorities of the Government.

The Project Proponent will establish and activate the EHS Management System starting from the commencement of construction.

During Pre-construction/Construction: The Project will endeavour to minimize environmental impacts and meet all EHS requirements during the construction. This will be achieved through adopting designs, construction methods, construction management practices, and impact mitigation measures. The Project EHS performance will be measured and evaluated against applicable national or international standards and guidelines prescribed by MONREC or proposed in the CEMP. In addition, the Project will establish an environmental management system (EMS) for the Project construction.

During Operation: The Project will endeavor to minimize environmental impacts and meet all EHS requirements of the power plant's operation and maintenance (O&M). This will be achieved through adopting: (i) best available technologies in the power plant design and operation; and (ii) effective impact mitigation measures proposed in the ESIA. The Project EHS performance will be measured and evaluated against applicable national or international standards and guidelines prescribed by MONREC or proposed in the OEMP. The Project will also establish an EMS specific for the power plant operation, which will follow principles and good practices in environmental management of power plants.

8.2.2 Legal Requirements

Environmental management of the Project will comply with legal requirements pertinent to the EMP prescribed in the Electricity Law 2014, the Environmental Conservation Rule 2014, and the EIA Procedure 2015.

A. Electricity Law 2014

The Electricity Law 2014 aims at the development of the power sector in harmony with environmental conservation and development (Article 3 (a) and (f)). To realize this, the draft Electricity Law 2013 authorizes the relevant ministry to conduct EIA, implement the activities with minimal environment impact, compensate for the negative impacts and provide funds for environmental conservation in accordance with the Environmental Conservation Law (Article 10 (b)). It requires the permit holders of the electricity businesses to abide by the current rules, regulations, orders and directives of the relevant ministry in implementing the electricity works (Article 20). Therefore, the draft Electricity Law supports the Environmental Conservation Law, its rule and the related EIA Procedure.

B. Environmental Conservation Rules 2014

Chapter IX, Articles 41 to 46 prescribes the tasks regarding waste management under the control of MONREC and the Environmental Conservation Department. Waste management covers hazardous wastes, solid wastes, wastewater and emissions.

C. EIA Procedure 2015

Articles in the EIA Procedure relevant to the preparation and implementation of the EMPs are summarized in ***Table 8.2-1***. Preparation and implementation of the two EMPs will need to comply with relevant articles in the table.

TABLE 8.2-1

CONTENT OF THE EIA PROCEDURE RELEVANT TO THE EMPS

Subject	Relevant Articles
Content of the EMPs	63
Project Approval Requirements	
- Issuance of an ECC	70
- Conditions of the ECC	87 - 101
- Submission of an CEMP and OEMP	91, 92, 94,100
Revision and updating the EMPs	94 – 99, 101
Implementing the EMPs	102 - 105
Monitoring and Reporting	
- Responsibility for Monitoring	106,107
- Content of Monitoring Report	109
- Submission of Monitoring Report	108
- Disclosure of Monitoring Report	110
- Inspection by MONREC	111 - 122

According to **Article 102 (a)**, the Project Proponent shall bear full legal and financial responsibility 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.

Article 103 states that 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.

D. Myanmar National Environmental Quality (Emission) Guidelines

Myanmar National Environmental Quality (Emission) Guidelines dated on 29 December 2015 will be adopted as the base guidelines and standards for environmental management during the entire period of Project implementation. The international guidelines and standards will be adopted only when the national guidelines and standards do not exist.

Based on nature of the gas-fired power plant development of the project, the national emission standards will be adopted for stack gas emissions and effluents to be discharged into the coastal waters. Combination of international and national ambient environmental quality standards for other parameters will be adopted as appropriate.

8.3 SUMMARY OF CEMP

As discussed in ***Chapter 6***, the Project is not expected to have major environmental impacts during construction apart from environmental disturbances normally experienced in power plant construction. Nevertheless, the Project Proponent will ensue that the Contractor will make best efforts to minimize the impacts during the construction phase despite their insignificant levels. In this regard, the Project Proponent will ensure that the Contractor-CEMP will incorporate all mitigation measures as prescribed in the Owner-CEMP in preparing detailed designs of the power plant and its associated facilities, construction methods, and specifications.

The content of the Owner-CEMP presented in Volume 2 follows the basic elements of environmental management as discussed in ***Section 8.1.3***. Major aspects of the Owner-CEMP are summarized as follows:

The following issues will be managed during the pre-construction/construction phase: (i) general construction, (ii) air quality management, (iii) noise and vibration, (iv) wastewater management, (v) waste management, (vi) traffic management, (vii) OSH management, (viii) social environment, and (ix) emergency management plan (flood and cyclone). A sub-management plan for each of the identified issues is prepared and the nine sub-plans are presented in ***Appendix of Volume II***. The Contractor will update the sub-plans and include in the Contractor-CEMP. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in construction schedule and management review changes.

8.3.1 Arrangements for the Implementation of Mitigation Measures

The Contractor will elaborate and update the Owner-CEMP to prepare a Contractor-CEMP for approval by the Owner's Project Manager. The Contractor will then implement the Contractor-CEMP under supervision of the Owner's Project Manager through the Construction Supervision Consultant. The Contractor will field an EHS manager to be in charge of all aspects of the implementation of the Contractor-CEMP.

8.3.2 Monitoring, Evaluating and Reporting

Monitoring, evaluating, and reporting (MER) of the environmental performance of the Contractor will include scheduled monitoring of the indicators related to each impact issue as indicated in each sub-plan in ***Appendix of Volume II (EMP).*** In addition, the Contractor's and the Owner's EHS managers will conduct daily, weekly, and monthly site inspection programs to observe environmental performance of the construction. The Contractor will submit two monthly monitoring reports-one for internal use and another for reporting to MONREC. These two types of reports are discussed in details in the CEMP.

In addition to the scheduled MER, environmental incidents, if occurred, will be recorded, registered and reported.

TABLE 8.3-1

ANTICIPATED IMPACTS DURING CONSTRUCTION PERIOD

Construction Activities	Duration (Months)	Impacts
Phase 1: Foundation work and Building Structures	3	Dust, Noise, Road traffic, Social
Phase 2: Installation of Gas Engines and equipment	1	Air, Noise, Vibration, Road traffic
Phase 3: Load Test and Commission Test	1	Air, Noise

Note : Duration of activities based on project construction schedule in ***Chapter 4***.

8.3.3 Corrective Actions

The Contractor will be instructed by the Owner's Project Manager to take corrective actions for any identified non-compliance with prescribed environmental indicators. Taking corrective actions in the context of CEMP will have to be a part of project management and will use the same procedure for taking corrective actions in project management. The procedure proposed in the CEMP will therefore have to be reviewed and revised as necessary to make it similar to the procedure for project management. A single procedure for taking corrective actions should be used in project management.

The Contractor is required to establish own procedure for corrective actions related to EHS non-compliances. The CEMP proposes several categories of non-compliance, levels of non-compliance, and responsibilities and process for taking corrective actions based on the level of non-compliance. The Contractor will be required to conduct an investigation of the non-compliance to determine its root causes and formulate effective actions to correct the root causes. The Contractor will report to the Project Manager the results of taking corrective actions. The Contractor will also be required to prepare an emergency response plan and establish adequate capacity for implementing the emergency response plan.

8.3.4 Organization

Environmental management during the project construction will involve the Project Proponent, the Contractor, and MONREC through ECD, and other government agencies at the regional, township and community levels.

As environmental management will be carried out as part of the Project management, it will be a functional unit in the project management organization. ***Figure 8.3-1*** shows a tentative organizational structure for Project construction consisting of an organizational structure of the Project Proponent and an organizational structure of the Contractor. The two organizational structures will need to be revised as appropriate as the Project moves from the planning stage to the design stage.

8.3.5 Public Consultation and Disclosure

Establishment of Grievance Redress Mechanism

The Project proposes to establish grievance redress process as the main mechanism for public consultation and disclosure to ensure that public complaints and concerns related to the construction will be effectively addressed as soon as possible.

Structure

The key persons to mechanize grievance redress will be the same group as the Community Participatory Committee (CPC), comprising 12 members of:

- Four Representatives of government sectors, one from each agency, comprising MONREC/ ECD, Department of Electric Power (DOEP) of Tanintharyi Region, Dawei District and Yebyu Township;
- Six representatives from communities of Pagaw Zoon, Min dut, Yalai, Pale Gu, Kin Ywar and Wet Chaung, 1 from each community; and
- Two representatives of the Project Proponent. They have authority to make a decision on behalf of the Project Proponent and power plant.

***Roles and Responsibilities*:**

Roles and responsibilities of the CPC [1] has been defined as majority on cooperation with the Project Proponent in following activities:

- Public relations for the Project;
- Building understandings and good relationship between the Project and the surrounding communities;
- Participation in monitoring of the Project impacts and mitigation measures;
- Receiving and addressing complaints arisen from the project impacts;
- Resolving conflicts between the Project and the locals; and
- Coordinate among government sectors, the Project, communities and other stakeholders.

[1] Refers to Establishment of a Community Participatory Committee in Section 6.4.7 Stakeholders' Negative Attitudes toward the Project of Chapter 6.

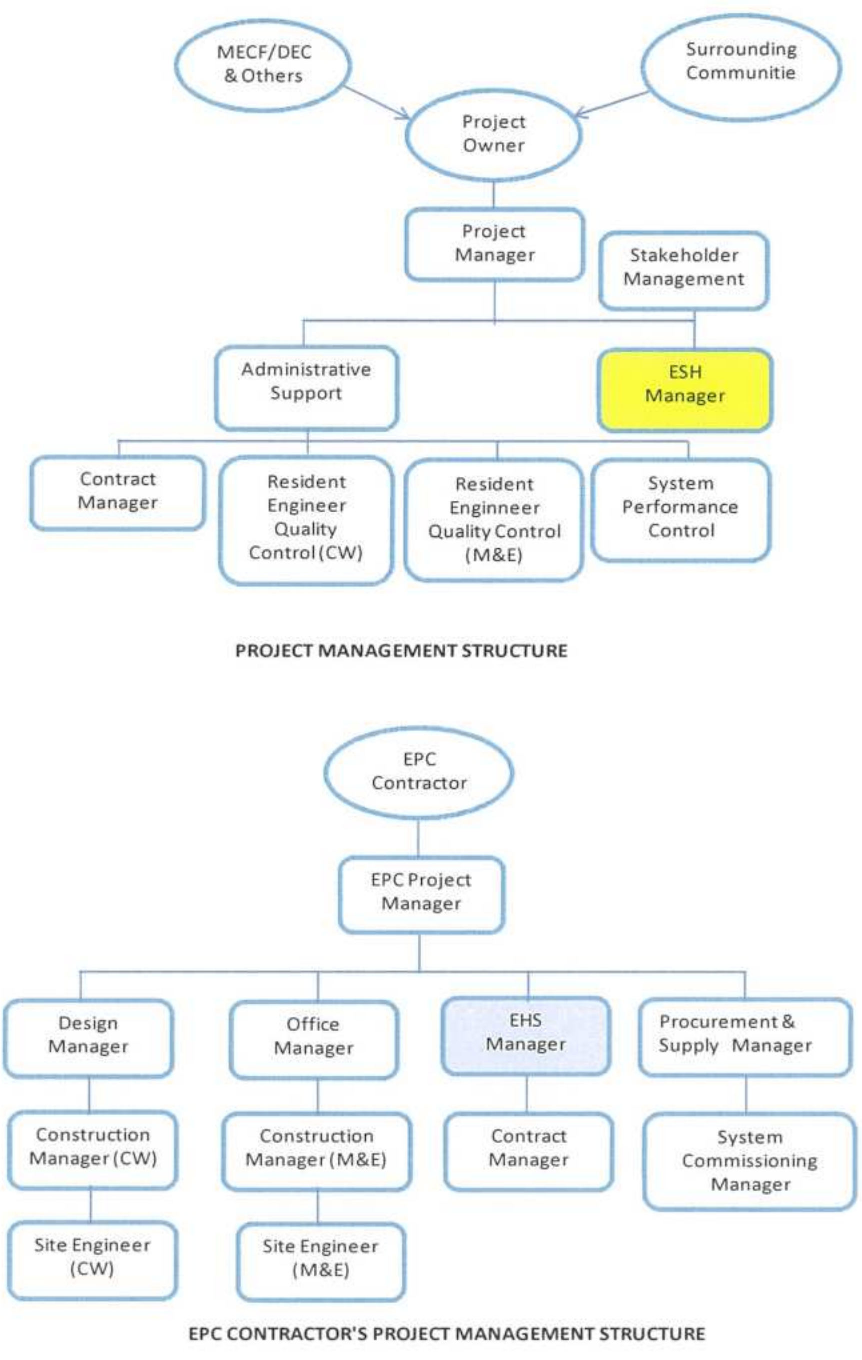


FIGURE 8.3-1 : ORGANIZATION FOR PROJECT CONSTRUCTION

Specific responsibility for cooperation in receiving and addressing complaints arisen from the project impacts, and resolving conflicts between the Project and the locals are described as shown in Grievance redress process diagram ***Figure 8.3-2***.

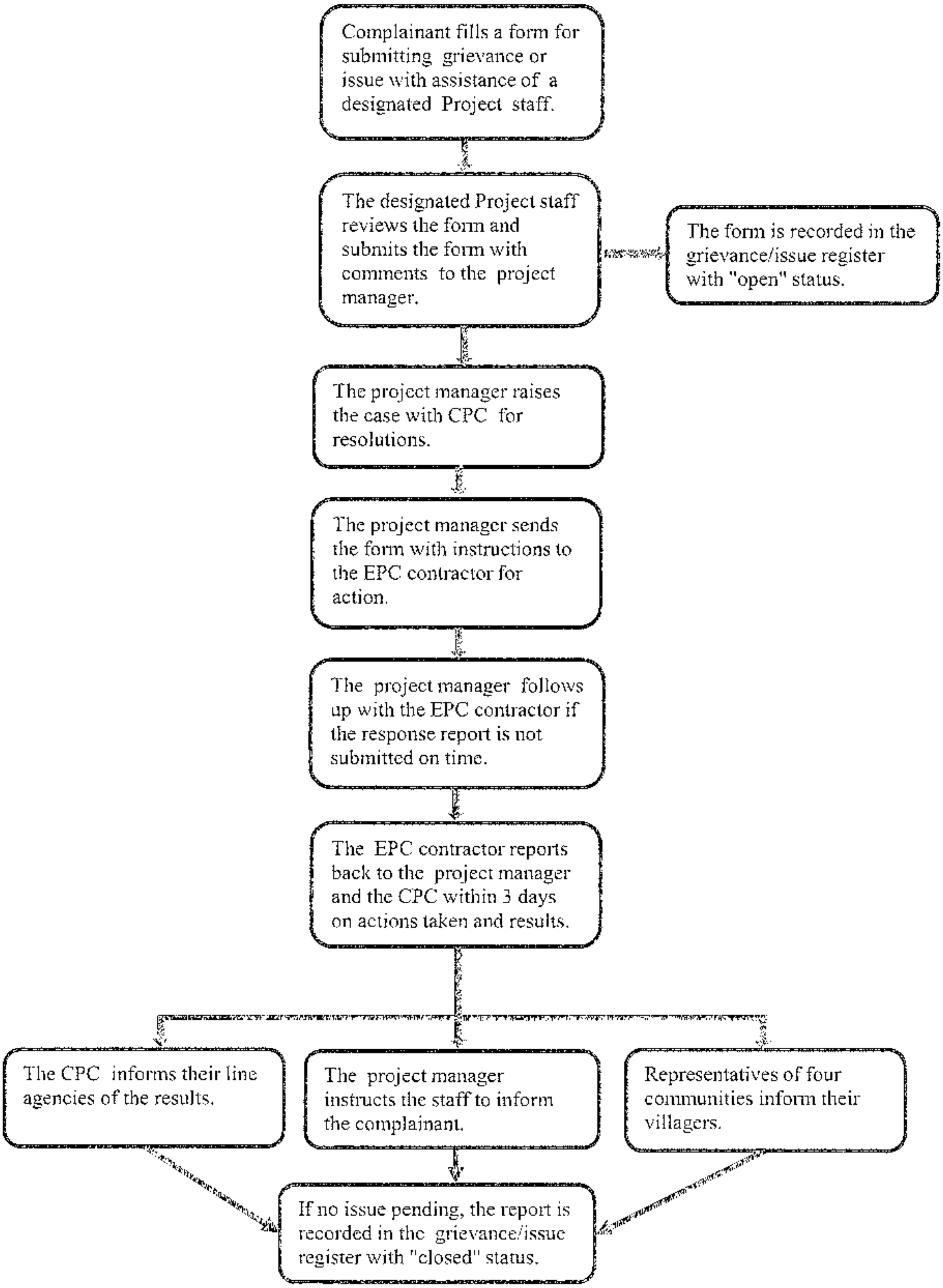


FIGURE 8.3-2 : GRIEVANCE MANAGEMENT PROCESS

***Linkage between CPC, Government Sectors and Communities*:**

Linkage between CPC, government sectors and communities in the specific context of cooperation in receiving complaints and resolving conflicts will be:

- Representatives of government sectors will inform about the complaints received from stakeholders and their resolutions to their agencies at the reginal, district and township levels. In case of any feedbacks/comments from their agencies, they will bring the messages and inform the CPC.
- Representatives of four nearby communities will convey the complaints related to the Project impacts from villagers to the CPC for joint consideration on problems' solving. They will also bring the results to inform the complainers and their communities.

8.3.6 Responsible Agencies for Environmental Management Plan

Environmental Management Team during Pre-construction and Construction Phases

Structure

The Project Proponent and the Contractor will be involved in environmental management of the Project construction. The Contractor will select construction methods or practices that have least environmental impacts to meet environmental performance targets prescribed in the Contract. During the construction, the Contractor will implement under supervision of the Project Proponent, following impact mitigation measures prescribed in the Contract.

There will be nine persons of two key groups responsibility for environmental management of the Project during these two phases:

- Five representatives of the Project Proponent or Project Owner who manages the Project through the Project manager and his/her functional units of (i) construction quality control (civil works); (ii) head and core environmental scientist of environmental, health and safety management; and (iii) stakeholder management; and
- Four representatives of the Project Contractor as the party undertaking the construction; including the Contractor Project Manager and three functional units of (i) construction management (CW), (ii) construction management (M&E); and (iii) Contract EHS management.

Responsibilities

Responsibilities of each party in environmental management are as follows:

Project Proponent

- Response to MONREC and other line organizations who are responsible for specific environmental issues for environmental performance of the Project as prescribed as conditions in the ECC and other permits.
- Supervise closely the Contractor in implementing the Contractor CEMP as an integral part of its project implementation management and construction supervision.
- Conducting periodic audit of environmental and social performances of the Contractor.

Contractor

The Contractor, including its approved sub-contractors, is contractually responsible to the Project Proponent for environmental performance of the construction as prescribed in the construction Contract.

Specifically, the Contractor will have the following responsibilities:

- Prepare a detailed Contractor CEMP for review and approval by the Project Proponent.
- Implement the mitigation measures during the construction through construction method statements and work instructions in strict conformance with environmental conducts prescribed in the Contract.
- Ensure that all process and environmental control equipment meet all technical specifications related to their environmental performance.
- Ensure that its sub-contractors shall comply with the Contractor CEMP.
- Consistently update the Contractor CEMP and submit the updated version to the Project Proponent for approval.

Budget

The proposed measures for mitigation of environmental impacts during the pre-construction and construction phases will be included in the contract cost as they are carried out mainly by the contractor, and will be specified in the contract. Its cost will be too small to be presented as separate cost items. Examples are: (i) limit speed for vehicles and trucks not to exceed 40 km/hr, (ii) the contract will specify the contractor and his sub-contractors to use construction equipment that generate low level of noise, and (iii) toilet wastes will be discharged into a septic tanks with hydraulic retention time of about 5 days, etc. Due to duration of the pre-construction and construction phases of this project is approximately 3 month, total cost of mitigation measures during these two phases would be gather with budget for environmental monitoring program.

8.3.7 Responsible Agencies for Environmental Monitoring Program

8.3.7.1 Establishment of Environmental Monitoring Program

Monitoring is required throughout the project life to evaluate compliance with legal requirements, the environmental management objectives, and relevant policies, standards and guidelines. The monitoring and evaluation will enable the overall effectiveness of the environmental controls to be determined and allow areas of non-compliance to be identified so corrective actions can be taken.The environmental monitoring plan for each issue to be managed is also presented in each sub-plan.

Two types of monitoring will be arranged for the Project. Internal monitoring will be carried out by staff of the Project or Contractor who are involving those particular subjects while external monitoring will be sourced out to a third party.

Internal monitoring will be organized by two teams, one for construction phase and another one for operation phase in accordance with different nature of work. As a short time operation of pre-construction and decommissioning phases, responsibilities of the former is integrated into construction phase while the latter is in operation phase.

Environmental Monitoring Responsible Agency during Pre-construction and Construction Phases

<u>Structure of Internal Monitoring Responsible Agency</u>

There will be four persons of two key groups responsibility for internal environmental monitoring during these two phases:

- Two representatives of the Project Proponent or Project Owner comprise: (i) Project Manager, and (ii) Owner's EHS Manager; and
- Two representatives of the Project Contractor comprise: (i) the Contractor Project Manager, and (ii) the Contract's EHS management.

<u>Responsibilities</u>

Responsibilities of each party in environmental monitoring are as follows:

Project Proponent

- Monitoring and reviewing environmental compliance at the Project level as part of the Project management.
- Monitoring will also cover environmental incidents.
- Instructing the Contractor Manager to take corrective actions for any identified non-compliance.
- Preparing a project environmental monitoring report every six months for submission to MONREC.
- Notwithstanding the periodic monitoring reports to be submitted to MONREC, keep MONREC and other concerned authorities informed of any serious environmental events and responses to the events.

Contractor

- Implementing the monitoring plans, and arranging training and specialist consultants for the monitoring as required.
- Conducting monitoring by using the approved methods stated in the Contract.
- Conducting periodic monitoring and reporting of its compliance with the environmental and social performance prescribed in the Contract.
- Environmental results not meeting the required standards will be managed as per the corrective action process and issued with a non-compliance report.
- The Contractor's EHS Manager will advise the Contractor Project Manager of any non-compliance from monitoring and will report these to the Owner's EHS Manager as required.
- Preparing monthly environmental performance reports for submission to the Owner's Project Manager.

Budget

Budget is allocated for monitoring carried out by a third party only, but not for internal monitoring as it will be undertaken by monitoring team as mentioned above.

Monitoring by the third party will be officially carried out for air quality, noise, wastewater, traffic monitoring and village forum over the construction period. Total cost of monitoring and evaluation of the Project's environmental and performance is provisionally estimated at about 25,080 US$ (2016 prices), as shown in ***Table 8.3-2***.

8.3.8 Audit

An audit is proposed at the end of the first year of construction and another audit at project completion.

TABLE 8.3-2

BUDGET AND SCHEDULE DURING PRE-CONSTRUCTION / CONSTRUCTION PHASES

A. Budget for environmental monitoring during Pre-construction and Constrution Phase

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Total Cost (US$)
		US$	Units			
1	Environmental monitoring during the pre- construciton/ construction period					
	air quality (3 stations)	800	Station	2 time during pre-construction/construction Phase)	3 stations at project site, Pagaw Zoon and Pale Gu Village	4,800
	noise and vibration measurement (3 stations)	700	Station	2 time during pre-construction/construction Phase)	3 stations at project site, Pagaw Zoon and Pale Gu Village	4,200
	wastewater and surfacewater measurement (10 stations)	300	Station	2 time during pre-construction/construction Phase)	1 station at project site and 2 station at nearby water courses	1,800
	traffic flows measurement (1 stations)	500	Station	2 time during pre-construction/construction Phase)	2 station at access road to project site and ITD main road (KM.17)	2,000
2	OSH Management Plan*	-	Include Construction Cost	Every day	Cosntruction Site and Surrounding Area	a
3	Village Forum (Public consulation)	10,000	Lumpsum	2 time during pre-construction/construction Phase)	At 12 villages within radius of 5 km. from Project site	10,000
	TOTAL					**22,800**
	CONTINGENCY (APPROX. 10%)					**2,280**
	GRAND TOTAL					**25,080**

Remark: a = include on construction cost prepared by sub-contractor

* included Waste management and Emergency management Plan

8.4 SUMMARY OF OEMP

As discussed in ***Chapter 6***, the operation of the power plant will not create any significant environmental impacts apart from social impacts related to sub-plans such as air quality and waste management. Therefore, the OEMP will require much less activities and a much simpler EMS compared to those of the CEMP. A summary of the Owner-OEMP is presented below:

8.4.1 Mitigation Measures and Plans

The following issues will be managed during the operation phase: (i) air quality and greenhouse gas management, (ii) hazardous waste management, (iii) traffic management, (iv) OSH management (v) social environmental management and CSR Program, (vi) operation staff management and (vii) emergency management plan (flood and cyclone). A sub-management plan for each of the identified issues is prepared and the 15 sub-plans are presented in ***Appendix of Volume II (EMP)***. The developer will update the sub-plans and include in the Contractor-OEMP. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in operation schedule and management review changes.

8.4.2 Environmental Management System (EMS)

The power plant management organization will set up a simple EMS for its O&M activities. This EMS will focus more on occupational health and safety of power plant workers which are around 7-12 persons.

8.4.3 Monitoring, Evaluating and Reporting (MER)

The MER will include scheduled monitoring of air quality, and noise. Air monitoring at each of the exhaust stacks will be fitted with in-stack monitoring equipment linked to the continuous emissions monitoring system (CEMS). Ambient air quality monitoring will be conducted in sensitive receptor areas, once every six months during commercial operation. Each monitoring will collect air samples continuously for 24 hours. The collected combined samples will be analyzed for NOx. Subject to the ambient air quality, the ambient air quality monitoring could be more frequent to quarterly or less frequent to once a year. Annual environmental reports will be prepared for submission to MONREC and other concerned authorities.

8.4.4 Corrective Actions

Corrective actions are described as part of the management of the implementation of the community development. The process is discussed in the sub-plans.

8.4.5 Organization

As environmental management will be carried out as part of the management of the 15 MW Temporary power plant, it is a functional unit in the power plant management organization. ***Figure 8.4-1*** shows a tentative organizational structure for power plant management, including the EHS unit. The organizational structure will be revised as appropriate in due course by the Project Proponent before the commissioning.

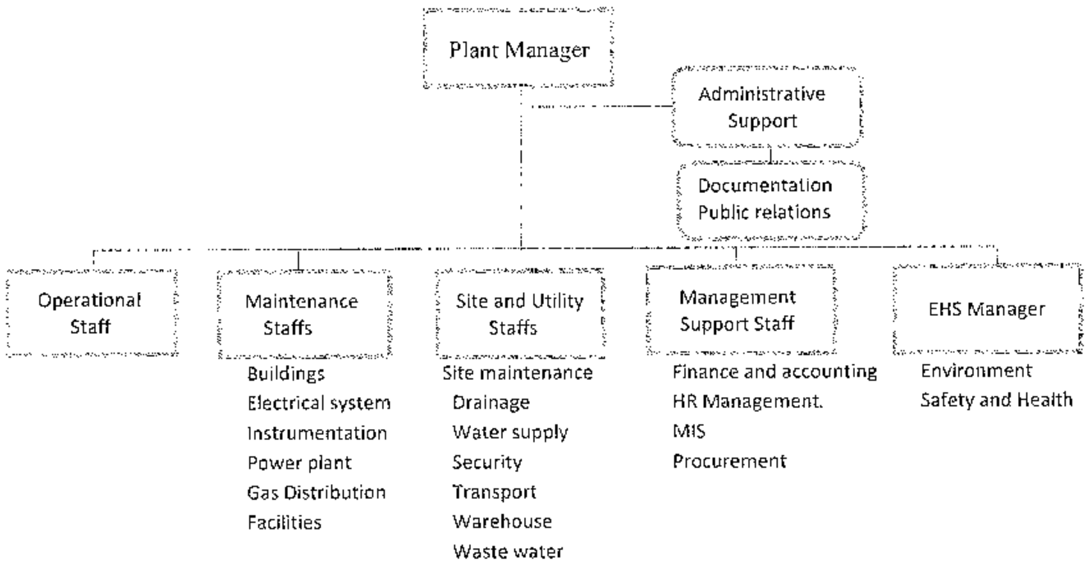


FIGURE 8.4-1 : TENTATIVE ORGANIZATION FOR POWER PLANT O&M AND ENVIRONMENTAL MANAGEMENT

8.4.6 Public Consultation and Disclosure

Establishment of Grievance Redress Mechanism

The Project proposes to establish grievance redress process as the main mechanism for public consultation and disclosure to ensure that public complaints and concerns related to the construction will be effectively addressed as soon as possible.

Structure

The key persons to mechanize grievance redress will be the same group as the Community Participatory Committee (CPC), comprising 12 members of:

- Four Representatives of government sectors, one from each agency, comprising MONREC/ ECD, Department of Electric Power (DOEP) of Tanintharyi Region, Dawei District and Yebyu Township;
- Six representatives of four communities of Pagaw Zoon, Min dut, Yalai, Pale Gu, Kin Ywar and Wet Chaung, 1 from each community; and
- Two representatives of the Project Proponent. They have authority to make a decision on behalf of the Project Proponent and power plant.

***Roles and Responsibilities*:**

Roles and responsibilities of the CPC[2] has been defined as majority on cooperation with the Project Proponent in following activities:

- Public relations for the Project;
- Building understandings and good relationship between the Project and the surrounding communities;
- Participation in monitoring of the Project impacts and mitigation measures;
- Receiving and addressing complaints arisen from the project impacts;
- Resolving conflicts between the Project and the locals; and
- Coordinate among government sectors, the Project, communities and other stakeholders.

Specific responsibility for cooperation in receiving and addressing complaints arisen from the project impacts, and resolving conflicts between the Project and the locals are described as shown in Grievance redress process diagram ***Figure 8.4-2***.

[2] Refers to Establishment of a Community Participatory Committee in Section 6.4.7 Stakeholders' Negative Attitudes toward the Project of Chapter 6.

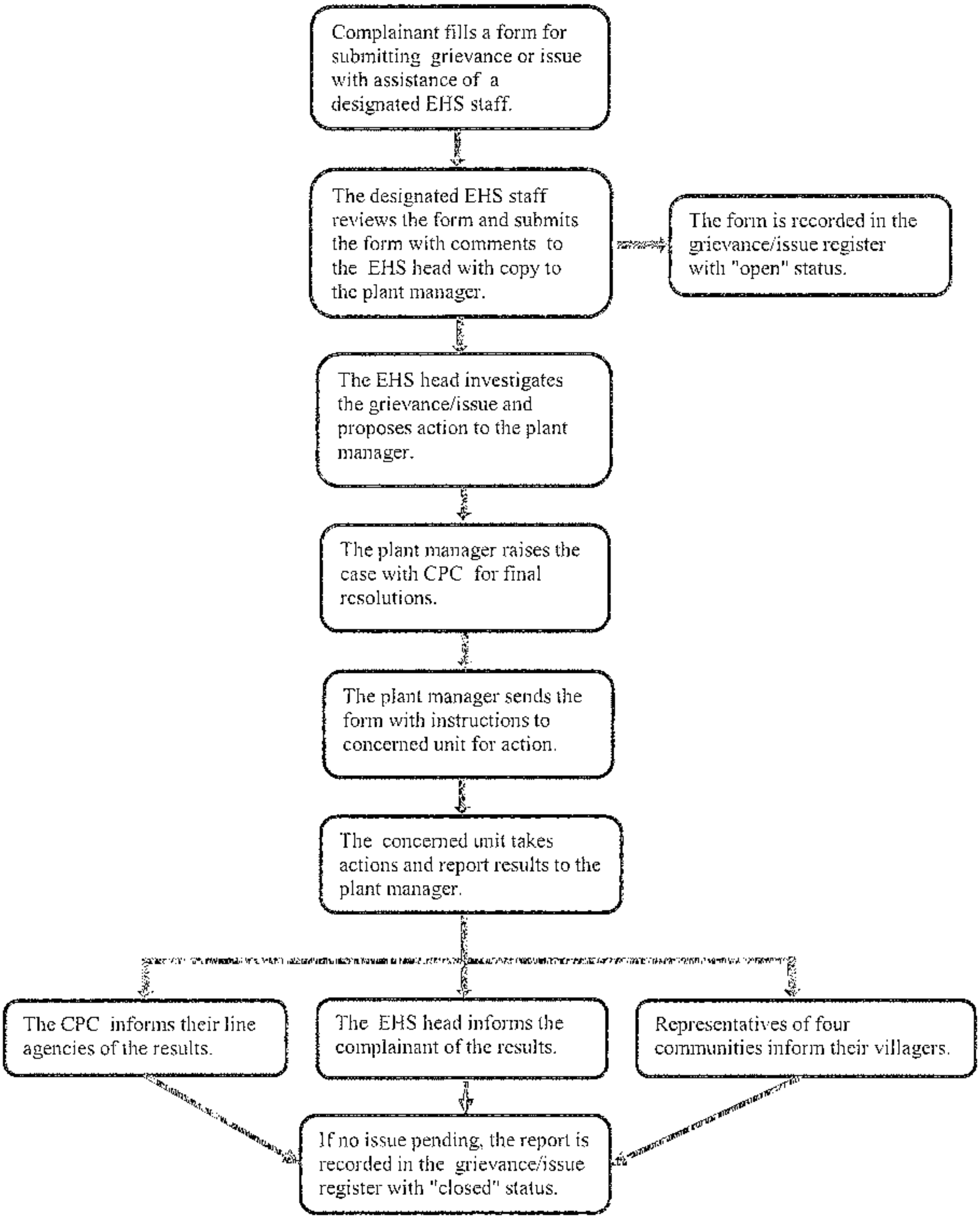


FIGURE 8.4-2 : GRIEVANCE REDRESS PROCESS

8.4.7 Responsible Agencies for Environmental Management Plan

Environmental Management Team during Operation Phase

Structure

Environmental management during this phase will be part of the power plant management. Environmental management measures will be implemented by the plant operation team, consisting four representatives of the Project Proponent or Project Owner who manages the Project through the Power Plant Manager and his/her five functional units of (i) operational management; (ii) maintenance management; and (iii) environmental, health and safety management.

Responsibilities

- The Operation Manager will be primarily responsible for operation of environmental management facilities and implementing mitigation measures. He will therefore be responsible for EHS performance of the power plant.
- The Project Manager will supervise the Operation Manager and the EHS Manager in environmental management of the power plant operation.
- The EHS management function will involve the following activities:
  - Prepare the operation manuals for all scheduled environmental monitoring;
  - Collaborate with the Operation Manager to ensure efficient operation of environmental management facilities and implementation of impact mitigation measures;
  - Prepare periodic EHS performance reports for submitting to the Plant Manager;
  - Coordinate with the Plant Manager and the Construction Manager to facilitate site inspection or visits of officials from MONREC/ECD, other government agencies, and representatives of communities in the vicinities;
  - Cooperate with the Operation Manager in investigations related to public complaints;
  - In consultation with the Operation Manager, prepare recommendations to the Plant Manager on corrective actions related to environmental performance; and
  - Supervising environmental management during the commissioning period.

Budget

Impact mitigation measures to be implemented during the operation phase will be installed a part of the power plant process. These comprise gas engine and gas distribution facilities and emission control equipment. Their costs will be included in the power plant structure. At this stage of the Project design, there is no information about the capital costs and their annual operation and maintenance expenses of these mitigation measures. The budget of this phase will gather with environmental monitoring cost.

8.4.8 Responsible Agencies for Environmental Monitoring Program

Structure

Environmental monitoring during this phase will be part of the power plant management, mainly by the Power Plant Manager and his/her functional units of (i) operational management; (ii) environmental, health and safety management; and (iii) documentation public relations. So, there will be four person involved in monitoring.

Responsibilities

- The EHS Manager will be responsible for monitoring, evaluating, and reporting EHS performance of the power plant. He will work closely with the Operation Manager in formulating corrective actions to resolve non-compliance issues.
- The EHS management function will involve the following activities:
  - Carry out scheduled monitoring as prescribed in the monitoring plan;
  - Prepare periodic EHS performance reports for submitting to the Plant Manager;
  - Prepare monthly monitoring reports for internal use as feedback to the EMS;
  - Prepare bi-annual monitoring reports for submitting to MONREC; and
  - Supervising environmental management during the commissioning period.

Budget

Budget for monitoring will be allocated for a third party only, but not for internal monitoring as it will be undertaken by monitoring team as mentioned above.

Monitoring by the third party will be officially carried out for air quality and traffic load. It will be undertaken twice a year. Total cost of monitoring and evaluation of the Project's environmental and performance including mitigation measure is provisionally estimated at about 33,880 US$ (2017 prices), as shown in ***Table 8.4-1***.

TABLE 8.4-1
BUDGET AND SCHEDULE DURING OPERATION PHASE

B. Annual Budget during Operation Phase (2 years)

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Annual Budget During Operation Phase (US$)
		US$	Units			
1	Environmental monitoring during the operation period					
	air quality (2 stations)	700	Station	twice a year	2 stations at project site, Pagaw Zoon and Pale Gu Village	2,800
	traffic measurement (2 stations)	500	Station	twice a year	2 station at access road to project site and ITD main road (KM.17)	2,000
2	OSH Management Plan*	-	Include Operation Cost	Everyday	Project Site	b
3	Social development and livelihood support for PAPs					
3.1	Development Fund	1,500	time	Throughout opration phase	At 4 village groups within radius of 5 km. from Project site	6,000
3.3	Village forum	10,000	Lumpsum	1 times per year throughout operation phase	At 12 villages within radius of 5 km. from Project site	20,000
	TOTAL					30,800
	CONTINGENCY (APPROX. 10%)					3,080
	GRAND TOTAL					**33,880**

Remark: b = include operation cost prepared by project proponent
* included Waste management and Emergency management Plan

8.5 SUMMARY OF DEMP

As discussed in ***Chapter 6***, the decommissioning of the power plant will not create any significant environmental and social impacts. Therefore, the DEMP will require much less activities and a much simpler EMS compared to those of the CEMP. A summary of the Owner-DEMP is presented below:

8.5.1 Mitigation Measures and Plans

No environmental impact mitigation measures will be required apart from routine inspection of decommissioning activities. The Project will implement sub-plans of air quality, noise, waste, traffic, OSH management, and social environmental management plan, as presented in ***Appendix of Volume II***.

8.5.2 Monitoring, Evaluating and Reporting

The MER will include scheduled monitoring of air quality, noise and vibration, waste and traffic as indicated in each sub-plan in ***Appendix of Volume II***. In addition, the Contractor's and the Owner's EHS managers will conduct regular inspection programs to observe environmental performance of the decommissioning. The Contractor will submit monitoring reports-one for internal use and another for reporting to MONREC. The monitoring report will be simple and straight forward to the results. Report to MONREC will be submitted when completion of decommissioning operation.

8.5.3 Corrective Actions and Organization

Corrective actions and environmental management will be carried out within the same process as those in the operation phase.

8.5.4 Public Consultation and Disclosure

Role and responsibilities of the core CPC will be the same as the operation phase. A grievance redress process will be continued.

8.5.5 Responsible Agencies for Mitigation and Monitoring during Decommissioning Phase

<u>Structure</u>

Environmental management during this phase will be part of the power plant management. Due to the short duration of decommissioning phase, environmental management, and monitoring will be implemented in parallel by the same team. The team will consist of three persons: (i) the Demolition Contractor, (ii) the EHS Manager, and (iii) Demolition Manager of the Power Plant Company.

Responsibilities

The Demolition Contractor will be responsible for implementing the prescribed mitigation measures and undertaking monitoring under the supervision of the EHS Manager and the Demolition Manager of the Power Plant Company.

The Demolition Contractor will establish an environmental management system (EMS) for the demolition works. The EMS will be supported by a documentation system to support decision making for corrective action. The Demolition Contractor will organize his demolition team which will include an EHS Manager.

The Power Plant will implement the demolition works as a project and will establish a Demolition Project Manager Office. The Demolition Project Manager and the Demolition EHS Manager will be responsible for environmental management of the demolition works.

Budget

All mitigation measures to be implemented in the demolition will be included in the EPC contract cost. As most mitigation measures are operational control measures, it is not possible to estimate their costs.

8.6 EMERGENCY RESPONSE PLAN

The Project Proponent and the Contractor will prepare Disaster Preparedness Plan & Emergency Response Plan for pre-construction, construction, operation and decommissioning phases of the Project. The plan will be submitted to Natural Disaster Management Committee of Division/State Government and for approval before the Project commencement.

The Contractor will be required to prepare an emergency response plan to efficiently and effectively cope with accidents and emergencies which may occur during the pre-construction, construction, operation and decommissioning phases. Emergency situations could occur such as fast spreading fires, explosions, bursting of gas or steam pipes, gas leakage, including natural disaster of storm, flood or even tsunami. Considering the nature and magnitude during these four phases, the emergency response plan would deal with work accidents and accidental fires. Natural emergency events such as earthquakes and floods would be very unlikely.

These emergency situations could seriously affect the power plant's construction and operation, and could result in damages to properties and injuries of plant personnel. The emergency situations therefore need prompt and effective response to return the power plant to normal construction and operation as early as possible and minimize injuries and loss of lives, damage to properties, and construction delay.

The emergency response plan will be a part of the OSH system. Facilities to be provided on site will contain at minimum the following: fully equipped first aid station, fire-fighting equipment, arranged access to emergency services of the local hospital, and direct communication link with local fire brigades and other relevant government authorities and the local police station.

8.6.1 Emergency Procedures

The project will be responsible for providing emergency plan for unexpected case. The main objective of the plan is to mitigate impact on person in charge within the area of the project and damage to equipment and machinery. The emergency plan consists of:

- Map and diagram of each building's exit
- Safety zone, evacuation route, and a mustering point
- Diagram showing locations of fire extinguisher devices for example fire hose cabinet, chemical extinguisher, etc. of each building
- Practice various emergency cases, for example, fire, electric leakage, storm, flood, demonstration, etc.
- Evacuation plan
- First aid methods
- Training on proper use of fire extinguishing devices

The project manager will also be the emergency plan director. He/she will be responsible for controlling and instructing to evacuate all of workers and employees to safety place when emergency incident occurs. This director must well understand the emergency plan and be able to assess the situation. In addition, the director must determine degree of the situation whether it has necessity to evacuate either all people or some. He will also assess the necessity to divide zones for the situation control. The director will instruct workers and employees back to work after the situation is resolved and turned into normal stage. Thereafter, the director will take responsibility to prepare report, explaining in details which includes specific day, time, occurrence point, causes, severity level, damage to people and equipment, lost working hour, instruction program, employee's mentality recovery plan and machinery repairing plan. Furthermore, he will estimate working hour for repairing, number of employee concerns, cost of repairing equipment and spare part purchase, etc.

The project will conduct annual emergency practice and organize training for the power plant staff to have skill and specialization to mitigate impact from emergency situation at least once a year. Additionally, the project will be also responsible to examine equipment on weekly basis.

Emergency situation may causes by:

(1) Fire around the Power Plant

Fire may be expanded if strong wind is blown in period of dry climate, near to flammable substance and flammable origin. In addition, control of fire incident will be more difficult if fire occurs from flammable and explosive materials such as oil. However, trained employee's skill and quick response to fire is important factor to control fire. In addition, readiness of fire extinguisher devices, their positions, sufficiency of water pressure, readiness of fire pump with weekly examination and ready use condition are also important. These preparations, examination and emergency plan verification must be done regularly.

(2) Electric Leakage

In case electric leakage occurs, an assigned staff must be able to inform everyone to understand rescue practice to correctly save life of electric shock victim to safety.

(3) Accident

Accident such as falling from height, heavy weight falling during lifting, lost consciousness in confined space and traffic accident in particular have to be considered. Repeating accidents will cause substantial lost of working times and, consequently, solving the situation would become more difficult.

(4) Storm / Flood

An assigned staff must listen to news and climate forecast announcement from the Department of Meteorology for possible storm occurrence. Then, he will determine and instruct the staff to prepare readiness in advance such as fixing equipment for protection, lifting up stuffs to high and safe place, warn workers or employees to stop working outdoor around the building, etc.

On duty staff to watch change of the sea. Whenever there is a sign of tsunami, he/she must report to the project manager and instruct workers/employees to evacuate to the high/safe place.

(5) Emergency Control

During working hour, a power plant manager will be responsible for controlling safety of workers and handling other emergencies.

During period of off-hour, periodic chief will be responsible for controlling emergency until the emergency is resolved or the power plant manager arrives at accident area and assumes the responsibility in place of the periodic chief.

8.6.2 Fire Fighting Plan

Fire is an emergency situation severely destroys life and property. Precise firefighting plan including regular practice of fire escape will be necessary and helpful to control and resolve the situation back to normal. These include:

(1) Practice during Working Hours

The power plant manager will determine the level of emergency whether it is level 1 or level 2. The manager will instruct to control the situation and protect equipment, machinery including evacuate people to safety zone. Official instructions which are frequently used include contacting fire brigade station, prepare to transport injured persons to the hospital, operation firefighting team, evacuation people from accident to assembly point, closing of traffic, closing entrance-exit of the power plant, etc. In addition, trained employees of each team will work together as follows:

- **Standby Employee**

Employee working during working hours will be responsible for maintaining fire extinguishing devices and preparing firefighting fire when instruction announce.

- **Fire Fighting Chief**

Firefighting chief will be responsible for controlling and instructing firefighting team to practice effectively. Therefore, the chief must report fire situation to an emergency director to request for support and coordinate with standby employees. However, an assigned staff must inform an emergency director to request manpower support or announce when situation becomes at violence.

- **Fire Fighting Team**

Firefighting Team consists of employees who are well trained on using fire hydrant and chemical fire extinguishing tank. The team will be responsible for squirting water or chemicals after receiving an instruction from an assigned staff. The team will take function to support firefighting officer in the area where fire arises severely.

- **Fire Fighting Device Team**

Firefighting device team consists of employees who are trained on using fire extinguisher devices such as opening fire hose cabinet, releasing fire hose, connecting fire hose with fire hydrant, preparing chemical extinguisher and fire fighting materials such as helmet, shirt, gloves, shoes and communicating devices. Therefore, this team will be responsible for examining fire extinguishing device to be ready for use during working hours.

- **Water Fire Extinguishing Team**

Water fire extinguisher team consists of employees who are trained on using fire pump such as pump controller, electric motor fire pump and engine fire pump.

- **Survey and Evacuation Team**

Evacuation team consists of employees responsible for counting number of employees, taking them to safety zone (an assembly point), surveying injuries and taking the injuries to first aid team.

- **First Aid Team**

First aid team consists of employees responsible for first aid treatment, first aid device preparation, spinal board preparation, preparing to transport injured persons to the hospital, contact the hospital, moving patient by using spinal board, conducting temporary splint first aid treatment for patient before taking to hospital.

- **Security Team**

The security team during fire will control traffic within the power plant site by setting barriers, managing route for fire trucks approaching accidental place by clearing obstructing vehicles, preventing property of the power plant; prohibiting unauthorized people to enter into accidental area and managing obstructing vehicles.

(2) Practice during Off-Hour

Workers or employees facing an accident must determine whether he himself can resolve the accident or not. If not, the workers or employees must inform a central controlling building and emergency director to request for support immediately. A periodic chief will be an emergency director determining the accident when low number of employee works during off-hour. In case an accident is determined at emergency level 2, the director must immediately inform fire brigade station. Then, the director will also inform employees who are working, firefighting team and first aid team. He will instruct to perform the same as practicing. If there are injuries, the director must inform the hospital and transport them there. In addition, the director will cut off electricity around water squirting areas. Then, the director will report the situation of accident to a power plant manager and employees concerned as follows:

- **Standby Employee**

An employee working in irregular hours will be responsible for maintaining fire extinguishing devices and preparing for firefighting when a periodic chief gives instruction to him.

- **Fire Fighting Chief**

Firefighting chief will be responsible for receiving instruction from emergency director and collaborating with firefighting team. In addition, the chief will report fire situation to the emergency director for requesting support and coordinating with standby employee. In case fire is expanded and unable control, an assigned staff will inform the emergency director for requesting manpower support or announcing the situation become emergency level 2.

- **Fire Fighting Team**

Firefighting team consists of employees who are well trained on using fire pump, chemical fire extinguishing tank. The team will receive instruction from an assigned person and assume a function to support firefighting officer in the area.

- **Security Team**

Normally, the mission of security team is controlling entrance-exit door, preventing violators, protecting property of the power plant. In case fire occurs at night time, security team will prepare fire extinguishing devices such as opening fire hose cabinet, releasing fire hose, connecting fire hose to fire hydrant, preparing gloves, communicative devices and supporting fire extinguishing activities of the local fire extinguishing officer.

- **Emergency Supporting Team**

Emergency supporting team consists of employees who are trained on controlling fire at night time. They will coordinate with firefighting team and security team after both teams arrive at the accidental area. Therefore, the emergency supporting team must have telephone numbers of all employees, officers and agency concerned in hand.

- **Communication**

When emergency takes place in the power plant, the manager has to control a situation. In case it is beyond the ability, the manager has to call for assistance from other agencies. These will include, but not limit to

- Local authority of Launglon Township
- Police station in Launglon
- Maungmagan station hospital and Dawei hospital to prepare and support for injuries

8.6.3 Contingency Plan

Contingency plans and emergency procedures are being developed to cover events due to operational failures, natural causes and acts of third parties. The plans and procedures will cover, as a minimum, the following:

- Fire
- Explosion
- Bomb alerts
- Leaks and spill of hazardous materials
- Structure or equipment failures
- Injuries and illnesses
- Risk from nature disasters (Wind, storm, and earthquake)

8.6.4 Accidental Plan

As part of the preparation of emergency plans for accident response arrangements, the Project Proponent will carry out the following:

- Review industry-specific and Myanmar and applicable International standards and regulations
- Establish general guidelines on potential safety and accident risks
- Prepare job-specific operating instructions where appropriate
- Establish safety and security notices for hazardous materials
- Prepare specific emergency operating instructions
- Provide protective equipment (including clothing, air and ear protection etc.) as required
- Evaluate information and feedback from employees, record and investigate all accidents, injuries and incidents

An Emergency Response Team (ERT) will be setup. The role of ERT is to handle any emergency incident during construction and operations of the project site. The ERT is responsible for all incidents including hazardous material handling, rescue and fire control. Members of this team, or other nominated employees may be requested by the construction contractor and/or operation management to give advice or assistance in any incident in which is related to the plant. The ERT may be requested by construction contractor and/or operation management to assist any other company in the event of mutual aid. The ERT may consist of shift operators and relevantly trained day staff volunteers. This team will be lead by the Incident Controller, based in the construction offices (Construction) or control room (Operation). A site chief will be assigned and control the incident from the field. A coordinator will be assigned to control all services requested from the site chief, these will include all outside services, such as fire, ambulance and other public services.

The project will conduct annual emergency practice and organize training for the power plant staff to have skill and specialization to mitigate impact from emergency situation at least once a year. Additionally, the project will be also responsible to examine equipment on weekly basis.

8.6.5 Evacuation Plan

The project will take a responsibility to designate a assemble point and evacuation route. The best route for safety will be decided to evacuate the people from accident area.

The emergency evacuation plan will include:

- Floor plan of the workplace
- Exit route for all employees
- Employee assembly points
- Employee training requirements (drills/exercises)
- Assigning and defining responsibilities
- Contacting the emergency response units
- Accounting for workers (head count)
- Greeting the emergency response units
- Authorizing workplace re-entry

8.6.6 Recovery Plan

After any accident, recovery plan will be revised, improved and reported in all issues from real situation. The plan will place high priority on fire protecting plan, firefighting practicing plan, mitigation plan (must be immediately implemented after fire extinguishing complete) and provide relief for all employees who become disabled from the accident.

CHAPTER 9

PUBLIC CONSULTATION AND DISCLOSURE

CHAPTER 9

PUBLIC CONSULTATION AND DISCLOSURE

This chapter presents results of public consultation and disclosure carried out in the ESIA investigation, including results of initial public consultation and disclosure reported in the Scoping Report. The chapter is structured as prescribed in ***Annex 3 of the Administrative Instruction of Environmental Impact Assessment Procedure.***[1]

9.1 PURPOSES OF THE CONSULTATION DURING THE PREPARATION OF ESIA REPORT

Public consultation conducted as part of the ESIA investigation of this Project has three purposes:

(i) informing the stakeholders about the Project, environmental and social issues related to Project construction and operation, and mitigation measures to minimize environmental and social impacts;

(ii) Seeking views of the stakeholders on the Project and mitigation measures; and

(iii) Participation and partnership where issues and needs are jointly discussed and assessed.

Results of the public consultation are useful to the formulation and implementation of environmental and social management plans for the Project.

9.2 METHODOLOGY AND APPROACH

Public Consultation during preparation of ESIA report was conducted in three periods, following the Administrative Instruction of Environmental Impact Assessment Procedure. The three period of consultation were organized as follow;

- 29 to 31 January 2015
- 5 to 6 December 2015
- 28 March 2018

The methodology and approach of public consultation is presented below:

[1] Administrative Instruction of Environmental Impact Assessment Procedure (2015), the Government of the Union of Myanmar, Ministry of Environmental Conservation and Forestry.

9.2.1 Identification of Stakeholders and Group Affected by the Project

Considering the Project scope and the legal and institutional framework for environmental and social impact management applicable to the Project, the Project stakeholders could be identified and classified into three categories:

(1) Government Authorities Involved in EIA Administration

The Project's stakeholders in this category are key officials or representatives of the national, state/ regional, district and local authorities who have direct responsibilities for the administration of the EIA process for environmental and social clearance and issuing operation permits for proposed development projects, particularly power projects.

For this Project, relevant key offices at the national level are Dawei Special Economic Zone (DSEZ) Management Committee and Ministry of Environmental Conservation and Forestry and Environmental Conservation Department (ECD).

Relevant key offices at the regional level are: (i) Tanintharyi Region Government; (ii) Tanintharyi Region Office of the Environmental Conservation Department; (iii) Tanintharyi Region Office of the Ministry of Electricity and Industry; (iv) Tanintharyi Region Office of Fisheries; and (v) Dawei District Government.

The DSEZ Management Committee (DSEZMC) and the Supporting Working Body (SWB) - Support Working Group of DSEZ - are two key organizations responsible for facilitating resolving issues between the Government, the Central Body and developers/ investors in DSEZ. Their responsibilities are wide-ranging including, but not limited to, supervising and inspecting matters regarding implementation of proposed investment and establishment plans, land-use, environmental conservation, waste control, health, education, finance and taxation, development, communication, security, infrastructure and coordination among the relevant governmental departments.

SWB involves in development activities in the project area. It comprises 14 representatives of relevant government agencies and organizations from various ministries.

Relevant key offices at the local level are from Yebyu Township Administration.

(2) Other Interested Parties

The Project's stakeholders in this category are various government departments responsible for development of various sectors, and community based organizations as listed below:

- Department of Health
- Planning Department
- Forestry Department
- Agriculture Department
- Fishery Department

- Electric Power Department
- Land Record Department
- Tavoyan Women's Union (Non Government Organisation)

(3) General Public

The Project's stakeholders in this category are village committees and individual villagers in the twelve villages in the study area in Yebyu Townships; namely: Kin Ywar, Lain Gra Ywar, Dauk Lauk, Pale Gu, Min Dut, Tha Prae Zoon, Kyauk Hwet Kone, Thit To Taut, Yalai, Pagaw Zoon and Wet Chaung. Residents in these villages would have concerns on various potential impacts of the Project during construction and operations such as noise, stack emissions, traffic safety, and degradation of nearby natural resources.

9.2.2 Methods of Consultations

The main method used in consultation was public meetings. This method is generally used in ESIA. It is most effective in achieving the informing purpose, followed by the seeking views purpose, and the participation and partnership purpose.

The public meeting method was complemented by disclosure of project information through presentation in the meetings. This served the informing purpose.

In addition, the public meeting method was also complemented by the household surveys and one-on-one interviews used in collecting socio-economic information on communities in the study area. These two methods served the informing and seeking views purposes of the public consultation. However, this chapter reports only result of the public meetings, including the meetings with NGO and key officials of government offices involved in environmental and social management of development projects.

9.2.3 Approach to the Public Meetings

The following approach to the public meetings was adopted:

- Each meeting at the community level was organized with assistance of Yebyu Township Administration and village headmen. Headman of each village had identified participants to be invited, and in making arrangements for the meeting venue and issuing invitations.

- Representatives of the Project Proponent and the Consultant were jointly conducting the meeting. The Consultant was responsible for providing information on brief Project information including Project development plan, the ESIA study including clarifications on issues related to impacts of the Project. Both of the Project Proponent's representatives and the Consultant were responsible for answering questions from the meeting or clarifying points raised in the meeting regarding the Project development plan. The two parties had worked as a Project team.

- For the second period of meeting, major impacts and mitigation measures to minimize the impacts were presented in addition.

- For the third period of meeting, following title included 1)major concerned laws and regulations on environmental and social management 2) mitigation measures / commitments needed to complied during project development and 3) environmental management plans for project development, were presented in addition.

- The meeting began by informing the participants of the objectives of the meeting and expected outcome. After that the Project team gave information about the Project and the ESIA.

- The meeting then provided an open forum for discussions. The participants expressed their concerns, offer their views and suggestions, and raise questions or points that they need response from the Project team. The Project team responded to their concerns, views and suggestions as appropriate. The meeting was intended in interactive mode. The Project team and the participants engaged in constructive and relevant discussions.

9.3 SUMMARY OF CONSULTATION ACTIVITIES UNDERTAKEN

Public consultations with relevant government authorities, NGO and local communities were held in three period include 1) 29 to 31 January 2015, 2) 5 to 6 December 2015 and 3) 28 March 2018. The meeting dates, names of persons met, the agencies they represented, and venues are given in ***Table 9.3-1*** to ***Table 9.3-3***. Names of villagers in the villages attended the consultation meetings in two periods are listed for the record in ***Appendix 9A***.

Photo 9.3-1 to ***9.3-3*** show some pictures of each meetings.

TABLE 9.3-1
THE FIRST PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates	Organization/Name	Position
	SWB-Support Working Group	
20 January 2015	1. Mr. U Than Shwe	Secretary
	2. Mr. U Linn Zaw Htwg	Member
	3. Mr. U Thet Oo	Member
	4. Mr. U Aye Lwin	Member
	5. Mr. U Khin My Zaw	Member
	Government Authorities at National, Regional and Local Levels	
22 January 2015	1. H.E. U Phone Swe	Deputy Minister of Social Welfare, Relief and Resettlement.
	2. Mr. U Win Swe	Minister of Electricity and Industry for Tanintharyi Region
	3. Mr. U Thein Lwin	Minister of Planning and Economic for Tanintharyi Region
	4. Mr. Htin Aung Kyaw	Chairman of Hluttaw
	5. Head of Launglon Township Administration	
	6. Head of Yebyu Township Administration	
28 January 2015	7. Mr. U Win Naing,	Deputy Director of Forestry Department Taninthayi Division (Act in place of Environment Conservation Department for Taninthayi Region)
29 January 2015	8. Mr. Htun Win Myint,	Regional Fisheries Officer, Taninthayi Region
	Other Interested Parties	
29 January 2015	1. Mr. U Soe Min	Staff of Medecins Sans Frontieres (MSF) Dawei Office
30 January 2015	2. Mr. U Lay Lwin,	Coordinator of Dawei Development Association (DDA)
	The General Public : Local Community Groups	
29 January 2015, 9.00 a.m.	1. Wet chaung village	Village headman, village committee, community leaders and villagers (total of 53 persons)
29 January 2015, 1.30 p.m.	2. Pale Gu village*	Village headman, village committee, community leaders and villagers (total of 52 persons)
30 January 2015, 9.00 a.m.	3. Pagaw Zoon village**	Village headman, village committee, community leaders and villagers (total of 38 persons)
30 January 2015, 1.30 p.m.	4. Yalai village***	Village headman, village committee, community leaders and villagers (total of 78 persons)

Remark * including representative from Kin Ywar,Lain Gra Ywar and Dauk Lauk
** including representative from Min Dut
*** including representative from Tha Prae Zoon, Thit To Taut and Kyauk Hwet Kone

TABLE 9.3-2
THE SECOND PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates/time	Name	Position and Organization	Venue
2 October 2015	**Government Authorities at Regional and Local Levels (total of 20 persons)**		
9.00-11.00 hrs.	1. Mr. U Khin Maung Cho	Directory of General Administration Department of Dwei District (7 person)	ITD Meeting Hall
	2. Mr. U Htun Wai Oo	Electric Power Corporation of Dwei District (1 person)	
	3. U Aung Hom Than	SWB: General Administration Department (1 person)	
	4. U Thet Oo	SWB: Department of Labor (2 person)	
	5. U Khin Maung Win	SWB: Myanmar Port Authority (1 person)	
	6. U Kyaw Maw Htun	SWB: Immigration (2 person)	
	7. Mr. U Aung Khine Soe	Deputy Director of Environmental Conservation Department for Tanintharyi Region (3 person)	
	8. U Htun Win Myint	Director of Regional Fishery Officer (2 person)	
	9. U Kyaw Naing	General Administration Department of Yebyu Township (2 person)	
4 December 2015	**NGO**		
13.00 – 14.30	Tavoyan Women's Union	Ms. Ma Marlar (total of 9 persons)	702, Shwe Taung Sar Road, North Village, Dawei
5 December 2015	**The General Public : Local Community Groups**		
9.00-11.00 hrs.	Wet Chaung village	Village headman, village committee, community leaders and villagers (total of 52 persons)	At the Temple of Wet chaung Village
13.00-15.00 hrs.	Pale Gu village*	Village headman, village committee, community leaders and villagers (total of 57 persons)	At village Primary school
6 December 2015	**The General Public : Local Community Groups**		
9.00-11.00 hrs.	Pagaw Zun village**	Village headman, village committee, community leaders and villagers (total of 29 persons)	At village Hall
13.00-15.00 hrs.	Yalai village***	Village headman, village committee, community leaders and villagers (total of 44 persons)	At village Hall

Remark * including representative from Kin Ywar, Lain Gra Ywar and Dauk Lauk
** including representative from Min Dut
*** including representative from Tha Prae Zoon, Thit To Taut and Kyauk Hwet Kone

Meeting with Government Authorities at National and Regional Levels

Meeting with SWB of DSEZ

Meeting with Regional Fishery Officer, Tanintharyi Region

Meeting with the DDA

Consultation Meeting at Pagaw Zoon Village

Consultation Meeting at Pale Gu Village

PHOTO 9.3-1 : THE FIRST MEETING WITH CONCERNED AGENCIES AND THE LOCALS

Meeting with SWB and Regional Government Officials at ITD Hall

Consultation Meeting at Wet Chaung Village

Consultation Meeting at Pale Gu Village

Consultation Meeting at Pagaw Zun Village

Consultation Meeting at Yalai Village

Consultation Meeting with Tavoyan Women's Union

PHOTO 9.3-2 : THE SECOND CONSULTATION MEETINGS WITH CONCERNED AGENCIES, THE LOCALS AND NGO

TABLE 9.3-3
THE THIRD CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates/time	Name	Position and Organization	Venue
28 March 2018	**Government Authorities at Regional and Local Levels, Local Communities and NGOs**		
9.00-11.00 hrs.	1. Mr. U Mr. Phyo Min Tun	Deputy Chairman of DSEZ Committee	ITD Meeting Hall
	Dr. Myint San	Vice Chairman-2 of DSEZ Committee	
	Representative from environmental Conservation Department (Naypyitaw and Dawei)*		
	Representative from Ministry of Construction, Naypyitaw (Department of Highways)*		
	Karen National Union*		
	Representatives from project affected villages*		
	NGOs (WWF, TWU, DDA, ERZ)*		
	Representatives from Myandawei Industrial Estate Company Limited*		
	Consultants (TEAM Consulting, Engineering and Management Co., Ltd. and Total Business Solution Co., Ltd.)*		

Remark : * Name list is presented in Appendix 9A-3.

PHOTO 9.3-3 : THE THIRD CONSULTATION MEETING WITH CONCERNED AGENCIES, THE LOCALS AND NGO

9.4 SUMMARY OF MAIN COMMENTS RECEIVED FROM STAKEHOLDERS

During three periods of consultation meetings, there were comments and feedbacks from each group of stakeholders. The Project's Proponent and Consultant had responded and clarified those comments, as attached in Minutes of Meeting ***(Appendix 9B)***. Major issues can be summarized as follows:

9.4.1 The First Period of Consultation Meeting

Issues identified by the stakeholders during the public consultation meetings can be summarized by group as follows:

(1) Government Authorities

Issues identified by the SWB and government authorities at the national and regional levels:

- **Participation in the ESIA:** The Project must inform the district, township officials about the schedule of the public consultation, including environmental and social survey activities.
- **Land acquisition:** Compensation for land acquisition must follow official guidelines and practices.
- **Submitting the ESIA results:** The Consultant has to submit an official letter to inform the Environment Conservation Department at Nay Pyi Taw directly about the conduct of ESIA study.

(2) Other Interested Parties

Issues identified by the community based organizations:

- **Correct project information:** Accurate information about the Project plan and situation should be provided to the peoples;
- **Employment opportunities:** Provision of job opportunity to the locals, including relevant vocational training;
- **Compensation:** Fair compensation rate for the project affected people;
- **Environmental management:** The Project must be aware of environmental impact, air pollution in particular. Best practices should be employed for environmental management. Environmental monitoring should be conducted by a third party acceptable to the Government authority and NGOs;
- **Roles of NGO:** The NGOs should have opportunity to contribute to the ESIA report.
- **Electricity supply to locals:** Electricity from the project should be provided to the locals in nearby villages with a tariff rate as used in Yangon (35 Kyat/unit).

(3) Local Community Groups

Issues identified by participants from all 12 villages within 5 km. radius of proposed project site are listed below:

- **Pollution:** Concerns on pollutions from emissions;
- **Disturbances:** Concern on disturbances from noise and vibration from construction and transportation;
- **Use of road:** Concern that the ITD road that they currently use will be for exclusive use of the Project;
- **Environmental protection:** Suggestion on environmental protection to ensure sustainable use of natural resources;
- **Compensation:** Concern on fair compensation for land acquisition;
- **Yield of cashew nut:** Yield of cashew nut could be low due to Project activities such as dust and vibration from transportation.
- **Employment opportunities:** The Project should provide employment opportunities to the locals; and
- **Electricity supply:** The Project should provide electricity supply to the villages.

9.4.2 The Second Period of Consultation Meeting

(1) Government Authorities

Consultation meeting with the Government Officials at regional and local levels was conducted on December 2, 2015. Twenty officials participated the meeting. There are from 9 concerned agencies such as Dawei District, SWB, Electricity Power Corporation, Environmental Conservation Department and Fishery Department of Tanintharyi Region, etc.

Their major concerns and comments were:

- Impact on the marine resources
- Impact during construction
- Suggest to provide electricity to nearby community, at the lower rate of fee.

(2) Local Communities Groups

Consultation meetings at the village level were conducted between 5-6 December 2015, at villages of Wet chaung, Pale Gu, Pagaw Zun and Yalai.

Issues identified by the participating villagers are as follows:

a) Comment from the meeting with Wetchaung Village on 5 Dec 2015

- The Head of Village requests to improve the surface of the road from ITD main road to the end of village.

b) Comment from the meeting with Pale Gu Village on 5 Dec 2015

- Is there any harmful from CO_2 emission from stack to village due to the distance of the power plant to this village is only 1.5 km?
- Some of villager own plantation land inside DSEZ demarcation area; hence this areas are not issued annual Title Deed Form (105) from Department of Land Use. However, there is not compensation has not been paid to the villagers. As a result, the villagers are worried whether continue to their plantation or not as well as whether they would get the full compensation or not?

c) Comment from the meeting with Pa Gaw Zoon Village on 6 Dec 2015

- Can villager access to electricity produce from the project?
- The local people should get first priority to be recruited,
- Compensation to some plot of land are not provided since 2011
- Plantation land of Mr. U Than Zaw had been cleared for construction without compensation pay. The compliant reported many time about this compensation to SWB and also copied to regional office but do not get any response from them. Villager suggest to directly negotiate with ITD office.
- The Head of Villager suggested that if the road from Yee Phyu to Wet Chuang, Ka Mout Chaung has to be blocked during construction, ITD should consider making other access road since this road is used for local people travel to Yebyu Township.
- Villager would like to have new access road to the pagoda settles inside demarcation area and also request the project prepare a ground for people attend annual ceremony at the pagoda.

d) Comment from the meeting with Yalai Village on 6 Dec 2015

- The villagers are happy and agree with the project.
- Private own land within the demarcation area should have been compensate prior to construction.

(3) NGO

The meeting with Tavoyan Women's Union was held on December 4, 2015. They proposed to participate the public consultation meeting at the village level in the future. This was agreeable by all parties and hope for mutual understanding.

9.4.3 The Third Consultation Meeting

Consultation meeting with government officials at regional and local level with local communities group and NGO were organized in 28 March 2018. Major concerns and recommendation were:

- Support of project proponent to local communities
- Channel or contact person in case of emergency

9.5 HOW THESE COMMENTS WERE TAKEN INTO ACCOUNT

All comments/issues obtained from the consultations are the basis for planning and arranging subsequent consultation meetings during the project implementation. Results of all the public consultation meetings will be utilized for implementation of environmental and social management plans of the Project as well as community support development programs to be implemented by the Project Proponent in the CSR context.

9.6 PROJECT INFORMATION DISCLOSURE

Public consultation and information disclosure for the first and second consultation periods were in form of public meetings together with posting information at the well-known visible places in the communities such as at the tea shop and grocery shop in the village centre.

Photo 9.6-1 and 9.6-2 shows information posting in Villages.

A. Yalai Temple

B. Wet Chaung Temple

PHOTO 9.6-1 : DISCLOSURE OF THE 1st PUBLIC CONSULTATION MEETING

A. Pagaw Zun Village Office

B. Yalai Village Office

PHOTO 9.6-2 : DISCLOSURE OF THE 2nd PUBLIC CONSULTATION MEETING

Details of Public consultation and information disclosure at each period are presented as follows:

In each public consultation meeting, objectives of EISA and the Project information was disclosed to the officials and villagers through handouts in Myanmar language. For the second meeting, results of environmental survey in the wet season and the first public consultation, including major impacts from the project and their mitigation measures to minimize the impacts were presented in addition. Participants were invited for discussion after presentation.

In the third meeting, major concerned laws and regulations on environmental and social management, mitigation measures / commitments needed to complied during project development and environmental management plans for project development were presented prior open forum for recommendation and discussion.

Appendix 9C provides the slides and the handouts of the three periods of meeting.

The information disclosed in the first, second and third meetings included:

- Objectives of ESIA
- Project location
- Project layout
- Generation capacity
- Main project components including:
  - Generator and its facilities
  - Fuel type
  - Waste management system

- Firefighting system for the entire plant
- Continuous monitoring system
- Other related facilities

- Field activities related to environmental survey, including:
    - Air quality/noise
    - Seawater Quality
    - Marine Ecology
    - Fisheries
    - Groundwater Quality
    - Sediment Quality
    - Terrestrial Resources
    - Wildlife Resource and
    - Land Use
- Field activities related to social survey, comprising:
    - Public consultation and
    - Socio-economic survey
- Tentative schedule of the study
- Contact persons
- Open discussion

The additional information disclosed in the second meetings included:

- Results of environmental survey
- Results of socio-economic survey
- Issues raised by the stakeholders during the first meeting
- Major impacts and their mitigation measures

The additional information disclosure in the third meeting included:

- Major concerned laws and regulations on environmental and social management
- Mitigation measures/commitments needed to complied during project development
- Environmental management plans for project development
- Environmental monitoring stations

9.7 RECOMMENDATIONS FOR FUTURE CONSULTATIONS

Public consultation will be carried out during the construction and operational phases as part of environmental management of the two project phases. Public consultation during the construction would mainly concern with measures to minimize various environmental disturbances which some communities may experience. The issues discussed would vary with the progress of construction and change in the nature of construction works. Public consultation during the operational phase would be less intense as environmental and social management become predictable and routine. Community development support would be a major issue for public consultation.

In ***Chapter 8***, the Consultant proposes that a tripartite committee be set up to serve as venue for public consultation. Details of the tripartite committee for the construction phase and the operational phase are given in CEMP and OEMP.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

The ESIA investigation was based on the surveys of environmental and socio-economic settings of the Project area, rounds of consultations with stakeholders in the government sector and communities in the vicinity of the Project site, and experience of the Consultant in technical and environmental aspects of power projects. From the ESIA investigation results, the following major conclusions may be drawn:

1) By its design, the Project will have minimum environmental impacts through (i) use of liquefied natural gas (LNG), the most environmentally friendly fossil fuel which contain low sulfur and has the lowest CO2 emissions per unit; (ii) use of lean-burn gas generators which emitted relatively low NO_x; (iii) generator is equipped with closed circuit cooling system with generator, no cooling water generated by Project's operation; and (iv) no provision for back-up fuel (distillate oil) as only natural gas will be used.

2) The surrounding areas are largely rural and have no environmentally or ecologically sensitive areas. The nearest village, Pagaw Zoon is 1,100 m away.

3) During Project constructions, all environmental issues are normally experienced in construction projects. All environmental issues could be readily addressed using conventional measures and good environmental practices in the design and construction. The most concerned issue is fugitive dust from the construction site, the contractor would be strictly enforced to proceed mitigation measures specified in the EMP to avoid negative impacts to locals. Transportation of filling material and construction material would provide no impact on traffic condition of ITD main road if the construction period is as on schedule of 60 days. Socials impacts during construction phase would be insignificant because all workers will stay in existed ITD worker camp.

4) During Project operation, NO_x and SO_X emission loads will be very small due to low sulfur content in the natural gas fuel and the use of lean-burn technology gas generator and low NO_x burner. The impacts on ambient air quality will be insignificant even maximum of 15 generators operate simultaneously. The wastewaters which is mainly from domestic use would be very small, these water would be treated by aerated septic tank with no discharge of wastewater outside the power plant. The transportation of LNG along ITD main road would not change the traffic condition.

5) The identified environmental risks of the Project in the construction phase will need to be managed through contractual arrangements and close supervision of the EPC contractor in implementing the prescribed environmental impact mitigation measures. The major risks during the power plant operations will be fires and explosions. The likelihood of occurrence of these risks will be minimized through incorporating risk management objectives in the designs, selection of equipment, quality construction, and operation and maintenance. To cope with the consequences of the risks, if occur, an emergency response plan and operational procedures will have to be in place for commissioning and commercial operation.

6) The proposed CEMP and OEMP are adequate at this stage of project planning for the EPC contractor to prepare the contract specific CEMP and OEMP based on the designs, specifications, and construction plans and methods to be developed by the EPC contractor.

7) The national and regional agencies concerned have high expectations of environmental and social management of the Project as well as CSR activities of the Project. Their concerns are on air pollution, damages to the access road, and wrong perception of the villagers on environmental aspect of the Project. Due to the project is in Dawei SEZ, some villagers especially who officially occupied the land are not clear on the right in use of their land and some are not yet got compensation fee form ITD.

8) The locals from nine villages that involved in the public consultation meetings were not opposed to the Project, notwithstanding they have concerns on air pollution, impacts on their plantation and grievance redress. They have high expectations of Project benefits to the communities.

10.2 RECOMMENDATIONS

To implement the results of this ESIA investigation, the Consultant recommends that:

1) Proposed environmental mitigation measures and environmental management requirements be clearly stated and incorporated in the TOR for the procurement of EPC contract and construction supervision contract, and in the EPC contract and construction supervision contract.

2) Earth works of the Project site be carried out in phases, if possible, and started as soon as possible to minimize the traffic load.

3) Groundwater investigation involving well testing at the power plant site be carried out as soon as possible.

4) The proposed tri-partite committee be set up as soon as possible to serve as a means for continuing public consultation and disclosure.

APPENDIX 1A

CONSULTANT'S DOCUMENTS

TRANSLATION

(Official Emblem)

Corporate Registration Office of Bangkok,
Department of Commercial Development,
Ministry of Commerce

No. Sor Jor.3 054100

CERTIFICATE

This is to certify that this company has been registered according to the Civil & Commercial Code as a juristic person in the category of Limited Liability Company, Registration No. 0105521011519 on 12 July 1978, with the contents in the documentary registration on the date of issue as follows:

1. The Company's name: "TEAM Consulting Engineering and Management Co., Ltd."

2. The number of the Company's Directors is comprised of 8 persons listed as follows:

   (1) Mr. Prasert Patramai
   (2) Mr. Sanit Rangnoi
   (3) Gen. Wichien Sirisoontorn
   (4) Mr. Peerawat Premchun
   (5) Mr. Wera Sutesopon
   (6) Mr. Thanasarn Khuayjarernpanishk
   (7) Mr. Chawalit Chantararat
   (8) Mr. Issarin Patramai/

3. The number or list of directors who can sign binding to the Company consists of Mr. Prasert Patramai, Mr. Peerawat Premchun, Mr. Thanasarn Khuayjarernpanishk, Mr. Chawalit Chantararat, and Mr. Issarin Patramai. Two of these directors mutually sign with affixation of the corporate common seal.

4. The Company's registered capital: 166,052,000 Baht / One Hundred Sixty-six Million Fifty-two Thousand Baht.

5. The Company's principal office is situated at 151, Nuanchan Road, Nuanchan, Bueng Khum, Bangkok 10230 Thailand.

6. The Company's objectives are comprised of 38 items set forth in the copy of attachment to this corporate certificate of 3 pages, evidenced with the signature of the Registrar reaffirming the certificate, and the official seal of Corporate Registration Office.

Given on: 15 May 2017

(Signed – Ms. Nanthawan Phong-ampornsophon)

Registrar

Official Seal Affixed

TRANSLATION

(Official Emblem)

Corporate Registration Office of Bangkok,
Department of Commercial Development,
Ministry of Commerce

No. Sor Jor. 3 054100

CERTIFICATE

REMARKS:

1. The previous name of this company was "TEAM Consulting Engineers Co., Ltd." and registered alteration to "TEAM Consulting Engineering and Management Co., Ltd." on 18 April 2000.
2. This Company has already submitted its 2015 Fiscal Balance Sheet.
3. This certificate is to certify only the contents in the documentary registration for legal reason.
4. The registrar may cancel this registration should any essential statements herein be incorrect or false.

The fact should be found for examination.

PNS/BPC200/GE5401/100/GE001

No. Sor Jor.3 054100 issued on 15 May 2017

TRANSLATION

This copy is attached to the Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(1) To provide service in all types of architectural and engineering design work, including survey, experiment and research to obtain information for such designs.

(2) To provide service in education, research, analysis, data acquisition, evaluation and summary in any general business projects without limitation.

(3) To provide service or be hired to serve in the technical knowledge, survey, research, analytical, design, evaluation and summary and report on various aspects of architectural development projects and all branches and specialties of engineering (for example: civil, structural, transportation, hydraulic, oceanographic, hydrography, water resources development, industrial, chemical, electrical, survey, mechanical, mining, sanitation and environmental engineering). Also, to improve on those projects so as to give the best quality and most economical results and to prevent waste of resources. The scope of work covers resources in the water, underground, on land and in the air for the private sector, sanitation communities, municipalities, government agencies, international organizations and other countries.

(4) To consult, advise, control operation, provide technical assistance as well as conduct research, experiments, analysis and research into any activities for individuals and juristic persons both in the country and overseas and various international organizations.

(5) To provide management in environmental control through stages of initiating development project, country and town planning, construction, project development, operation, management of resources in the water, underground, on land, in the air, sound and garbage control.

(6) To establish branch offices in Thailand and overseas in all parts of the world in order to reach all or one of the company's objectives.

No. Sor Jor.3 054100 issued on 15 May 2017

TRANSLATION

~~This copy is attached to the~~
Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(7) To borrow money, overdraw from banks, financial institutions, government and other organizations. To pawn, mortgage, sell with right of redemption the company's properties as credit guarantee. To make loans to juristic persons or other persons (except acceptance of mortgage of movable and immovable properties.)

(8) To deal in mass transportation, transport of merchandise and all other items by vehicles on land, waterways and air, both within the country and overseas whether it will be by personal or other person's vehicles. This includes purchasing, selling, exchanging, renting, loaning and hire-purchasing land, sea and air vehicles.

(9) To procure concession, permit, patent and other forms of right that is deemed beneficial to the company or affiliated companies.

(10) To enter into limited partnership, to assume responsibility in a limited partnership or be a shareholder in other limited companies regardless of whether such partnerships or companies have the same objectives as ours.

(11) To buy, sell, exchange, rent or let for rent of land, buildings and to bur, sell, appropriate land for sale and build residential buildings and bungalows for rent (except for hire-purchase purpose)

(12) To do business as proprietor or owner of immovable and movable properties to be used as offices, plants and for other uses by the company.

(13) To buy or procure share of other juristic persons that have similar objectives to the company's or that may be beneficial to the company.

(14) To be broker, agent and commission agency in all types of trade and business (except insurance business, association membership recruitment and trade of securities)

TRANSLATION

This copy is attached to the Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(15) To buy, sell, rent, hire-purchase, sell with right for redemption and mortgage immovable properties as well as accept pawning of movable properties.

(16) To engage in trade of rice and granular products, cassava and its products, corn, sesame seeds, beans, pepper, hemp, ceiba, cotton, lac, castor bean, woods, rubber, fruits, forest products, herbs, animal hides, animal horns, sugar, animal feeds and all types of agricultural products.

(17) To engage in trade of machinery, motors, machine tools, labor-saving devices, vehicles, electrical generators and appliances, refrigerators, air-conditioners, electrical fans, electrical rice cooker, electrical iron, water pumps, heater, coolers kitchen utensils, ironware, copperware, bronze ware, sanitary ware, furniture, electric and plumbing equipment as well as spare parts and supplies for the aforementioned items.

(18) To engage in trade of medicines for treatment and prevention of human and animal diseases, medical and chemical supplies, medical and pharmaceutical apparatus, fertilizers, pesticides and insecticides as well as other scientific apparatus.

(19) To engage in trade of papers, stationery, textbooks, printed forms, books, educational equipment, calculators, printers and accessories, newspapers, filing cabinets and all sorts of office equipment and automation.

(20) To do business of operating rice farm, orchard, salt, forestry, rubber plantation, raising of livestock and ranches.

(21) To do business in printing house, providing printing service, printing books and newspapers for sale.

(22) To do business in import and export of goods stated in the objectives.

TRANSLATION

~~This copy is attached to the~~
Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(23) To provide service in legal matters, accounting, engineering, architecture as well as advertising.

(24) To engage in business on guarantee, of liabilities and performance of other persons, including guarantee for persons coming into and travelling out of the country in accordance with laws relating to immigration, revenue and other related laws.

(25) To act as consultant and provide advise on problems regarding commercial and industrial, production, marketing and distribution management.

(26) To do real estate development business by selling and buying land either in cash or credit, renting or high-purchase, including improvement of such land with earth filling, construction of bridges, roads and water drainage, and installation of electricity, water supply including other improvements that will be beneficial to the aforementioned business, for private sector, juristic persons/entities, government authorities, organizations and state enterprises.

(27) To repair, renovate or modify residential and office buildings, roads, bridges, national highways and various types of factories, including to provide consultation service, to design plans and diagrams, estimate construction cost, and install electricity, water supply and drainage systems. In addition, to provide service in dredging moats, canals, ditches, rivers, streams, creeks, marshes, lakes, and excavating reservoirs, tunnels and drainage channels. To improve lanes, roads, sidewalks and drainage pipes. To fill the land with earth. To provide service in wastewater treatment. To offer bids in order to receive contracts for the aforementioned services from private sector, government, juristic persons/entities, organizations or state enterprises.

TRANSLATION

This copy is attached to the
Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(28) To deal with telecommunications equipment, transceivers, telex, telephones, electronic testing device, medical and industrial X-ray machines, hearing aids, industrial equipment, console, closed-circuit TV's industrial control device, measuring instrument, electrical welding machine, electrical transformers, switchboards, electrical motors, electronic parts and accessories as well as spare parts and accessories of these devices.

(29) To buy, sell, exchange, rent hire-purchase calculating machines and computers both Thai and English languages for use of private sector, sanitary communities, municipalities, government agencies, international organizations and various countries. To provide service on statistic analysis of businesses and industries. To provide service on all types of processing, scientific, engineering, accounting, stock control and telecommunications work including spare parts and accessories of these equipment.

(30) To provide service on consultation, computation, analysis and design of production systems and all types of program development. To provide service in research design, analysis of research result in all branches of related computer and maintenance of machines, computers and all types of calculating machines.

(31) To collect, compile, publish, and distribute statistics and data of agriculture, industry, commerce, finance and marketing. To analyze and evaluate all business operations.

(32) The company reserves the right to issue shares of higher value than stated in the certificates.

(33) To do business and provide service regarding conservation of energy and solution of environmental problems from the use and production of energy,

No. Sor Jor.3 054100 issued on 15 May 2017

TRANSLATION

~~This copy is attached to the~~
Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(34) To carry out trade of construction materials, supplies and equipment, all kinds of tools, paints, painting tools, and building decoration equipment.

(35) To do business on contractual construction of buildings, commercial, residential and office buildings, roads, bridges, dams and tunnels, including construction of other structures, and public works.

(36) To provide service on systems of wastewater treatment and garbage disposal.

(37) To provide service for measurement, investigation, testing, certification, risk assessment including training or consulting to support the safety, occupation health, working environment and related services.

(38) To do business on consultation and providing recommendation to solve the problems concerning Agriculture And Rural Development Sector, Construction Industry Development Sector, Energy Sector, Environment Sector, Industry Sector, Population Sector, Tourism Sector, Transportation Sector, Urban Development Sector, Water Supply And Sanitation Sector, and related services.

(Official Emblem) No. 1-1003-60-4-038532 Issued on 15 May 2017

(TRANSLATION)

Form Bor Or Jor. 4

Computer-Generated Copy

Additional Amendment Registration and/or Special Resolution
of
TEAM Consulting Engineering and Management Co., Ltd.
Registration No. 0105521011519

This text was amended to include in the registrar 4 items as follow;

1. Special Resolution to increase Company's capital to Eighty-three Million Nine Hundred Forty-eight Thousand Baht (83,948,000) by issuing a new common share of Eight Hundred Thirty-nine Thousand Four Hundred and Eighty shares (839,480) with a par value of One Hundred Baht (100)

2. Additional Amendment of Company's Article No.4 as follow;

Article No.4 The Transfer of Shares

4.1 The transfer of shares will be effective by registering the amendments to the shareholders registration.

4.2 If one of the shareholders dies or become bankrupt, the inheritor or administrator or the one who has right to the shares must bring legal proof to the company. After the Directors deem it to be valid and does not violate the Company' Article, the Company will register the person as the shareholder of the Company.

4.3 In addition to the provisions of this Article's section, the Directors may impose any regulations as appropriate regarding the shares.

4.4 The Company will not hold or pledge its shares."

3. Additional Amendment of the Company's Directors list as follow;

Five Directors have resigned as follow;
(1) Mr. Suksavasdi Srisupornvanij
(2) Mr. Amnat Prommasutra
(3) Mr. Kittipol Bunnim
(4) Mr. Prasong Wangrattanapranee
(5) Mrs. Sirinimit Boonyuen

Three new Directors have been registered (as shown in Form Gor.) as follow;
(1) Mr. Sanit Rangnoi
(2) Gen. Wichien Sirisoontorn
(3) Mr. Issarin Patramai

Signature)..............(Signed).............. Director
(Mr. Prasert Patramai ...... Mr. Thanasarn Khuayjarernpanishk)

 (Signature)..........(Signed).......... Registrar

Request of Documentation No.1003260051/10057 (Ms. Nanthawan Phong-ampornsophon)

(TRANSLATION)

Form Bor Or Jor. 4

Computer-Generated Copy

Additional Amendment Registration and/or Special Resolution
of
TEAM Consulting Engineering and Management Co., Ltd.
Registration No. 0105521011519

This text was amended to include in the registrar, total 4 items as follow;

4. To amend the number or list of directors as following;

Item 6. The number or list of directors who can sign binding to the Company consists of Mr. Prasert Patramai, Mr. Peerawat Premchun, Mr. Thanasarn Khuayjarernpanishk, Mr. Chawalit Chantararat, and Mr. Issarin Patramai. Two of these directors mutually sign with affixation of the corporate common seal.

(Signature)..............................(Signed)..............................Director
(Mr. Prasert Patramai ...... Mr. Thanasarn Khuayjarernpanishk)

(Signature)..................(Signed)..............Registrar

Request of Documentation No. 1003260051/10057 (Ms. Nanthawan Phong-ampornsophon)

(Official Emblem) No. 1-1003-60-4-038532 Issued on 15 May 2017

(TRANSLATION)

NEW DIRECTORS

of

TEAM Consulting Engineering and Management Co., Ltd.

All Directors have signed and consented to the registrar to verify the accuracy and disclose following information for the official use.

1) Mr. Sanit Rangnoi age 69 years Nationality Thai
☑ Holder of Identification Card No. 3 1 0 0 2 0 0 1 6 0 5 4 4
☐ Other Card No. .... No. ....
101 Panya-Indra Road, Khan Na Yao District, Bangkok Telephone 02-509-9000

Signature ....

2) Gen. Wichien Sirisoontorn age 61 years Nationality Thai
☑ Holder of Identification Card No. 3 1 0 0 6 0 1 3 9 0 5 1 6
☐ Other Card No. .... No. ....
71/65 Seraneeraya Village, Nawongprachapattana Road, Si Kan Sub-district, Don Mueang District, Bangkok Telephone 02-509-9000

Signature ....

3) Mr. Issarin Patramai age 43 years Nationality Thai
☑ Holder of Identification Card No. 3 1 0 0 6 0 0 9 3 0 9 8 3
☐ Other Card No. .... No. ....
11 Ramkhamheang 118, Ramkhamheang Road, Sapansoong Sub-district, Sapansoong District, Bangkok Telephone 02-509-9000

Signature ....

4) .... age ...... years Nationality ....
☐ Holder of Identification Card No. ☐☐☐☐☐☐☐☐☐☐☐☐☐
☐ Other Card No. .... No. ....
Village No. .... Road .... Sub-district, ... District,
Province .... Telephone ....

Signature ....

(Signature) .... (Signed) .... Director
(Mr. Prasert Patramai .... Mr. Thanasarn Khuayjarernpanishk)

(Signature) .... (Signed) .... Registrar
Request of Documentation No. 1003260051/10057 (Ms. Nanthawan Phong-ampornsophon)

(Official Emblem) No. 1-1003-60-4-038532 Issued on 15 May 2017

(TRANSLATION)

Articles of Association
of
TEAM Consulting Engineering and Management Co., Ltd.
(Amendment)

By the special resolution of the Ordinary Shareholders' Meeting No. 1/2560 held on 27 April 2017 which resolved to amend Article No. 4 as following:

Article No.4 The Transfer of Shares

4.1 The transfer of shares will be effective by registering the amendments to the shareholders registration.

4.2 If one of the shareholders dies or become bankrupt, the inheritor or administrator or the one who has right to the shares must bring legal proof to the company. After the Directors deem it to be valid and does not violate the Company' Article, the Company will register the person as the shareholder of the Company.

4.3 In addition to the provisions of this Article's section, the Directors may impose any regulations as appropriate regarding the shares.

4.4 The Company will not hold or pledge its shares.

This is to confirm that all above text is correct and consistent with the above meeting resolution.

(Signed)................................ Director
Mr. Prasert Patramai

(Signed)................................ Director
Mr. Thanasarn Khuayjarernpanishk

TRANSLATION

(Official Emblem)

No. Kor.Khor. 0910/4099

Public Debt Management Office
Ministry of Finance
Rama VI Road, Bangkok 10400

22 December 2016

Subject The Extension of the Thai Consultant Registration

To Executive Director
TEAM Consulting Engineering and Management Co., Ltd.

Ref. TEAM Consulting Engineering and Management Co., Ltd.
Letter No. HC/100G/592946 dated 2 December 2016

With reference to the said letter, TEAM Consulting Engineering and Management Co., Ltd. expressed its intention to extend the registration with Thai Consultant Database Centre, Ministry of Finance

Kindly be informed that Thai Consultant Database Centre has now completed your extension for TEAM Consulting Engineering and Management Co., as Thai Consultant Type A, No. 23, TEAM Consulting Engineering and Management Co., Ltd. provides services as Thai Consultant on the study of agriculture and rural development, construction industry, energy, environment, industry, public relations for population, tourism, transport communication, urban and community development, as well as water supply and sanitation since 26 December 2016. Additionally, if TEAM Consulting Engineering and Management Co., Ltd. has additional experience and information as well as any alteration on other information kindly inform Public Debt Management Office every quarterly period for the benefits of updating of information on the Company's current status.

This registration valid 2 years dated from 26 December 2016, so please kindly run your additional registration before the expired date to maintain continual registration.

This letter is therefore herewith transmitted for your information and further reference accordingly.

Respectfully Yours,

(Signed – Mr. Ace Viboolcharern)
Assistant Director
Acting as Director of Public Debt Management Office

Project Loan Office
Thai Consultant Database Centre
Tel. 0 271 7999 Ext. 5717
Fax: 0 2357 3576
www.thaiconsult.pdmo.go.th/

Certificate of Registration

This certificate has been awarded to

TEAM Consulting Engineering and Management Co., Ltd.

151 Nuan Chan Road, Nuan Chan, Bueng Kum,
Bangkok 10230 Thailand

in recognition of the organization's Quality Management System which complies with

ISO 9001:2008

The scope of activities covered by this certificate is defined below

Studies, Planning and Design, Cost Estimate and Tender Document Preparation, Environmental Impact Assessment, Project Management and Construction Supervision

Certificate Number:	Date of Issue: (Original)	Date of Issue:
02765/A/0001/UK/En	25 January 2011	25 January 2017
Issue No:	Expiry Date:	
5	14 September 2018	

Issued by: *On behalf of the Schemes Manager*

UKAS MANAGEMENT SYSTEMS 0043

If there is any doubt as to the authenticity of this certificate, please do not hesitate to contact the Head Office of the Group on [illegible]
URS is a member of United Registrar of Systems (Holdings) Ltd, Darby Manor, Darby Road, Bournemouth, BH1 3DD, UK. Company Registration no. [illegible]

TRANSLATION

Form Sor.Vor.Lor.4

(Official Emblem)

PERMIT

CERTIFICATE FOR PREPARATION OF ENVIRONMENTAL IMPACT ASSESSMENT MITIGATION MEASURE AND MORNITORING PROGRAME

Permit No. 25/2558

By virtue of Section 19 of the Enhancement and Conservation of National Environmental Quality Act the National Environment Board (NEB) hereby grants this Permit to TEAM Consulting Engineering and Management Co., Ltd., to certify the Company as Qualified Company for preparation of Environmental Impact Assessment, Mitigation Measures and Monitoring Programe with validity of 3 years effective as from 29 October 2015 – until 28 October 2018 with terms and conditions as following:

(1) Unconditional..

(2) ....

(3) ....

(4) ....

Given on 12 October 2015

(Signed – Mrs. Raviwan Phuridech
Secretary-General

Bureau of Natural Resources and Environmental Policy and Planning

ที่ สจ.3 054100

สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร
กรมพัฒนาธุรกิจการค้า กระทรวงพาณิชย์

หนังสือรับรอง

ขอรับรองว่าบริษัทนี้ ได้จดทะเบียนเป็นนิติบุคคล ตามประมวลกฎหมายแพ่งและพาณิชย์ เมื่อวันที่ 12 กรกฎาคม 2521 ทะเบียนนิติบุคคลเลขที่ 0105521011519 ปรากฏข้อความในรายการตามเอกสารทะเบียนนิติบุคคล ณ วันออกหนังสือนี้ ดังนี้

1. ชื่อบริษัท บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด
2. กรรมการของบริษัทมี 8 คน ตามรายชื่อดังต่อไปนี้

1. นายประเสริฐ ภัทรมัย	2. นายศานิต ร่างน้อย
3. พลเอกวิเชียร ศิริสุนทร	4. นายพีรวัธน์ เปรมชื่น
5. นายวีระ สุธีโสภณ	6. นายธนสาร ก้วยเจริญพานิชก์
7. นายชวลิต จันทรรัตน์	8. นายอิศรินทร์ ภัทรมัย/

3. จำนวนหรือชื่อกรรมการซึ่งลงชื่อผูกพันบริษัทได้คือ นายประเสริฐ ภัทรมัย นายพีรวัธน์ เปรมชื่น นายธนสาร ก้วยเจริญพานิชก์ นายชวลิต จันทรรัตน์ นายอิศรินทร์ ภัทรมัย กรรมการสองในห้าคนนี้ลงลายมือชื่อร่วมกัน และประทับตราสำคัญของบริษัท//
4. ทุนจดทะเบียน 166,052,000.00 บาท / หนึ่งร้อยหกสิบหกล้านห้าหมื่นสองพันบาทถ้วน/
5. สำนักงานแห่งใหญ่ ตั้งอยู่เลขที่ 151 ถนนนวลจันทร์ แขวงนวลจันทร์ เขตบึงกุ่ม กรุงเทพมหานคร/
6. วัตถุที่ประสงค์ของบริษัทมี 38 ข้อ ดังปรากฏในสำเนาเอกสารแนบท้ายหนังสือรับรองนี้ จำนวน 3 แผ่น โดยมีลายมือชื่อนายทะเบียนซึ่งรับรองเอกสารและประทับตราสำนักงานทะเบียนหุ้นส่วนบริษัทเป็นสำคัญ

ออกให้ ณ วันที่ 15 เดือน พฤษภาคม พ.ศ. 2560

สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

(นางสาวพันทวรรณ์ [illegible] ศอัมพรัตนศภณ)

คำเตือน : ผู้ใช้ควรตรวจสอบข้อควรทราบท้ายหนังสือรับรองฉบับนี้ทุกครั้ง

ที่ สจ.3 054100

สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร
กรมพัฒนาธุรกิจการค้า กระทรวงพาณิชย์

หนังสือรับรอง

ข้อควรทราบ ประกอบหนังสือรับรอง ฉบับที่ สจ.3 054100

1. บริษัทนี้เดิมชื่อ บริษัท ทีมคอนซัลติ้ง เอนจิเนียร์ จำกัด ได้จดทะเบียน
เปลี่ยนชื่อเป็น บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด
เมื่อวันที่ 18 เมษายน 2543/

2. นิติบุคคลนี้ได้ส่งงบการเงินปี 2558

3. หนังสือนี้รับรองเฉพาะข้อความที่ห้าง/บริษัทได้นำมาจดทะเบียนไว้เพื่อผลทางกฎหมายเท่านั้น
ข้อเท็จจริงเป็นสิ่งที่ควรหาไว้พิจารณาฐานะ

4. นายทะเบียนอาจเพิกถอนการจดทะเบียน ถ้าปรากฏว่าข้อความอันเป็นสาระสำคัญที่จดทะเบียน
ไม่ถูกต้อง หรือเป็นเท็จ/.

ที่ สจ.3 054100 ออกให้ ณ วันที่ 15 เดือน พฤษภาคม พ.ศ. 2560

สำเนาเอกสารนี้แนบท้ายหนังสือรับรอง

วัตถุที่ประสงค์ของ ห้างหุ้นส่วน/บริษัท นี้ มี 38 ข้อ ดังนี้

(1) รับบริการออกแบบงานสถาปัตยกรรม และงานสาขาวิศวกรรมทุกแขนง รวมถึงการสำรวจ ทดลอง ค้นคว้า และวิจัย เพื่อให้ได้มาซึ่งข้อมูลเพื่อการออกแบบนั้นๆ

(2) รับบริการทางด้านการศึกษา ค้นคว้า วิเคราะห์ หาข้อมูล ประเมินผล สรุปผล ในโครงการธุรกิจต่างๆ ทั่วไป โดยไม่จำกัดขอบเขต

(3) เพื่อรับจัดหรือรับจ้างหรือรับบริการด้านเทคนิค วิชาการ งานสำรวจ ศึกษา ค้นคว้า วิเคราะห์ วิจัย ออกแบบ ประเมินผล สรุปผล และทำรายงานในโครงการพัฒนาต่างๆ ทางด้านสถาปัตยกรรมและวิชาชีพ วิศวกรรมทุกแขนงและทุกสาขา (โยธา โครงสร้าง ขนส่ง ชลศาสตร์ สมุทรศาสตร์ อุทกศาสตร์ การพัฒนาแหล่งน้ำ อุตสาหกรรม เคมี ไฟฟ้า สื่อสาร เครื่องจักร เหมืองแร่ สุขาภิบาล สิ่งแวดล้อม) ตลอดจนการปรับปรุงแก้ไขโครงการนั้นๆ ให้ได้ผลลัพธ์ที่มีคุณภาพดีที่สุดและประหยัดที่สุด และการป้องกันความสูญเสียทรัพยากรโดยมีขอบเขตงานครอบคลุมทั้งในน้ำ ใต้ดิน บนดิน และในอากาศ ให้แก่เอกชน สุขาภิบาล เทศบาล หน่วยงานของรัฐบาล องค์การระหว่างประเทศและประเทศต่างๆ

(4) รับปรึกษา ให้คำแนะนำ ควบคุมการดำเนินงาน และการจัดการด้านเทคนิค รวมทั้งการค้นคว้า ทดลอง วิเคราะห์และวิจัย ในกิจการใดๆ แก่บุคคล นิติบุคคล ทั้งในและนอกประเทศ รวมทั้งองค์การระหว่างประเทศต่างๆ

(5) รับจัดการควบคุมสิ่งแวดล้อมทั้งหมด จากการริเริ่มโครงการพัฒนา การวางผังเมือง การศึกษา วิเคราะห์ ค้นคว้า ในด้านอำนวยความสะดวก การวางผังเมือง การก่อสร้าง การพัฒนาโครงการต่างๆ การดำเนินการ และการจัดการในน้ำ ใต้พื้นดิน บนดิน และในอากาศ เสียง และการควบคุมสิ่งปฏิกูล

(6) จัดตั้งสำนักงานสาขาในประเทศไทยและในต่างประเทศไม่ว่าส่วนใดของโลก เพื่อดำเนินการตามวัตถุประสงค์ของบริษัททั้งปวงหรือข้อหนึ่งข้อใด

(7) ทำการกู้ยืม เบิกเงินเกินบัญชีจากธนาคาร สถาบันการเงินต่างๆ หรือบุคคลอื่นๆ และทำการจำนำ จำนอง ขายฝาก ทรัพย์สินของบริษัทเป็นประกันเครดิตดังกล่าว รวมทั้งให้กู้ยืมเงินแก่นิติบุคคลหรือบุคคลอื่น (ยกเว้นการรับจำนองอสังหาริมทรัพย์และสังหาริมทรัพย์)

(8) ประกอบกิจการขนส่งคนโดยสาร สินค้า พัสดุภัณฑ์ทุกชนิดทุกประเภท โดยยานพาหนะทางบก ทางน้ำ ทางอากาศ ทั้งภายในและภายนอกประเทศ ไม่ว่าด้วยยานพาหนะของตนเองหรือของบุคคลอื่น ตลอดจนทำการซื้อ ขาย แลกเปลี่ยน เช่า ให้เช่า เช่าซื้อ ยานพาหนะทางบก ทางน้ำ และทางอากาศ

(9) จัดให้ได้มาซึ่งสัมปทาน ประทานบัตร นิมิตรสิทธิ์ และสิทธิใดๆ บรรดาที่เห็นว่ามีประโยชน์แก่กิจการของบริษัทหรือบริษัทในเครือเดียวกัน

(10) เข้าเป็นหุ้นส่วนจำกัดความรับผิดชอบในห้างหุ้นส่วนจำกัดหรือเป็นผู้ถือหุ้นในบริษัทจำกัดอื่นใด ไม่ว่าจะมีวัตถุประสงค์ตรงกันหรือไม่ก็ตาม

วัตถุที่ประสงค์ของ ห้างหุ้นส่วน/บริษัท นี้ มี 38 ข้อ ดังนี้

สำเนาเอกสารนี้แนบท้ายหนังสือรับรอง

(11) ประกอบกิจการซื้อ ขาย แลกเปลี่ยน เช่า หรือให้เช่าที่ดิน อาคารบ้านเรือน โรง และสิ่งปลูกสร้างทุกชนิด ตลอดจนซื้อ ขาย จัดสรรที่ดินออกเป็นแปลงเล็กๆ เพื่อจำหน่าย ทั้งสร้างที่พักอาศัยหรือบังกาโลให้เช่า (ยกเว้นการให้เช่าซื้อ)

(12) ประกอบกิจการเป็นเจ้าของ ผู้ถือกรรมสิทธิ์ในอสังหาริมทรัพย์ และสังหาริมทรัพย์ เพื่อใช้เป็นสำนักงาน โรงงานและเพื่อประโยชน์อื่นๆ ของบริษัท

(13) ทำการซื้อ จัดให้ได้มา ซึ่งหุ้นของนิติบุคคลอื่น ซึ่งมีวัตถุประสงค์ทำนองเดียวกับบริษัท หรือซึ่งจะเป็นประโยชน์แก่บริษัท

(14) ประกอบกิจการเป็นนายหน้า ตัวแทนและตัวแทนค้าต่างในกิจการค้าและธุรกิจทุกประเภท (เว้นแต่ในธุรกิจประกันภัย การจัดหาสมาชิกให้สมาคมและการค้าหลักทรัพย์)

(15) ประกอบกิจการซื้อ ขาย ให้เช่า เช่าซื้อ ขายฝาก จำนองอสังหาริมทรัพย์ ทั้งนี้ตามหลักการรับจำนำเช่าสังหาริมทรัพย์ด้วย

(16) ประกอบกิจการค้าข้าว ผลิตภัณฑ์ข้าว มันสำปะหลัง ผลิตภัณฑ์มันสำปะหลัง ข้าวโพด งา ถั่ว พริกไทย ปอ นุ่น ฝ้าย ครั่ง ละหุ่ง ไม้ ยาง ผลไม้ ของป่า สมุนไพร หนังสัตว์ เขาสัตว์ น้ำตาล อาหารสัตว์ และพืชผลทางการเกษตรทุกชนิด

(17) ประกอบกิจการค้าเครื่องจักร เครื่องยนต์ เครื่องมือกล เครื่องทุ่นแรง ยานพาหนะ เครื่องกำเนิด และเครื่องใช้ไฟฟ้า ตู้เย็น เครื่องปรับอากาศ พัดลม หม้อหุงข้าวไฟฟ้า เตารีดไฟฟ้า เครื่องสูบน้ำ เครื่องทำความร้อน เครื่องทำความเย็น เครื่องครัว เครื่องเหล็ก เครื่องทองแดง เครื่องทองเหลือง เครื่องสุขภัณฑ์ เครื่องเคหภัณฑ์ เครื่องเฟอร์นิเจอร์ อุปกรณ์ไฟฟ้า อุปกรณ์ประปา รวมทั้งอะไหลและอุปกรณ์ของสินค้าดังกล่าวข้างต้น

(18) ประกอบกิจการค้ายารักษาและป้องกันโรคสำหรับคนและสัตว์ เครื่องเวชภัณฑ์ เคมีภัณฑ์ เครื่องมือแพทย์ และเภสัชกรรม ปุ๋ย ยาปราบศัตรูพืชและสัตว์ทุกชนิด เครื่องมือ เครื่องใช้ในทางวิทยาศาสตร์

(19) ประกอบกิจการค้ากระดาษ เครื่องเขียน แบบเรียน แบบพิมพ์ หนังสือ อุปกรณ์การเรียน เครื่องคำนวณ เครื่องพิมพ์ อุปกรณ์การพิมพ์ สิ่งพิมพ์ หนังสือพิมพ์ ตู้เก็บเอกสาร และเครื่องใช้สำนักงานทุกชนิด

(20) ประกอบกิจการทำนา ทำสวน ทำไร่ ทำนาเกลือ ทำป่าไม้ ทำสวนยาง เลี้ยงสัตว์ และกิจการคอกปศุสัตว์

(21) ประกอบกิจการโรงพิมพ์ รับพิมพ์หนังสือ พิมพ์หนังสือจำหน่าย และออกหนังสือพิมพ์

(22) ประกอบกิจการสั่งเข้ามาจำหน่ายในประเทศ และส่งออกไปจำหน่ายยังต่างประเทศซึ่งสินค้าตามที่กำหนดไว้ในวัตถุที่ประสงค์

(23) ประกอบกิจการบริการทางด้านกฎหมาย ทางบัญชี ทางวิศวกรรม ทางสถาปัตยกรรม รวมทั้งกิจการโฆษณา

(24) ประกอบกิจการบริการค้ำประกันหนี้สิน ความรับผิดชอบ และการปฏิบัติตามสัญญาของบุคคลอื่น รวมทั้งรับบริการค้ำประกันบุคคลซึ่งเดินทางเข้ามาในประเทศ หรือเดินทางออกไปต่างประเทศตามกฎหมายว่าด้วยคนเข้าเมือง กฎหมายว่าด้วยภาษีอากร และกฎหมายอื่น

(25) ประกอบธุรกิจบริการรับเป็นที่ปรึกษาและให้คำแนะนำปัญหาเกี่ยวกับด้านบริหารงาน พาณิชยกรรม อุตสาหกรรม รวมทั้งปัญหาการผลิต การตลาดและจัดจำหน่าย

(26) ทำการจัดซื้อที่ดินเพื่อขายและจัดแบ่งขาย ทั้งโดยเงินสดและเงินผ่อน หรือให้เช่า หรือให้เช่าซื้อ รวมทั้งการปรับปรุงที่ดินดังกล่าวให้เหมาะสมแก่การแบ่งขายหรือให้เช่า โดยการถมดิน สร้างสะพาน ถนน ทางระบายน้ำ ติดตั้งไฟฟ้า ประปา ตลอดจนการปรับปรุงอื่นๆ ที่จะเป็นประโยชน์แก่กิจการดังกล่าวให้แก่ เอกชน นิติบุคคล ทางราชการ องค์การหรือรัฐวิสาหกิจต่างๆ

ที่ สจ.3 054100 ออกให้ ณ วันที่ 15 เดือน พฤษภาคม พ.ศ. 2560

สำเนาเอกสารนี้แนบท้ายหนังสือรับรอง

วัตถุที่ประสงค์ของ ห้างหุ้นส่วน/บริษัท นี้ มี......38..........ข้อ ดังนี้

(27) ทำการซ่อมแซม แก้ไข ดัดแปลงอาคารที่พักอาศัย สถานที่ทำการ ถนน สะพาน ทางหลวงแผ่นดิน โรงงานต่างๆ รวมทั้งรับปรึกษา ออกแบบแปลนแผนผัง คำนวณการก่อสร้าง และรับทำการติดตั้งไฟฟ้า ประปา ทำท่อระบายน้ำ ขุดลอกคู คลอง ห้วยร่อง แม่น้ำ ลำธาร ห้วย หนอง บึง สระ อ่างเก็บน้ำ อุโมงค์ ทางระบายน้ำ ซ่อมแซมแก้ไข เปลี่ยนแปลงตรอก ซอย ถนน ทางเท้า ท่อระบายน้ำ ถมที่ดิน ขจัดน้ำเสีย น้ำโสโครก ตลอดจนประมูล จัดทำ ใช้ช่วงงาน ในกิจการดังกล่าวจากเอกชน นิติบุคคล รัฐบาล องค์การหรือรัฐวิสาหกิจต่างๆ ด้วย

(28) ประกอบกิจการค้าเครื่องมือสื่อสาร โทรคมนาคม วิทยุรับส่ง โทรพิมพ์ โทรศัพท์ เครื่องตอบรับ อิเล็กทรอนิกส์ เครื่องเอ็กซเรย์ทางการแพทย์และอุตสาหกรรม เครื่องช่วยหูฟัง เครื่องมือเครื่องใช้เกี่ยวกับอุตสาหกรรม เครื่องเสียง เครื่องโทรทัศน์วงจรปิด เครื่องควบคุมระบบการทำงานทางอุตสาหกรรม เครื่องชั่ง ตวง วัด เครื่องเชื่อมไฟฟ้า หม้อแปลงไฟฟ้า สวิสซ์บอร์ด มอเตอร์ไฟฟ้า อุปกรณ์ชิ้นส่วนอิเล็กทรอนิกส์ รวมทั้งอะไหล่ และอุปกรณ์ของเครื่องดังกล่าว

(29) ประกอบกิจการซื้อ ขาย แลกเปลี่ยน เช่า ให้เช่าซื้อ เครื่องคำนวณและเครื่องคอมพิวเตอร์ทั้งไทย และอังกฤษ เพื่อใช้กับหน่วยงานของเอกชน สุขาภิบาล เทศบาล หน่วยงานรัฐบาล องค์การระหว่างประเทศ และประเทศต่างๆ คำนวณสถิติกิจการอุตสาหกรรม งานธุรกิจ งานประมวลผลทุกชนิด งานวิทยาศาสตร์ งานวิศวกรรมศาสตร์ งานบัญชี สต๊อก งานเกี่ยวกับโทรคมนาคม รวมทั้งอะไหล่และอุปกรณ์เครื่องคอมพิวเตอร์ และเครื่องคำนวณทุกชนิด

(30) บริการให้การปรึษา คำนวณ วิเคราะห์ ออกแบบ ระบบงานผลิต และพัฒนาโปรแกรมทุกชนิด และรับออกแบบงานวิจัย วิเคราะห์ผลงานวิจัยทุกสาขาเกี่ยวกับเครื่องคอมพิวเตอร์ต่างๆ รวมทั้งซ่อมบำรุงรักษาเครื่องจักร แก้ไขปรับปรุงเกี่ยวกับเครื่องคอมพิวเตอร์และเครื่องคำนวณทุกชนิด

(31) ประกอบกิจการจัดเก็บ รวบรวม จัดทำ จัดพิมพ์และเผยแพร่สถิติ ข้อมูลในทางเกษตรกรรม อุตสาหกรรม พาณิชยกรรม การเงิน การตลาด รวมทั้งวิเคราะห์และประเมินผลในการดำเนินธุรกิจต่างๆ

(32) บริษัทมีสิทธิที่จะออกหุ้นในราคาที่สูงกว่ามูลค่าที่กำหนดไว้

(33) เพื่อประกอบธุรกิจและให้บริการเกี่ยวกับการอนุรักษ์พลังงาน หรือการแก้ไขปัญหาสิ่งแวดล้อมจากการใช้และการผลิตพลังงาน

(34) ประกอบกิจการค้าวัสดุก่อสร้าง อุปกรณ์และเครื่องมือเครื่องใช้ในการก่อสร้าง เครื่องมือช่างทุกประเภท สี เครื่องมือทาสี เครื่องตกแต่งอาคารทุกชนิด

(35) ประกอบกิจการรับเหมาก่อสร้างอาคาร อาคารพาณิชย์ อาคารที่พักอาศัย สถานที่ทำการ ถนน สะพาน เขื่อน อุโมงค์ และงานก่อสร้างอย่างอื่นทุกชนิด รวมทั้งการรับงานโยธาทุกประเภท

(36) ประกอบกิจการ ระบบบำบัดน้ำเสีย และ ระบบกำจัดขยะมูลฝอย

(37) ให้บริการในการตรวจวัด ตรวจสอบ ทดสอบ รับรอง ประเมินความเสี่ยง รวมทั้งจัดฝึกอบรมหรือให้คำปรึกษาเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน รวมถึงการให้บริการอื่นๆ ที่เกี่ยวข้อง

(38) ประกอบธุรกิจรับเป็นที่ปรึกษา และให้คำแนะนำในการแก้ไขปัญหาเกี่ยวกับสาขาเกษตรและพัฒนาชนบท สาขาอุตสาหกรรมก่อสร้าง สาขาพลังงาน สาขาสิ่งแวดล้อม สาขาอุตสาหกรรม สาขาประชากรด้านประชาสัมพันธ์ สาขาการท่องเที่ยว สาขาคมนาคมขนส่ง สาขาพัฒนาเมือง และสาขาการประปาและสุขาภิบาล รวมถึงการให้บริการอื่นๆ ที่เกี่ยวข้อง

แบบ บอจ. 4

สำเนาถูกต้อง

รายการจดทะเบียนแก้ไขเพิ่มเติม และ/หรือ มติพิเศษ

บริษัท ....ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ ... จำกัด (มหาชน)

(นางสาวนิ่มหวรรณ พงศ์อัมพรโศภณ)

ทะเบียนเลขที่ ...0105521011519.......................นายทะเบียน

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการในทะเบียนไว้แล้ว เป็นดังนี้

สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร

1. มีมติพิเศษให้เพิ่มทุนของบริษัทเพิ่มขึ้นอีก แปดสิบสามล้านเก้าแสนสี่หมื่นแปดพันบาท (83,948,000) โดยการออกหุ้นใหม่ เป็นหุ้นสามัญจำนวน แปดแสนสามหมื่นเก้าพันสี่ร้อยแปดสิบหุ้น (839,480) มูลค่าหุ้นละ หนึ่งร้อยบาท (100)..........

2. ให้แก้ไขเพิ่มเติมข้อบังคับของบริษัทข้อ. 4 เป็นดังนี้

ข้อ 4. การโอนหุ้น

4.1 การโอนหุ้นจะมีผลโดยการจดทะเบียนแก้ไขลงในทะเบียนผู้ถือหุ้น

4.2 ถ้าผู้ถือหุ้นคนหนึ่งคนใดตาย หรือล้มละลาย ผู้รับมรดกหรือผู้จัดการมรดกหรือผู้มีสิทธิจะได้หุ้นนั้นจะต้องนำ ต้องนำหลักฐานอันชอบด้วยกฎหมายมาแสดงต่อบริษัท และเมื่อคณะกรรมการเห็นว่าเป็นการถูกต้องและไม่ขัดต่อข้อบังคับบริษัทแล้ว จะรับจดทะเบียนบุคคลนั้นเป็นผู้ถือหุ้นของบริษัทต่อไป

4.3 นอกจากบทบัญญัติแห่งข้อบังคับหมวดนี้ คณะกรรมการอาจกำหนดระเบียบใดๆ ตามความเหมาะสมในเรื่องการจัดการเกี่ยวกับหุ้น

4.4 บริษัทจะถือหรือรับจำนำหุ้นของบริษัทตัวเองไม่ได้"

3. ให้แก้ไขเพิ่มเติมจำนวนกรรมการของบริษัท เป็นดังนี้

กรรมการออกจากตำแหน่ง จำนวน 5 คน คือ

(1) นายสุขสวัสดิ์ ศรีสุภรวาณิชย์

(2) นายอำนาจ พรหมสูตร

(3) นายกิตติพล บุลนิม

(4) นายประสงค์ หวังรัตนปราณี

(5) นางสิรินิมิตร บุญยืน

กรรมการเข้าใหม่ จำนวน 3 คน (ดังปรากฏรายละเอียดในแบบ ก.) คือ

(1) นายศานิต ร่างน้อย

(2) พลเอกวิเชียร ศิริสุนทร

(3) นายอิศรินทร์ ภัทรมัย

(ลงลายมือชื่อ)..กรรมการผู้ขอจดทะเบียน

(....นายประเสริฐ ภัทรมัย..........นายธนสาร ถ้วยเจริญพานิชย์....)

หน้า....1......ของจำนวน....2.....หน้า (ลงลายมือชื่อ)..นายทะเบียน

เอกสารประกอบคำขอที่ 1003260051110057 (นางสาวนิ่มหวรรณ พงศ์อัมพรโศภณ......)

สจ.3 14:54

กรมพัฒนาธุรกิจการค้า
กระทรวงพาณิชย์

เลขที่ออกเอกสาร 1-1003-60-4-038532 วันที่ออกเอกสาร 15 พฤษภาคม 2560

แบบ บอจ. 4

สำเนาถูกต้อง

รายการจดทะเบียนแก้ไขเพิ่มเติม และ/หรือ มติพิเศษ

บริษัท ....ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ (นันทวรรณ พงศ์อัมพรโศภณ)

ทะเบียนเลขที่ ...0105521011519.......................นายทะเบียน

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการ ในทะเบียนนิติบุคคล ... กรุงเทพมหานคร

4. ให้แก้ไขเพิ่มเติมจำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัท เป็นดังนี้

ข้อ 6. จำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัทได้ คือนายประเสริฐ ภัทรมัย นายพีรวัชน์ เปรมชื่น นายธนสาร ก้วยเจริญพานิชก์ นายชวลิต จันทรรัตน์ นายอิศรินทร์ ภัทรมัย กรรมการสองในห้าคนนี้ลงลายมือชื่อร่วมกัน และประทับตราสำคัญของบริษัท

(ลงลายมือชื่อ)..กรรมการผู้ขอจดทะเบียน

(....นายประเสริฐ ภัทรมัย ....นายธนสาร ก้วยเจริญพานิชก์.......)

หน้า....2......ของจำนวน....2......หน้า

(ลงลายมือชื่อ)..นายทะเบียน

เอกสารประกอบคำขอที่ 0.0.3.2.6.0.0.5.1.1.0.0.5.7 (.....นางสาวนันทวรรณ พงศ์อัมพรโศภณ.....)

/E/O/TEAM/บอจ.4-กรรมการชอ5 เข้า-เพิ่มทุน-ลิธฤ.pdf

สจ.3 14:54

กรมพัฒนาธุรกิจการค้า
กระทรวงพาณิชย์

เลขที่ออกเอกสาร 1-1003-60-4-038532 วันที่ออกเอกสาร 15 พฤษภาคม 2560

แบบ ก.

กรรมการเข้าใหม่

สำเนาถูกต้อง

ของ

บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด

ข้าพเจ้ากรรมการทุกคนซึ่งได้ลงลายมือชื่อไว้นี้ ยินยอมให้นายทะเบียนตรวจสอบความถูกต้องและเปิดเผยข้อมูลตามที่ได้ระบุไว้ในรายการจดทะเบียนนี้ เพื่อใช้ประโยชน์ของทางราชการ

(นางสาวนันทวรรณ พงศ์อัมพรโสภณ)
นายทะเบียน
สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

(1) นายกานิต ร่างน้อย อายุ 69 ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1002-00160-54-4

☐ ถือบัตรอื่น ๆ (ระบุ) .... เลขที่ ....

อยู่บ้านเลขที่ 101 หมู่ที่/หมู่บ้าน .... ถนน ปัญญาอินทรา

ตำบล/แขวง คันนายาว อำเภอ/เขต คันนายาว จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ....

(2) พลเอก วิเชียร ศิริสุนทร อายุ 61 ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1006-01390-51-6

☐ ถือบัตรอื่น ๆ (ระบุ) .... เลขที่ ....

อยู่บ้านเลขที่ 71/65 หมู่ที่/หมู่บ้าน เศรณีราชา ถนน นาวงประชาพัฒนา

ตำบล/แขวง สีกัน อำเภอ/เขต ดอนเมือง จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ....

(3) นายอิศรินทร์ ภัทรมัย อายุ 43 ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1006-00930-98-3

☐ ถือบัตรอื่น ๆ (ระบุ) .... เลขที่ ....

อยู่บ้านเลขที่ 11 หมู่ที่/หมู่บ้าน ซอยรามคำแหง 118 แยก 33-6-1 ถนน รามคำแหง

ตำบล/แขวง สะพานสูง อำเภอ/เขต สะพานสูง จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ....

(4) .... อายุ .... ปี สัญชาติ ....

☐ ถือบัตรประจำตัวประชาชนเลขที่ ☐-☐☐☐☐-☐☐☐☐☐-☐☐-☐

☐ ถือบัตรอื่น ๆ (ระบุ) .... เลขที่ ....

อยู่บ้านเลขที่ .... หมู่ที่/หมู่บ้าน .... ถนน ....

ตำบล/แขวง .... อำเภอ/เขต .... จังหวัด ....

หมายเลขโทรศัพท์ ....

(ลงลายมือชื่อ) ....

(ลงลายมือชื่อ) .... กรรมการผู้ขอจดทะเบียน

(นายประเสริฐ ภัทรมัย นายธนสาร ก้วยเจริญพานิชก์)

หน้า 1 ของจำนวน 1 หน้า

เอกสารประกอบคำขอที่ 10038600511 0057

(ลงลายมือชื่อ) นางสาวนันทวรรณ พงศ์อัมพรโสภณ นายทะเบียน
(........)

ถ้ากรรมการเป็นชาวต่างประเทศ ให้ระบุชื่อและที่อยู่เป็นภาษาอังกฤษกำกับไว้ด้วย

/EID/TEAM/แบบ-ก_เพิ่ม3.pdf

สจ.3 14:54

สำเนาถูกต้อง

(นางสาวนันทวรรณ พงศ์อัมพรโศภณ)
นายทะเบียน
สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

ข้อบังคับ
ของ
บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด
(ฉบับแก้ไขเพิ่มเติม)

โดยมติพิเศษของที่ประชุมสามัญผู้ถือหุ้น ครั้งที่ 1/2560 เมื่อวันที่ 27 เมษายน 2560 ให้แก้ไขเพิ่มเติมข้อบังคับของบริษัท ข้อ 4. เป็นดังนี้

ข้อ 4. การโอนหุ้น

4.1 การโอนหุ้นจะมีผลโดยการจดทะเบียนแก้ไขลงในทะเบียนผู้ถือหุ้น

4.2 ถ้าผู้ถือหุ้นคนหนึ่งคนใดตาย หรือล้มละลาย ผู้รับมรดกหรือผู้จัดการมรดกหรือผู้มีสิทธิจะได้หุ้นนั้นจะต้องนำหลักฐานอันชอบด้วยกฎหมายมาแสดงต่อบริษัท และเมื่อคณะกรรมการเห็นว่าเป็นการถูกต้องและไม่ขัดต่อข้อบังคับบริษัทแล้ว จะรับจดทะเบียนบุคคลนั้นเป็นผู้ถือหุ้นของบริษัทต่อไป

4.3 นอกจากบทบัญญัติแห่งข้อบังคับหมวดนี้ คณะกรรมการอาจกำหนดระเบียบใดๆ ตามความเหมาะสมในเรื่องการจัดการเกี่ยวกับหุ้น

4.4 บริษัทจะถือหรือรับจำนำหุ้นของบริษัทตัวเองไม่ได้

ขอรับรองว่าเป็นข้อความถูกต้องตรงกับมติที่ประชุมดังกล่าวข้างต้น

ลงชื่อ ______________ กรรมการ
(นายประเสริฐ ภัทรมัย)

ลงชื่อ ______________ กรรมการ
(นายธนสาร กัวยเจริญพานิชก์)

แบบ สวล. ๔

ใบอนุญาต

เป็นผู้มีสิทธิทำรายงานเกี่ยวกับการศึกษา
และมาตรการป้องกันและแก้ไขผลกระทบกระเทือนต่อคุณภาพสิ่งแวดล้อม

ใบอนุญาตที่ ๒๕/๒๕๕๘

อาศัยอำนาจตามความในมาตรา ๑๙ แห่งพระราชบัญญัติส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมแห่งชาติ พ.ศ. ๒๕๑๘ คณะกรรมการสิ่งแวดล้อมแห่งชาติออกใบอนุญาตฉบับนี้ ให้แก่ บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด เพื่อแสดงว่าเป็นผู้มีสิทธิทำรายงานเกี่ยวกับการศึกษาและมาตรการป้องกันและแก้ไขผลกระทบกระเทือนต่อคุณภาพสิ่งแวดล้อมมีกำหนด ๓ ปี ตั้งแต่วันที่ ๒๙ เดือน ตุลาคม พ.ศ. ๒๕๕๘ ถึงวันที่ ๒๘ เดือน ตุลาคม พ.ศ. ๒๕๖๑ โดยกำหนดเงื่อนไขดังต่อไปนี้

(๑) ไม่มีเงื่อนไข

(๒)

(๓)

(๔)

ให้ไว้ ณ วันที่ ๑๒ ตุลาคม พ.ศ. ๒๕๕๘

(นางรวีวรรณ ภูริเดช)
เลขาธิการ
สำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อม

ที่ กค 0910/4077

สำนักงานบริหารหนี้สาธารณะ
กระทรวงการคลัง
ถนนพระรามที่ 6 กทม. 10400

22 ธันวาคม 2559

เรื่อง แจ้งผลการต่อทะเบียนที่ปรึกษาไทย

เรียน กรรมการบริหารบริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด

อ้างถึง หนังสือบริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด ที่ HC/100G/592946 ลงวันที่ 2 ธันวาคม 2559

ตามหนังสือที่อ้างถึง ได้แจ้งความประสงค์เพื่อขอต่อทะเบียนที่ปรึกษากับศูนย์ข้อมูลที่ปรึกษาไทย กระทรวงการคลัง นั้น

สำนักงานบริหารหนี้สาธารณะขอเรียนว่า ศูนย์ข้อมูลที่ปรึกษาไทย กระทรวงการคลัง ได้ต่อทะเบียนให้บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด เป็นที่ปรึกษาระดับ A หมายเลข 23 ให้บริการในฐานะที่ปรึกษาสาขาเกษตรและพัฒนาชนบท สาขาอุตสาหกรรมก่อสร้าง สาขาพลังงาน สาขาสิ่งแวดล้อม สาขาอุตสาหกรรม สาขาประชากร ด้านประชาสัมพันธ์ สาขาการท่องเที่ยว สาขาคมนาคมขนส่ง สาขาพัฒนาเมือง และสาขาการประปาและสุขาภิบาล เรียบร้อยแล้ว โดยมีผลตั้งแต่วันที่ 26 ธันวาคม 2559 ทั้งนี้ หากที่ปรึกษามีการเปลี่ยนแปลงข้อมูลบุคลากรที่ปรึกษา โปรดแจ้งให้สำนักงานบริหารหนี้สาธารณะทราบภายใน 30 วัน นับจากวันที่มีการเปลี่ยนแปลงข้อมูล เพื่อให้ข้อมูลที่ปรึกษาถูกต้องและเป็นปัจจุบัน

อนึ่ง เนื่องจากผลการต่อทะเบียนจะมีอายุ 2 ปี นับจากวันที่ 26 ธันวาคม 2559 ดังนั้น จึงขอได้โปรดดำเนินการต่อทะเบียนก่อนวันครบกำหนด 30 วัน เพื่อรักษาสถานภาพของการเป็นที่ปรึกษา

จึงเรียนมาเพื่อโปรดทราบ และใช้เป็นหลักฐานต่อไป

ขอแสดงความนับถือ

เอด วิบูลย์เจริญ

(นายเอด วิบูลย์เจริญ)
ที่ปรึกษาด้านหนี้สาธารณะ ปฏิบัติราชการแทน
ผู้อำนวยการสำนักงานบริหารหนี้สาธารณะ

ศูนย์ข้อมูลที่ปรึกษาไทยฯ
โทร. 0 2271 7999 ต่อ 5717
โทรสาร. 0 2357 3576
ติดต่อได้ที่ www.thaiconsult.pdmo.go.th

Certificate of Registration

This certificate has been awarded to

TEAM Consulting Engineering and Management Co., Ltd.

151 Nuan Chan Road, Nuan Chan, Bueng Kum,
Bangkok 10230 Thailand

In recognition of the organization's Quality Management System which complies with

ISO 9001:2008

The scope of activities covered by this certificate is defined below

Studies, Planning and Design, Cost Estimate and Tender Document Preparation, Environmental Impact Assessment, Project Management and Construction Supervision

Certificate Number:	Date of Issue: (Original)	Date of Issue:
02765/A/0001/UK/En	25 January 2011	25 January 2017
Issue No:	Expiry Date:	
5	14 September 2018	

Issued by: *On behalf of the Schemes Manager*

UKAS MANAGEMENT SYSTEMS
0043

If there is any doubt as to the authenticity of this certificate, please do not hesitate to contact the Head Office of the Group on info@urs-certification.com.
URS is a member of United Registrar of Systems (Holdings) Ltd, Derby Manor, Derby Road, Bournemouth, BH1 3QB, UK. Company Registration no. [illegible]

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

အမျိုးသားစီမံကိန်းနှင့် စီးပွားရေးဖွံ့ဖြိုးတိုးတက်မှုဝန်ကြီးဌာန

ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်

အမှတ် ၁၀၀ အက်ဖ်စီ / ၂၀၁၂-၂၀၁၃

မြန်မာနိုင်ငံ ကုမ္ပဏီများ အက်ဥပဒေအရ ...တိုတယ်(လ်) ဘစ်စနက်(စ်) ဆလူးရှင်း... ကုမ္ပဏီ လီမိတက် .... အား ပေးရန်တာဝန် ကန့်သတ်ထားသော လီမိတက် ကုမ္ပဏီအဖြစ် ၂၀၁၂ နှစ်၊ စက်တင်ဘာ လ၊ ၁၁ ရက်နေ့တွင် မှတ်ပုံတင်ခွင့်ပြုလိုက်သည်။

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)
(နန်းရီရီသန်း၊ ညွှန်ကြားရေးမှူး)
ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန

THE GOVERNMENT OF THE REPUBLIC OF THE UNION OF MYANMAR
MINISTRY OF NATIONAL PLANNING AND ECONOMIC DEVELOPMENT

CERTIFICATE OF INCORPORATION

NO. ....100 FC........... of 2012-2013

I hereby certify that ....TOTAL BUSINESS SOLUTION............ COMPANY LIMITED. ....is this day incorporated under the Myanmar Companies Act and that the company is Limited.

Given under my hand at Nay Pyi Taw this ....ELEVENTH ....day of SEPTEMBER, ...TWO THOUSAND AND TWELVE..

FOR DIRECTOR GENERAL
(Nang Yi Yi Than, Director)
Directorate of Investment and Company Administration

ဤကုမ္ပဏီမှတ်ပုံတင် လက်မှတ်သည် (၁၁-၉-၁၂) မှ (၁၀-၉-၁၇) ရက်နေ့ အထိ (၅)နှစ် သက်တမ်းအတွက်သာ ဖြစ်သည်။ သက်တမ်း မကုန်ဆုံးမီ (၃)လအလိုတွင် သက်တမ်းတိုးရန် ရင်းနှီးမြှုပ်နှံမှုနှင့် ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာနသို့ လျှောက်ထားရမည်။

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)
(သီတာအောင်၊ဒုတိယညွှန်ကြားရေးမှူး)

ISSUDE DATE 19 DEC

ဤကုမ္ပဏီ မှတ်ပုံတင် လက်မှတ်(ယာယီ)သည် မှတ်ပုံတင်ရက်စွဲ (၁၁–၉–၁၂) မှ (၁၀–၃–၁၃)ရက်နေ့အထိ (၆)လသက်တမ်းအတွက်သာ ဖြစ်သည်။ ယာယီသက်တမ်း မကုန်ဆုံးမီ အမြဲတမ်းမှတ်ပုံတင် လက်မှတ် (မူရင်း)နှင့် လဲလှယ်ရမည်ဖြစ်ပါသည်။

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)
(သီတာအောင်၊ဒုတိယညွှန်ကြားရေးမှူး)

APPENDIX 2A

INFORMATION ON THE DAWEI SEZ INITIAL PHASE DEVELOPMENT

Overall Plan for the Dawei SEZ Initial Phase Development

Italian-Thai Development Public Company Limited ("ITD"), ROJANA Industrial Park Public Company Limited ("ROJANA"), Electricity Generating Public Company Limited ("EGCO"), and LNG Plus International Company Limited ("LNG Plus") altogether referred to as (the "Applicant"), hereby submits the bid Application for the Initial Phase Development of the Dawei Special Economic Zone ("Dawei SEZ") in relation to the Terms of Reference to Apply for the Dawei SEZ Initial Phase Development ("TOR") as issued on the 15th of August 2014 by the Dawei Special Economic Zone Management Committee ("DSEZ Authority") and Dawei SEZ Development Company Limited ("SPV"). In compliance with the Government of the Republic of the Union of Myanmar ("Union Government") and the SPV to re-start the development of the DSEZ Project, create local employment in the immediate future, and stimulate the Myanmar economy, as well as show other benefits of the Dawei SEZ Project; the Applicant hereby submits the bid application which will cover the development plan for the Initial Phase of the Dawei SEZ Project covering the seven (7) Initial Projects as set forth in the TOR.

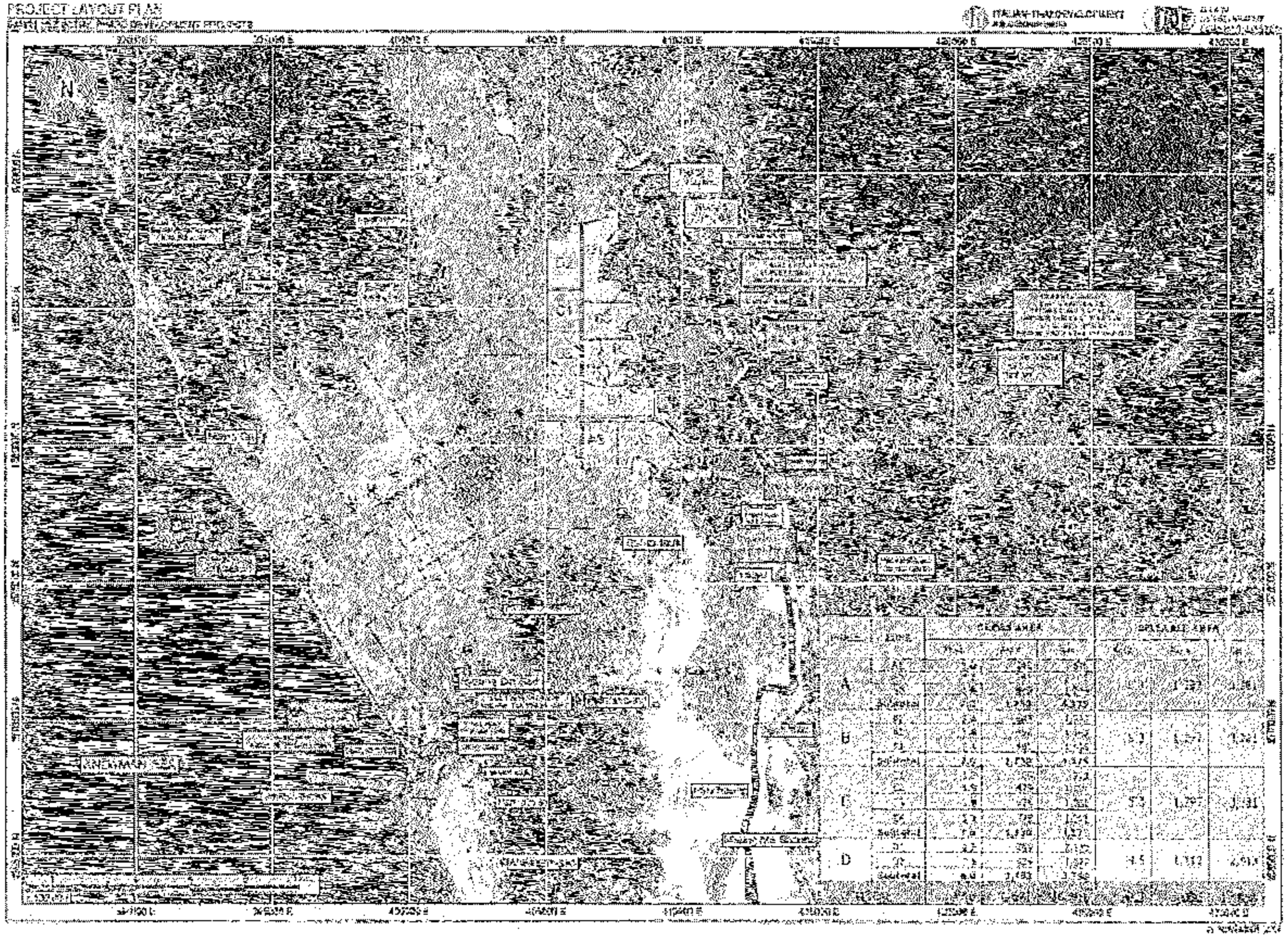
In order to integrate our development plan to develop a successful model to realize the Initial Phase of the Dawei SEZ, we, the Applicant, are purposing to develop the initial projects which will comprise of the following:

1. A Two-lane Road, connecting Dawei SEZ with the Thai border;
2. A Small Port. The following projects are proposed in the small port area:
   2.1 A Small Port
   2.2 LNG Terminal
3. An Initial Industrial Estate consisting of Land Development and Waste Water, Water Distribution and Power Distribution;
4. A Small Power Plant consisting of:
   4.1 Temporary Power Plant and Boil-off Gas Power Plant
   4.2 Small Power Plant GT/CCGT 450 MW
5. An Initial Township / Residential Area;
6. A small water reservoir; and
7. A Telecommunications Landline.

Due to the fact that the consortium for the various initial projects and its components comprise of various consortium members, we are proposing that the Concession Agreement be separated for each of the components of the initial projects as mentioned above. Therefore we are proposing altogether 9 different concessions: we propose the (1) LNG terminal and (2) Temporary Power Plant and Boil-off Gas Power Plant to be two additional separate concessions for the Initial Phase of the Dawei SEZ Development as described above. The seperation of the Concession Agreements will ensure that the liability for each of the concessions only falls to the respective consortium members of that particular initial project. This separation of Concession Agreements will also fulfill the requirements from our prospective lenders. More discussion can be made during the Negotiation Phase between the Applicant and the DSEZ Authority.

It is critical to note that all of the initial projects and its components as aforementioned are integrated to the overall successful development of the Initial Phase Development of the Dawei SEZ, therefore, the full support from the DSEZ Authority in granting the relevant permits and licenses and other supportive issues to be later described in this Application for each of the projects is highly essential not only for us to meet the tentative schedule to be later described but also to attain the necessary financing from our prospective lenders. Besides the Two-lane road from the DSEZ to the Thai border, the other initial projects development plan is subject to the phasing of the initial industrial estate development.

The development and operation plan is to develop an industrial estate area initially totaling 7 sq.km. including its related facilities adjacent to the Main Road as indicated in the map below as Phase A, to be leased to the various labor intensive and medium industries wishing to establish their factories in the Dawei SEZ on an environmentally friendly basis; wherein additional land will be granted in phases subjected to the performance monitoring terms and conditions as agreed upon with the DSEZ Authority. Altogether the industrial estate area for sale will total 27 sq.km as specified in the TOR. To develop this total land area of 27 sq. km., we estimate the time for development and sales to cover a period of 8 years (2016-2023) by dividing the sales plan into 4 phases, namely: Phase A (Y2016-2017), Phase B (Y2018-2019), Phase C (Y2020-2021) and Phase D (Y2022-2023) as shown in the figure below.



Overall Layout and Industrial Estate Zoning Plan

In conjunction with the initial industrial estate to be developed as mentioned above, the other Initial Projects or supporting infrastructure will also be developed to support the demand and functionality of the investors/customers in order to operate their businesses and factories sufficiently in the Dawei SEZ.

Lastly, as for the compensation and relocation plan, we propose the facilitation of the DSEZ Authority to utilize the existing Bawah Resettlement site with its existing facilities to accommodate the affected villagers in the Initial Phase Development estimated at 78 households (except for those affected along the two-lane road). Those along the Two-lane road is propose to relocated to the current Gad Tra Khee Resettlement Site at KM 145 north of the Two-lane road which will accommodate the Gad Tra Khee and Hti Khee Village.

Technical Plan for the Dawei SEZ Initial Phase Development

1. **Small Port**

The Small Port is located on the north bank of the Pan Din In river mouth at approximately 3 Kilometers southward from the Dawei SEZ area. The existing jetty at the Pan Din In river mouth will be utilized as the first berth of the Small Port (to serve the initial demand as well as during the construction period of the Initial Phase. The Small Port consists of an approach channel, basin, breakwaters, shore protection, reinforced concrete jetty structure (i.e. platform, dolphin and trestle), storage yard and other facilities, machinery, equipment related to its operation, as well as a coastal road for the transport of cargo to and from the port and linking it with the Main Road within the Dawei SEZ. The access channel has been designed to accommodate large LNG carriers in accordance with PIANC standards and is more than adequate to facilitate the cargo vessels at the small port. Protection from adverse sea states is afforded by the provision of breakwaters on both the north and south sides of the harbor entry. Navigation aids will be available for ship maneuvering.

The future demand of the Dawei SEZ initial phase industrial estate has been forecasted and plans to increase the capacity of the Small port by constructing a 2nd berth are being developed. The 1st berth of the small port will be sufficient for the expected cargo demand up until the completion of the 2nd berth at the beginning of 2019. The Small Port with 2 berths could be used at full capacity to accommodate the expected throughput increase from the initial industrial estate.

2. **LNG Terminal**

Rapid development of the Dawei SEZ Initial Phase Development cannot be contemplated without access to reasonably priced natural gas for power generation and industries. Present forecasts indicate that demand for natural gas for early stage of development will materialize from mid to 2016 onward albeit in small quantity and increasing rapidly as more industries start to be built and operated. The Dawei LNG Terminal will be located in a 15 acres plot at the Dawei Small Port.

The LNG Terminal will provide Throughput Services to the Dawei SEZ. Throughput Services will include the following services:

i) Berthing of LNG carriers at the LNG terminal;

ii) Receipt of LNG through unloading of LNG carriers at the LNG terminal:

iii) Temporary storage of the LNG;

iv) Pumping and vaporization of the LNG; and,

v) Send-out of the vaporized LNG into the downstream pipeline networks supplying gas to power plant and other industrial customers.

3. **Boil-Off Gas Power Plant**

The Boil-off Gas Power Plant will consist of 7 units (6 operating and 1 standby) of 2.5 MW containerized gas generator which will allow flexibility to handle the varying volume of boil-off gas from Dawei LNG Terminal which will be higher in the day and lower in the night as well as the seasonal high and low throughout the year. The boil-off gas volume is forecasted to be between 3 and 4 MMSCFD (Million Standard Cubic Feet per Day) which will be able to generate between 12 and 16 MW. The Boil-off Gas Power Plant will be operational at the same time as the Dawei LNG Terminal which is projected to be operational in January 2017.

4. **Two-Lane Road**

For land transport, the already existing Two-lane Road from the Thai border to the Dawei SEZ will be upgraded to asphalt specification based on the Class 4 of the Highway Design Standards of the Department of Highways (DOH), Thailand covering a distance of 138 km with two directions of 3.5 m width (7 m. of carriage roadway width) with 1 m pave shoulder (7 on 9 m road type) with the right-of-way ("R.O.W") of 40 m. starting from the DSEZ at Sta. 18+500 to Sta.156+500 at the Thai-Myanmar border, while maintaining the Two-Lane Road's alignment on the existing access road as much as possible. This road will be a toll road and will collect fee for the passing vehicles at four toll booths along the road with related facilities such Service center and Vista point.

APPENDIX 2B

BRIEF INFORMATION OF ITD

APPENDIX 2B

BRIEF INFORMATION ON ITD

Brief Information on ITD

ITD is one of the largest construction and engineering company in Thailand and Southeast Asia. The company was established in 1958 and was listed as a public company in the Stock Exchange of Thailand in 1994. As of the end of 2014, ITD had a registered capital of 5,279.84 million Baht (about 173,601.14 MM USD). Its total revenue in 2014 was about 49,186.64 million Baht (about 1,617,256.72 MM USD.)

ITD, together with its subsidiaries, is engaged in the civil and infrastructure construction and development business in Thailand and internationally. The company focuses on various projects consisting of buildings; industrial plants; pipelines and utility works, such as oil, gas, and water transmission pipelines, conduit and manhole systems, and storage tanks; highways, railways, high speed rails, viaducts, track works, Mass Rapid Transit (MRT) systems, bridges, and expressways; airports, ports, and marine works; dams, tunnels, and power plants; steel structures; telecommunications; and mining projects.

ITD is also involved in ship charter; coal digestion services; manufacture and distribution of cement; production and distribution of electricity; rock quarrying, processing, and distribution; and manufacture, distribution, and installation of concrete panels and concrete products for real estate, as well as provides foundation and piling work services. In addition, the company produces and sells vessels and equipment; manufactures and distributes steel pipes for civil construction; leases/sells sheet piles and beams; and constructs airport terminals, multi-purpose ports, underground electrical train stations, and water drainage tunnels, as well as involved in real estate and mining business. Further, it operates as a service agent; and contractor for track doubling, and overburden and lignite removal services.

APPENDIX 2C

NAME OF MEMBERS OF THE ESIA STUDY TEAM

Position	Name	Qualification	Experience (years)
1. Team Leader / Environmental Expert	Dr. Sirinimit Boonyuen	B.Sc., M.Sc., Ph.D.	34
2. EIA Expert	Dr. Sermpol Rattasuk	Ph.D., M.Eng. B.Sc. (Hons.)	48
3. Project Manager / Land Use / Agricultural Specialist	Mr. Plian Maneeya	B.Sc., M.Sc.	25
4. Project Coordinator / Environmental Scientist	Dr. Supichaya Wongchinawit	B.Sc., M.Sc., Ph.D.	15
5. Air Quality / Noise Specialist	Ms. Narachan Pimsuca	B.Sc., M.Sc.	9
6. Water Quality / Aquatic Ecological Specialist	Mr. Nipat Somkleep	B.S., M.S.	14
7. Terrestrial Ecology Specialist	Mr. Apichai Horcharoensap	B.Sc.	11
8. Environmental Scientist	Mr.Natt Dumkum	B.S., M.Sc.	9
9. Socio-Economic / Public Consultation Specialist	Dr. Siriluck Sirisup	B.Sc., M.Sc., Ph.D.	36
10. Socio-Economic / Public Consultation Specialist	Mr. Sai Kyawtun Oo	B.Art., M.Sc.	15
11. Public Health Specialist	Mr. Kunakorn Toomjeen	B.S., M.S.	6

APPENDIX 3A

CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES OF ITD

APPENDIX 3A

CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES OF ITD

1. ITD

ITD's corporate policy on Occupational Safety, Health, and Working Environment are as follows:

The Company recognizes the importance of occupational safety, health, and working environment which affect our employees. The Company, therefore, has established the policy on the said issue as follows:

1. Occupational safety and good working environment maintenance are responsibilities of all employees to cooperate and perform in order to afford safety to themselves, company, and related person.
2. The Company shall encourage all employees to understand and recognize occupational safety and health concern in their operation.
3. The Company recognizes the importance of operational accident prevention.
4. The Company shall support and promote the improvement of working environment and working with safety and healthy.
5. The management shall supervise occupational safety, health, and working environment of the subordinates according to related Company's regulation.
6. The Company shall support and promote safety campaign for maximum effectiveness of an application of the policy in practice.
7. The Company shall monitor and evaluate an application of the policy on occupational safety, health, and working environment for efficient and effectiveness according to legal requirements

Environmental concerns are explicitly stated as one element, item 6, of ITD's policy on Corporate Social Responsibility as follows:

The Company has a guideline for the Corporate Social Responsibility as follows:

1. The Corporate Governance: The management system of the Company shall have efficiency, transparency, and accountability for the confidence of shareholders, investors, stakeholders and related parties and lead to the sustainable growth of the Company.
2. The Business Ethics: The Company believed that moral in business operation can benefit the Company in the long-term. The Company will avoid engaging the activities which are against morality.
3. The Respect to Human Right and Labor Equity: Human resource is the effective factor to drive the business and add value for the corporate. The Company, therefore, shall improve their working environment and provide them a chance to training for skill enhancement.

4. The Responsibility to the Consumer: The construction business is high competition. The success of previous project and the satisfaction of the customer can benefit to the Company competitive advantage. The Company, therefore, shall maintain its standard of goods and services and can be the part of society to mitigate the social problems.

5. The Community Development: The community's sustainability is one of the significant factors which can support the Company's business. The Company will establish the activities which can strengthen the community for example the education support, human resource development, employment creation, and other development project.

6. The Environmental Concern: The people nowadays concern for the environment. The operation with suitable environmental impact protection system can help the Company timely complete the project. The Company, therefore, shall set the environmental impact protection system comply with laws and regulation and participate in environmental activities with other part of society.

7. CSR Report: The Company will disclose the information related to CSR activities of the Company in the annual report.

APPENDIX 4A

GAS ENGINE GENERATOR

MODEL CUMMINS QSK60

Natural gas generator set QSK60 series engine

Specification sheet

Our energy working for you.™

Power Generation

Description

This Cummins Power Generation gas generator set is a fully integrated power generation system utilizing state of the art technology that results in optimum performance and efficient use of fuel for continuous duty, CHP and peaking applications.

This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.

The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design.

Features

Exhaust emissions – Lean burn technology provides exhaust emissions levels as low as 250 mg/Nm³ (0.5 g/hp-hr) NO_x.

Cummins® high efficiency gas engine – State of the art lean burn engine utilizes Miller cycle combustion and full authority electronic engine management system that provides low emissions and high efficiency.

Permanent magnet generator (PMG) – Excitation system offers enhanced motor starting and fault clearing short circuit capability.

Alternator – Several alternator sizes offer selectable voltage and temperature rise with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short circuit capability, bearing and stator RTDs, anti-condensation heater, class F or H insulation (see alternator datasheet for details). Mechanically strengthened for use on utility paralleling with unreliable grid.

Control system – The PowerCommand 3.3 generator set control is standard equipment and provides total genset system integration including full paralleling capability in grid or load share mode, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and a user interface panel installed onto the genset. Optional remote operator panels are also available.

Cooling system – The generator set is equipped with the capability to interface with a remote radiator or heat exchanger.

Warranty and service – Backed by a comprehensive warranty and worldwide distributor network that can provide all levels of service from replacement parts to performance guarantee programs.

50 Hz				60 Hz			
New Model	Old Model	kW	Configuration	New Model	Old Model	kW	Configuration
C995 N5C	None	995	4 pole direct drive				
C1200 N5C	None	1200	4 pole direct drive	C1000 N6C	GQKB	1000	6 pole direct drive
C1400 N5C	GQKC	1400	4 pole direct drive	C1100 N6C	GQKC	1100	6 pole direct drive

* Genset is capable of operating between 0.8 lagging and 1.0 power factor. All fuel consumption and heat balance data is at 1.0 power factor.

* Listed ratings are for continuous grid parallel applications. Contact ESB Application Engineering for Standby and Island Mode applications.

©2006 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, AmpSentry and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
S-1552c (6/06)

Generator set specifications

Governor regulation class	ISO 8528 Part 1, Class G1 with exceptions - see PTS (Prototype Test Support) Data Sheet
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9
Single step load pickup	Minimum 25% see PTS data sheet for details

Engine specifications

Design	4 cycle, V-block, turbocharged low temperature aftercooled
Bore	159 mm (6.25 in)
Stroke	190 mm (7.48 in)
Displacement	60.3 liters (3685 in³)
Cylinder block	Cast iron, V16
Battery charging alternator	None
Starting voltage	24 volt negative ground
Fuel system	Lean burn
Ignition system	Individual coil on plug
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Full flow and bypass filters
Breather	Breather filter

Alternator specifications

Design	Brushless, 4 pole, revolving field
Stator	2/3 pitch
Rotor	Two bearing
Insulation system	Class F or H see ADS (Alternator Data Sheet) for details
Standard temperature rise	105 °C (221 °F) continuous @ 40 °C (104 °F) ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 3

Available voltages

60 Hz Three phase line-neutral/line-line				50 Hz Three phase line-neutral/line-line			
• 220/380	• 230/416	• 240/416	• 255/440	• 220/380	• 230/400	• 240/415	• 254/440
• 277/480	• 347/600	• 1620/13200	• 2400/4160	• 1905/3300	• 3610/6600	• 5774/10000	• 6250/11000
• 7200/12470	• 7970/13800						

Note: Some voltages may not be available on all models - consult factory for availability.

Generator set options and accessories

Engine
- ☐ NO_x 250 mg/Nm³
- ☐ NO_x 350 mg/Nm³
- ☐ NO_x 500 mg/Nm³
- ☐ NO_x 1.0 g/hp-hr
- ☐ NO_x 0.5 g/hp-hr

Alternator
- ☐ 80 °C (176 °F) rise alternator
- ☐ 105 °C (221 °F) rise alternator

Generator set
- ☐ CE Certification

Control panel
- ☐ Remote operator panel with HMI320
- ☐ Remote operator panel with HMI420

Accessories
- ☐ Batteries
- ☐ Battery charger
- ☐ Exhaust silencers
- ☐ Gas train
- ☐ Radiators
- ☐ Bladder expansion tank
- ☐ Heat exchanger
- ☐ Exhaust heat recovery

Note: Some options may not be available on all models - consult factory for availability.

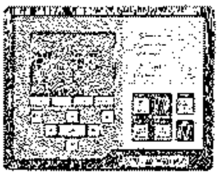
Our energy working for you.™

www.cumminspower.com

© 2009 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, AmpSentry and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
S-1552c (6/09)

Power Generation

PowerCommand® 3.3 control system



PowerCommand control system is a microprocessor-based genset monitoring, metering and control system designed to meet the demands of today's engine driven gensets. The integration of all control functions into a single control system provides enhanced reliability and performance, compared to conventional genset control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied. Major features include:

- AmpSentry™ protection providing a full range of alternator protection functions matched to the alternator provided.
- Extended Paralleling (Peak Shave/Base Load) regulates the genset real and reactive power output while paralleled to the utility. Power can be regulated at either the genset or utility bus monitoring point.
- Digital frequency synchronization and voltage matching.
- Isochronous Load Share
- Droop KW and KVAR Control
- Real time clock for fault and event time stamping.
- Real time clock for start/stop to initiate a test with or without load, or a Base Load or Peak Shave session.
- Digital voltage regulation. Three phase full wave FET type regulator.
- Genset/Engine monitoring and protection.
- Utility/AC Bus metering and protection
- Modbus® interface for interconnecting to customer equipment.

Operator/display panel
- Auto/Manual/Run/Stop mode selectors
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustment
- Circuit breaker position indication and manual control
- 320 x 240 pixels graphic LED backlight LCD.
- Multiple language support

Engine Protection
- Engine vitals - oil temperature and pressure, coolant temperature and levels
- Derate
- Configurable alarm and status inputs
- Emergency stop
- Low and high battery voltage warning
- Weak battery warning
- Dead battery shutdown
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout

Engine Data
- Oil temperature and pressure
- Coolant temperature and pressure, HT and LT
- Intake manifold pressure and temperature
- Exhaust temperature and pressure
- Engine electronics temperature and DC voltage
- Gas inlet and downstream pressures, mass flow rate, and control valve position
- Spark advance and knock level/count, per cylinder
- Lube oil status, priming status
- Oil and engine heater status
- Start system status
- Compressor and compressor bypass status
- Auxiliary power supply status

AmpSentry™ alternator protection
- Overcurrent and short circuit shutdown
- Single and three phase fault current regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning and load shed alarm output
- Reverse power and Var shutdown
- Excitation fault

Alternator data
- AC voltage, line-to-line and line-to-neutral
- Three phase AC current
- Frequency
- Total and individual phase power factor, kW and KVA
- Alternator heater status
- Winding and bearing temperatures

Other data
- Genset hardware data
- Data logs – operational data
- Fault history – up to 32 events
- Start attempts, starts, running hours, kW hours
- Engine data – operational data, monitored status functions, auxiliary system inputs, etc.
- Service adjustments - operational, customer configurable set up, calibration, etc.

Paralleling data, functions and protection
- Genset and Utility/AC Bus Source AC Metering
- First Start Sensor™ System
- Active Digital phase lock loop synchronizer
- Sync check
- Isochronous kW and kVAR load share controls
- kW import/export and kVAR/PF control for extended utility (mains) paralleling
- Multiple Genset Load Demand control
- Power Transfer Control
- Breaker Control and status monitoring/warning
- Inputs for remote kW and kVAR control

For further detail on PowerCommand™ 3.3 see document S-1570

Our energy working for you.™

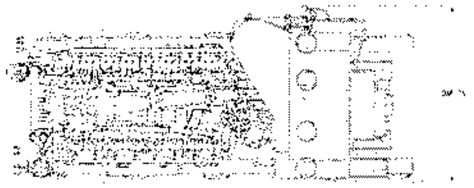
www.cumminspower.com

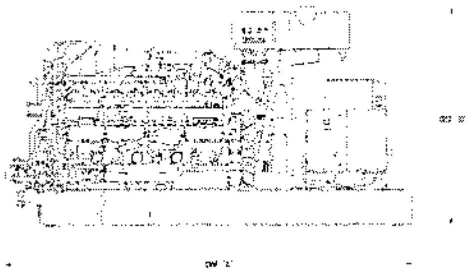
©2009 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, AmpSentry and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
S-1552c (6/09)

Power Generation

Base load (continuous) definitions

Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating. Consult authorized distributor for rating. (Equivalent to Continuous Power in accordance with ISO 8528, ISO 3046, AS2789, DIN 6271, and BS 5514). This rating is not applicable to all generator set models.





This outline drawing is to provide representative configuration details for Model series only.

See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Generator set data sheets

60 Hz

Model	Data sheet	MN*	Emissions g/hp-hr	LT (°C)	HT (°C)
C1000 N6C	D-3470	70	1.0	40	90
C1000 N6C	D-3471	76	0.5	40	90
C1000 N6C	D-3472	62	1.0	40	90
C1100 N6C	D-3475	76	1.0	40	90
C1100 N6C	D-3476	70	0.5	40	90
C1100 N6C	D-3477	62	1.0	40	90

50 Hz

Model	Data sheet	MN*	Emissions mg/Nm³	LT (°C)	HT (°C)
C995 N5C	D-3467	60	500	50	90
C1200 N5C	D-3473	60	500	40	90
C1400 N5C	D-3347	66	500	40	90
C1400 N5C	D-3346	64	250	40	90
C1400 N5C	D-3357	66	350	40	90
C1400 N5C	D-3356	72	500	40	90

* MN = Methane

Dimensions and weights

Model	Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Weight* wet kg (lbs)
C1000 N6C	5120 (202)	2320 (86)	2770 (109)	15625 (34375)
C1100 N6C	5120 (202)	2320 (86)	2770 (109)	15625 (34375)
C995 N5C	5120 (202)	2320 (88)	2770 (109)	14440 (31770)
C1200 N5C	5120 (202)	2320 (86)	2770 (109)	15625 (34375)
C1400 N5C	5120 (202)	2320 (88)	2770 (109)	15625 (34375)

* Weights represent a set with standard features. See outline drawings for weights of other configurations.

Americas
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone 763 574 5000
USA toll-free 877 769 7669
Fax 763 574 5298

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave.
Manston Ramsgate
Kent CT 12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

Asia Pacific
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

Our energy working for you.™

www.cumminspower.com

©2003 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, AmpSentry and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
S-1552b (6/03)

Power Generation

MODEL GE JENBACHER JGS320

0.01 Technical Data (at genset)

Data at:				Full load	Part Load	
Fuel gas LHV		kWh/Nm³		9,5		
				100%	75%	50%
Energy input		kW	[2]	2.655	2.046	1.436
Gas volume		Nm³/h	*)	279	215	151
Mechanical output		kW	[1]	1.095	821	548
Electrical output		kW el.	[4]	1.067	798	529
Heat to be dissipated			[5]			
~ Intercooler 1st stage (Engine jacket water cooling circuit)	40°C	kW		218		
~ Intercooler 2nd stage (Low temperature circuit)		kW		79		
~ Lube oil (Engine jacket water cooling circuit)		kW		116		
~ Jacket water		kW		353		
~ Surface heat	ca.	kW	[7]	82		
~ Balance heat		kW		27		
Spec. fuel consumption of engine		kWh/kWh	[2]	2,43	2,49	2,62
Lube oil consumption	ca.	kg/h	[3]	0,33	~	~
Electrical efficiency		%		40,2%	39,0%	36,8%

*) approximate value for pipework dimensioning
[_] Explanations: see 0.10 - Technical parameters

All heat data is based on standard conditions according to attachment 0.10. Deviations from the standard conditions can result in a change of values within the heat balance, and must be taken into consideration in the layout of the cooling circuit/equipment (Intercooler; emergency cooling; ...). In the specifications in addition to the general tolerance of +/- 8% on the thermal output a further reserve of 10% is recommended for the dimensioning of the cooling requirements.

Main dimensions and weights (at genset)

Length	mm	~ 5.700
Width	mm	~ 1.700
Height	mm	~ 2.300
Weight empty	kg	~ 11.100
Weight filled	kg	~ 11.600

Connections

Jacket water inlet and outlet	DN/PN	80/10
Exhaust gas outlet	DN/PN	250/10
Fuel gas (at gas train)	DN/PN	80/16
Fuel Gas (at genset)	DN/PN	100/10
Water drain ISO 228	G	½"
Condensate drain	mm	18
Safety valve - jacket water ISO 228	DN/PN	2x1½"/2,5
Lube oil replenishing (pipe)	mm	28
Lube oil drain (pipe)	mm	28
Jacket water - filling (flex pipe)	mm	13
Intercooler water-Inlet/Outlet 1st stage	DN/PN	80/10
Intercooler water-Inlet/Outlet 2nd stage	DN/PN	65/10

Output / fuel consumption

ISO standard fuel stop power ICFN	kW	1.095
Mean effe. press. at stand. power and nom. speed	bar	18,00
Fuel gas type		Natural gas
Based on methane number|Min. methane number	MZ d)	94|70
Compression ratio	Epsilon	11,80
Min./Max. fuel gas pressure at inlet to gas train	mbar	80-450
Allowed Fluctuation of fuel gas pressure	%	± 10
Max. rate of gas pressure fluctuation	mbar/sec	10
Maximum Intercooler 2nd stage inlet water temperature	°C	40
Spec. fuel consumption of engine	kWh/kWh	2,43
Specific lube oil consumption	g/kWh	0,30
Max. Oil temperature	°C	90
Jacket-water temperature max.	°C	95
Filling capacity lube oil (refill)	lit	~ 342

c) Lower gas pressures upon inquiry
d) based on methane number calculation software AVL 3.1 (calculated without N2 and CO2)

0.02 Technical data of engine

Manufacturer		GE Jenbacher
Engine type		J 320 GS-C105
Working principle		4-Stroke
Configuration		V 70°
No. of cylinders		20
Bore	mm	135
Stroke	mm	170
Piston displacement	lit	48,67
Nominal speed	rpm	1.500
Mean piston speed	m/s	8,50
Length	mm	3.320
Width	mm	1.358
Height	mm	2.065
Weight dry	kg	5.000
Weight filled	kg	5.500
Moment of inertia	kgm²	8,61
Direction of rotation (from flywheel view)		left
Flywheel connection		SAE 18"
Radio interference level to VDE 0875		N
Starter motor output	kW	7
Starter motor voltage	V	24

Thermal energy balance

Energy input	kW	2.655
Intercooler	kW	297
Lube oil	kW	116
Jacket water	kW	353
Exhaust gas total	kW	766
Exhaust gas cooled to 180 °C	kW	502
Exhaust gas cooled to 100 °C	kW	639
Surface heat	kW	54
Balance heat	kW	27

Exhaust gas data

Exhaust gas temperature at full load	°C [8]	460
Exhaust gas mass flow rate, wet	kg/h	5.693
Exhaust gas mass flow rate, dry	kg/h	5.264
Exhaust gas volume, wet	Nm³/h	4.503
Exhaust gas volume, dry	Nm³/h	3.988
Max.admissible exhaust back pressure after engine	mbar	60

Combustion air data

Combustion air mass flow rate	kg/h	5.502
Combustion air volume	Nm³/h	4.256
Max. admissible pressure drop in front of intake-air filter	mbar	10

Sound pressure level

Aggregate b)	dB(A) re 20µPa	96
31,5 Hz	dB	78
63 Hz	dB	90
125 Hz	dB	92
250 Hz	dB	89
500 Hz	dB	92
1000 Hz	dB	90
2000 Hz	dB	89
4000 Hz	dB	87
8000 Hz	dB	90
Exhaust gas a)	dB(A) re 20µPa	122
31,5 Hz	dB	97
63 Hz	dB	108
125 Hz	dB	118
250 Hz	dB	110
500 Hz	dB	113
1000 Hz	dB	114
2000 Hz	dB	117
4000 Hz	dB	115
8000 Hz	dB	114

Sound power level

Aggregate	dB(A) re 1pW	117
Measurement surface	m²	109
Exhaust gas	dB(A) re 1pW	130
Measurement surface	m²	6,28

a) average sound pressure level on measurement surface in a distance of 1m according to DIN 45635, precision class 2.
b) average sound pressure level on measurement surface in a distance of 1m (converted to free field) according to DIN 45635, precision class 3.
The spectra are valid for aggregates up to bmpe=18 bar. (add savety margin of 1dB to all values per increase of 1 bar pressure).
Operation with 1200 rpm see upper values, operation with 1800 rpm add 3 dB to upper values.
Engine tolerance ± 3 dB

0.03 Technical data of generator

Manufacturer		STAMFORD e)
Type		PE 734 E e)
Type rating	kVA	1.710
Driving power	kW	1.095
Ratings at p.f. = 1,0	kW	1.067
Ratings at p.f. = 0,8	kW	1.058
Rated output at p.f. = 0,8	kVA	1.322
Rated current at p.f. = 0,8	A	1.908
Frequency	Hz	50
Voltage	V	400
Speed	rpm	1.500
Permissible overspeed	rpm	2.250
Power factor lagging		0,8 - 1,0
Efficiency at p.f. = 1,0	%	97,4%
Efficiency at p.f. = 0,8	%	96,6%
Moment of inertia	kgm²	44,49
Mass	kg	3.506
Radio interference level to VDE 0875		N
Construction		B3/B14
Protection Class		IP 23
Insulation class		H
Temperature (rise at driving power)		F
Maximum ambient temperature	°C	40
Total harmonic distortion	%	1,5

Reactance and time constants

xd direct axis synchronous reactance	p.u.	2,06
xd' direct axis transient reactance	p.u.	0,12
xd'' direct axis sub transient reactance	p.u.	0,09
Td'' sub transient reactance time constant	ms	20
Ta Time constant direct-current	ms	20
Tdo' open circuit field time constant	s	2,46

e) GE Jenbacher reserves the right to change the generator supplier and the generator type. The contractual data of the generator may thereby change slightly. The contractual produced electrical power will not change.

0.05 Cooling water circuit

Oil - heat (Engine jacket water cooling circuit)

Nominal output	kW	116
Max. Oil temperature	°C	90
Nominal pressure of engine jacket water	bar	6
Loss of nominal pressure of engine jacket water	bar	0,20
Safety valve - max press. set point	bar	2,50

Engine jacket water - heat (Engine jacket water cooling circuit)

Nominal output	kW	353
Max. engine jacket water temperature (outlet engine)	°C	90
Engine jacket water flow rate	m³/h	29,8
Safety valve - max press. set point	bar	2,50

Mixture Intercooler (1st stage) (Engine jacket water cooling circuit)

Nominal output	kW	218
Max. inlet cooling water temp. (intercooler)	°C	73,4
Nominal pressure of cooling water	bar	6
Loss of nominal pressure of engine jacket water	bar	0,40
Safety valve - max press. set point	bar	2,50

Mixture Intercooler (2nd stage) (Low temperature circuit)

Nominal output	kW	79
Max. inlet cooling water temp. (intercooler)	°C	40
Aftercooler water flow rate	m³/h	25,0
Nominal pressure of cooling water	bar	6
Intercooler water pressure drop	bar	0,20
Safety valve - max press. set point	bar	2,50

0.10 Technical parameters

All data in the technical specification are based on engine full load (unless stated otherwise) at specified temperatures and the methane number and subject to technical development and modifications.

All pressure indications are to be measured and read with pressure gauges (psi.g.).

(1) At nominal speed and standard reference conditions ICFN according to DIN-ISO 3046 and DIN 6271, respectively

(2) According to DIN-ISO 3046 and DIN 6271, respectively, with a tolerance of + 5 %.
Efficiency performance is based on a new unit (immediately upon commissioning).Effects of degradation during normal operation can be mitigated through regular service and maintenance work;

(3) Average value between oil change intervals according to maintenance schedule, without oil change amount

(4) At p. f. = 1.0 according to VDE 0530 REM / IEC 34.1 with relative tolerances

(5) Total output with a tolerance of +/- 8 %

(6) According to above parameters (1) through (5)

(7) Only valid for engine and generator; module and peripheral equipment not considered

(8) Exhaust temperature with a tolerance of +/- 8 %

Radio interference level

The ignition system of the gas engines complies the radio interference levels of CISPR 12 and EN 55011 class B, (30-75 MHz, 75-400 MHz, 400-1000 MHz) and (30-230 MHz, 230-1000 MHz), respectively.

Definition of output

- ISO-ICFN continuous rated power:
  Net break power that the engine manufacturer declares an engine is capable of delivering continuously, at stated speed, between the normal maintenance intervals and overhauls as required by the manufacturer. Power determined under the operating conditions of the manufacturer's test bench and adjusted to the standard reference conditions.
- Standard reference conditions:

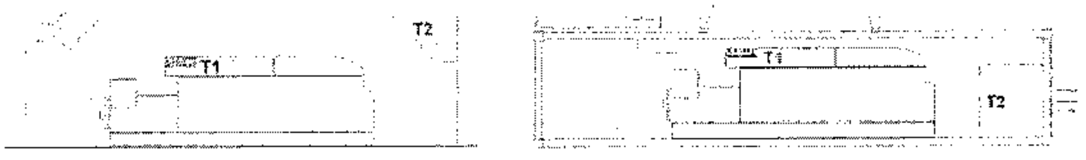
Barometric pressure:	1000 mbar (14.5 psi) or 100 m (328 ft) above sea level
Air temperature:	25°C (77°F) or 298 K
Relative humidity:	30 %

- Volume values at standard conditions (fuel gas, combustion air, exhaust gas)

Pressure:	1013 mbar (14.7 psi)
Temperature:	0°C (32°F) or 273 K

Output adjustment for turbo charged engines

Standard rating of the engines is for an installation at an altitude ≤ 0 m and an air intake temperature ≤ 40 °C (T1). Maximum room temperature: 50°C (T2) -> engine stop



If the actual methane number is lower than the specified, the knock control responds. First the ignition timing is changed at full rated power. Secondly the rated power is reduced. These functions are carried out by the engine management system.

Parameters for the operation of GE Jenbacher gas engines
The genset fulfills the limits for mechanical vibrations according to ISO 8528-9.
The following "Technical Instruction of GE JENBACHER" forms an integral part of a contract and must be strictly observed: **TI 1100-0110, TI 1100-0111 and TI 1100-0112.**
If possible, railway trucks must not be used for transport (**TI 1000-0046**).

Parameters for the operation of control unit and the electrical equipment
Relative humidity 50% by maximum temperature of 40°C.
Altitude up to 2000m above the sea level.

Parameters for using a gas compressor
The gas quantity indicated under the technical data refers to standard conditions with the given calorific value. The actual volume flow (under operating conditions) has to be considered for dimensioning the gas compressor and each gas feeding component – it will be affected by:

- Actual gas temperature (limiting temperature according to TI 1000-0300)
- Gas humidity (limiting value according to TI 1000-0300)
- Gas Pressure
- Calorific value variations (can be equated with methane (CH_4) variations in the case of biogas)
- The gas compressor is designed for a max. relative under pressure of 15 mbar(g) (0.22 psi) and a inlet temperature of 40°C (104°F), if within scope of supply GE Jenbacher

APPENDIX 5A

RESULTS OF WIND SPEED AND DIRECTION

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co., Ltd.

PROJECT NAME : EIA for 15 MW Temporary Power Plant

PROJECT NO. : 10P3145

MEASURED POINT : Pagaw Zoon Village (UTM 409304E 1578442N)

MEASURED DATE : 29/01/2015-1/02/2015

MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan

ANALYSIS NO. : WS-WD58003/2

TIME \ DATE	29-30 January 2015		30-31 January 2015		31 January-1 February 2015	
	WS	WD	WS	WD	WS	WD
11.00-12.00 AM	0.4	W	0.4	SW	0.4	SW
12.00 AM-01.00 PM	0.4	WNW	0.4	S	0.4	WSW
01.00-02.00 PM	0.4	SW	0.4	WNW	0.4	NE
02.00-03.00 PM	0.9	W	0.9	W	0.9	W
03.00-04.00 PM	0.9	WSW	0.9	W	0.4	WSW
04.00-05.00 PM	0.9	W	0.4	WSW	0.4	W
05.00-06.00 PM	0.4	SW	0.4	WSW	0.4	W
06.00-07.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
07.00-08.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
08.00-09.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
09.00-10.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
10.00-11.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
11.00-12.00 PM	0.0	Calm	0.0	Calm	0.0	Calm
12.00 PM-01.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
01.00-02.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
02.00-03.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
03.00-04.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
04.00-05.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
05.00-06.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
06.00-07.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
07.00-08.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
08.00-09.00 AM	0.0	Calm	0.0	Calm	0.0	Calm
09.00-10.00 AM	0.0	Calm	0.0	Calm	0.4	ENE
10.00-11.00 AM	0.0	Calm	0.0	Calm	1.3	NE

Remark : WS = Wind Speed (m/s) WD = Wind Direction Calm = <0.4 m/s

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

(MR. SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
13/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

GRL/LAB/RE5700109999/P3145_WS-WD58003/2

13-02-2015 TEAM GROUP

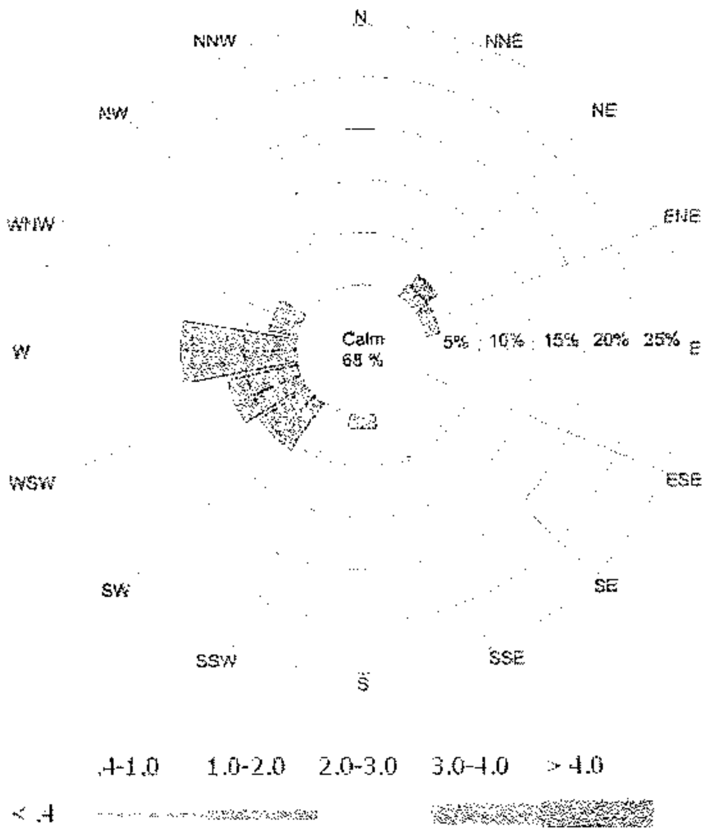
GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	EIA for 15 MW Temporary Power Plant
PROJECT NO.	:	10P3145
MEASURED POINT	:	Pagaw Zoon Village (UTM 409304E 1578442N)
MEASURED DATE	:	29/01/2015-1/02/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD58003/2

WIND ROSE PLOT



DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	EIA for 15 MW Temporary Power Plant
PROJECT NO.	:	10P3145
MEASURED POINT	:	Pale Gu Village (UTM 412472E 1580212N)
MEASURED DATE	:	29/01/2015-1/02/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD58003/1

DATE / TIME	29-30 January 2015		30-31 January 2015		31 January-1 February 2015	
	WS	WD	WS	WD	WS	WD
03.00-04.00 PM	4.1	WSW	3.3	W	3.4	WSW
04.00-05.00 PM	0.6	WSW	2.9	WSW	3.2	WSW
05.00-06.00 PM	0.7	SE	1.7	SSW	2.0	WSW
06.00-07.00 PM	0.4	ENE	0.8	SSE	0.6	SSE
07.00-08.00 PM	0.6	E	0.5	ENE	0.5	NW
08.00-09.00 PM	0.7	NE	0.5	ENE	0.9	ESE
09.00-10.00 PM	0.7	NE	0.7	NNE	0.9	ESE
10.00-11.00 PM	0.5	NE	0.7	NE	1.4	W
11.00-12.00 PM	0.5	WNW	0.7	W	1.0	W
12.00 PM-01.00 AM	0.4	N	0.4	NW	1.1	NE
01.00-02.00 AM	0.5	NE	0.7	WSW	1.2	NW
02.00-03.00 AM	0.5	NE	1.0	NNE	1.1	N
03.00-04.00 AM	0.8	NE	0.9	NNE	1.1	NE
04.00-05.00 AM	0.5	NE	0.7	NNE	1.4	NE
05.00-06.00 AM	0.6	WNW	0.5	NW	1.3	NE
06.00-07.00 AM	1.0	WSW	1.0	WSW	1.1	ENE
07.00-08.00 AM	0.5	WNW	0.6	NW	1.0	NE
08.00-09.00 AM	1.0	SE	1.6	WSW	0.9	NE
09.00-10.00 AM	1.1	SSE	1.2	SSE	0.9	ESE
10.00-11.00 AM	1.2	SE	1.2	SE	2.0	E
11.00-12.00 AM	1.3	ESE	1.2	ESE	2.5	E
12.00 AM-01.00 PM	1.3	ESE	1.1	E	3.9	E
01.00-02.00 PM	2.4	WSW	2.1	SSW	3.4	ESE
02.00-03.00 PM	4.7	WSW	3.7	WSW	3.1	E

Remark : WS = Wind Speed (m/s) WD = Wind Direction Calm = <0.4 m/s

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

(MR. SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
13/02/2015

(MR. PATRAWUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

13-02-2015 TEAM GROUP

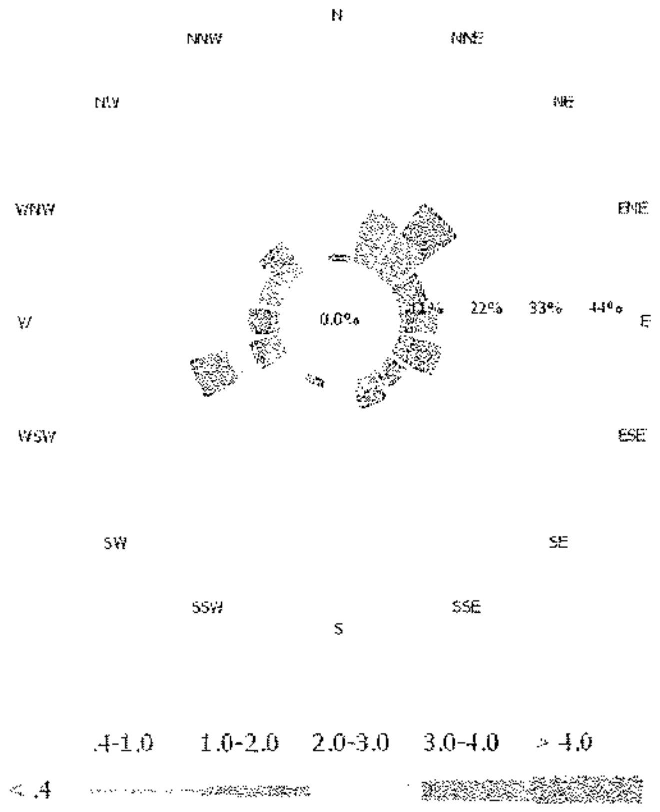
GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	EIA for 15 MW Temporary Power Plant
PROJECT NO.	:	10P3145
MEASURED POINT	:	Pale Gu Village (UTM 412472E 1580212N)
MEASURED DATE	:	29/01/2015-1/02/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Pattavut Tadsuan
ANALYSIS NO.	:	WS-WD58003/1

WIND ROSE PLOT



DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

13-02-2015

TEAM GROUP

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7720 Fax: +66 2 363 7724 www.gfe.co.th

The Geotechnical Expert

ISO 9001:2008 CERTIFIED

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei SEZ Initial Phase Development 370 MW Combined Cycle Power Plant Project
PROJECT NO.	:	10P3356
MEASURED POINT	:	Mudu Village (UTM 401450E 1570760N)
MEASURED DATE	:	7-10/10/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD580072

TIME \ DATE	7-8 October 2015		8-9 October 2015		9-10 October 2015	
	WS	WD	WS	WD	WS	WD
11.30-12.30 AM	1.3	WSW	3.7	WNW	0.4	SW
12.30 AM-01.30 PM	1.8	W	0.9	N	0.4	NW
01.30-02.30 PM	1.3	WSW	1.8	WSW	0.4	SSW
02.30-03.30 PM	1.3	WSW	1.3	W	0.0	Calm
03.30-04.30 PM	2.7	W	0.9	W	0.0	Calm
04.30-05.30 PM	1.8	W	0.4	WSW	0.4	WSW
05.30-06.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
06.30-07.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
07.30-08.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
08.30-09.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
09.30-10.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
10.30-11.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
11.30-12.30 PM	0.0	Calm	0.0	Calm	0.0	Calm
12.30 PM-01.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
01.30-02.30 AM	0.0	Calm	0.0	Calm	2.2	NW
02.30-03.30 AM	0.0	Calm	0.0	Calm	0.4	NW
03.30-04.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
04.30-05.30 AM	0.0	Calm	0.4	WNW	0.0	Calm
05.30-06.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
06.30-07.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
07.30-08.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
08.30-09.30 AM	0.0	Calm	0.0	Calm	0.0	Calm
09.30-10.30 AM	0.4	W	[illegible]	Calm	0.0	Calm
10.30-11.30 AM	1.3	W	0.4	SSW	0.4	[illegible]

Remark : WS = Wind speed (m/s) WD = Wind Direction Calm = < 0.5 m/s

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

(MR. SARAWOOT SINGPROMMA)	(MR. PATRAVUT TADSUAN)
ANALYST SIGNATURE	AUTHORIZED SIGNATURE
20/10/2015	20/10/2015

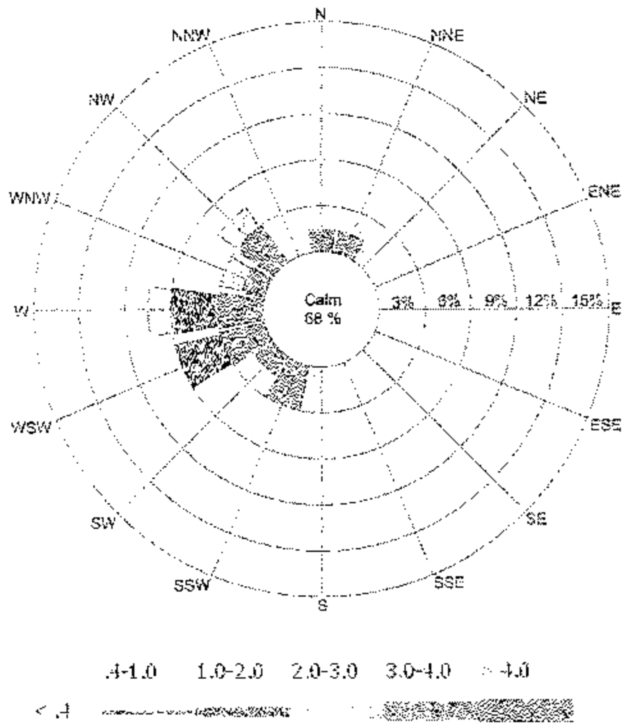
GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7733 Fax: +66 2 363 7734 www.gfe.co.th
The Geotechnical Expert

ISO 9001:2008 CERTIFIED

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei SEZ Initial Phase Development 370 MW Combined Cycle Power Plant Project
PROJECT NO.	:	10P3556
MEASURED POINT	:	Mudu Village (UTM 401450E 1576760N)
MEASURED DATE	:	7-10/10/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tedsuan
ANALYSIS NO.	:	WS-WD58007/2

WIND ROSE PLOT



DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

APPENDIX 5B

RESULTS OF THE AIR QUALITY SURVEYS

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 16/02/2015
PROJECT NAME : EIA for 15 MW Temporary Power Plant
MEASURED DATE : 29/01-1/02/2015
MEASURED POINT : Myanmar
PROJECT NO : P3145
MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO. : A58003/1-2
CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		TOTAL SUSPENDED PARTICULATES (TSP), 24 HRS. (µg/m³)	PARTICULATE MATTER LESS THAN 10 mm (PM-10), 24 HRS. (µg/m³)
Pale Gu Village (UTM 412472E 1560212N)	29-30/01/2015	262.17	52.11
	30-31/01/2015	193.14	53.67
	31/01-1/02/2015	225.14	59.54
Pagaw Zoon Village (UTM 409304E 1576442N)	29-30/01/2015	178.57	67.34
	30-31/01/2015	169.89	58.89
	31/01-1/02/2015	154.93	52.49
STANDARD		330	120
ANALYSIS METHOD@		GRAVIMETRIC METHOD	GRAVIMETRIC METHOD

REF:@ 1. METHOD OF AIR SAMPLING AND ANALYSIS 2ND ED., 1972

2. METHOD OF AIR SAMPLING AND ANALYSIS 3RD ED., 1989

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICAL APPROVAL

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
16/02/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
16/02/2015

ORI_LAB-RE57010-99999-P3145_A58003/1-2

16-02-2015 TEAM GROUP

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : EIA for 15 MW Temporary Power Plant
PROJECT NO. : P3145
MEASURED POINT : Pagaw Zoon Village, Myanmar.
ANALYSIS NO. : SO2NO258002/1-2
MEASURED DATE : 29/01/2015-1/02/2015
MEASURED BY : Mr.Patravut Tadsuan
CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		SULFUR DIOXIDE (SO_2) 24 HRS. (ppm)	NITROGEN DIOXIDE (NO_2) 24 HRS. (ppm)
Pale Gu Village (UTM 412472E 1580212N)	29-30/01/2015	<0.02*	<0.01**
	30-31/01/2015	<0.02*	<0.01**
	31/01/2015-1/02/2015	<0.02*	<0.01**
Pagaw Zoon Village (UTM 408304E 1578442N)	29-30/01/2015	<0.02*	<0.01**
	30-31/01/2015	<0.02*	<0.01**
	31/01/2015-1/02/2015	<0.02*	<0.01**
STANDARD		0.12	-
ANALYSIS METHOD®		PARAROSANILINE METHOD(1)	SODIUM ARSENITE METHOD(2)

REF: (1) METHOD OF ASTM D2914-76 (2) US.EPA EQN-1277-026

REMARK : * Less than 50 µg/m^3 ** Less than 19 µg/m^3

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICAL APPROVAL

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
13/02/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th
The Geotechnical Expert

ISO 9001:2008 CERTIFIED

AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 21/10/2015
PROJECT NAME : ESIA for Dawei SEZ Initial Phase Development 370 MW Combined Cycle Power Plant Project
MEASURED DATE : 7-10/10/2015
PROJECT NO. : 10P3356
MEASURED POINT : Nga Pitat Village and Mudu Village, Myanmar.
ANALYSIS NO. : SO2NO253005/1-2
CONTRACTED BY : Dr. Supichaya Wongchinawit
MEASURED BY : Mr Patravut Tadsuan

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		SULFUR DIOXIDE (SO_2) 24 HRS. (ppm)	NITROGEN DIOXIDE (NO_2) 24 HRS. (ppm)
Nga Pitat Village (UTM 399744E 1569815N)	7-8/10/2015	<0.02*	<0.01**
	8-9/10/2015	<0.02*	<0.01**
	9-10/10/2015	<0.02*	<0.01**
Mudu Village (UTM 401453E 1575763N)	7-8/10/2015	<0.02*	<0.01**
	8-9/10/2015	<0.02*	<0.01**
	9-10/10/2015	<0.02*	<0.01**
STANDARD		**0.12**	-
ANALYSIS METHODS		PARAROSANILINE METHOD[1]	SODIUM ARSENITE METHOD[2]

REF: (1) METHOD OF ASTM D2914-95 (2) US.EPA EQN-1277-026

REMARK : * Less than 50 µg/m³ ** Less than 12 µg/m³

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICAL APPROVAL

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
21/10/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
21/10/2015

21-10-2015 TEAM GROUP

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

The Geotechnical Expert

ISO 9001:2008 CERTIFIED

AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd

REPORT DATE : 21/10/2015

PROJECT NAME : ESIA for Dawei SEZ Initial Phase Development

370 MW Combined Cycle Power Plant Project

MEASURED DATE : 7-10/10/2015

MEASURED POINT : Myanmar

MEASURED BY : Mr Pornchai Chu-en and Mr Patravut Tadsuan

PROJECT NO : 10P0035

CONTRACTED BY : Dr. Supichaya Wongchinawit

ANALYSIS NO. : AS0037/1-2

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		TOTAL SUSPENDED PARTICULATES (TSP), 24 HRS. (µg/m^3)	PARTICULATE MATTER LESS THAN 10 mcn (PM-10), 24 HRS. (µg/m^3)
Nga Pitat Village (UTM 0390445 1560315N)	7-8/10/2015	46.44	22.39
	8-9/10/2015	33.78	11.30
	9-10/10/2015	35.22	9.30
Mudu Village (UTM 0414502 1576760N)	7-8/10/2015	33.97	9.32
	8-9/10/2015	13.71	4.02
	9-10/10/2015	6.64	5.46
STANDARD		330	120
ANALYSIS METHODS		GRAVIMETRIC METHOD	GRAVIMETRIC METHOD

REF# : 1 METHOD OF AIR SAMPLING AND ANALYSIS 2nd ED, 1977

2 METHOD OF AIR SAMPLING AND ANALYSIS 3rd ED, 1989

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

(MR.SARAWOOT SRIBROMMA)
ANALYST SIGNATURE
21/10/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
21/10/2015

GFE LAB REPORT 10P0035 AS0037 1-2

21-10-2015 TEAM GROUP

APPENDIX 5C

RESULTS OF THE NOISE MEASUREMENTS

ANALYSIS REPORT

CLENT NAME	:	TEAM Consulting Engineering and Management Co.,Ltd.
ADDRESS	:	151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 Tel. 0-2509-9000 Fax. 0-2509-9047
PROJECT NAME	:	EIA for 15 MW Temporary Power Plant
PROJECT LOCATION	:	Myanmar.
MEASURED SOURCE	:	Ambient Noise.
MEASURED POINT	:	1. Pale Gu Village, Myanmar. (UTM 412472E 1580212N) 2. Pagaw Zoon Village, Myanmar. (UTM 409304E 1578442N)
MEASURED INSTRUMENT	:	Sound Level Meter Type II : 1. RION Model NL-21 Serial Number 00598477 2. RION Model NL-42 Serial Number 01022264
ANALYSIS NO.	:	N58003/1-2

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
The Geotechnical Group
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008
CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 12/02/2015
PROJECT NAME : EIA for 15 MW Temporary Power Plant
MEASURED DATE : 29/01/2015-1/02/2015
MEASURED POINT : Pale Gu Village, Myanmar.
PROJECT NO. : P3145
MEASURED BY : Mr.Pornchai Chu-en
ANALYSIS NO. : N58003/1
CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
Pale Gu Village (UTM 412472E 1580212N)	29-30/01/2015	04.00 PM-05.00 PM	58.7	95.6	44.3
		05.00 PM-06.00 PM	53.4	77.2	44.9
		06.00 PM-07.00 PM	54.1	77.2	46.7
		07.00 PM-08.00 PM	50.2	72.8	47.2
		08.00 PM-09.00 PM	48.6	70.5	45.8
		09.00 PM-10.00 PM	49.8	74.1	45.9
		10.00 PM-11.00 PM	48.7	72.9	45.4
		11.00 PM-12.00 PM	48.0	65.5	45.9
		12.00 PM-01.00 AM	47.8	55.3	45.7
		01.00 AM-02.00 AM	46.3	55.0	46.4
		02.00 AM-03.00 AM	46.2	54.6	45.1
		03.00 AM-04.00 AM	46 2	65.7	45.0
		04.00 AM-05.00 AM	47.5	63.3	45.5
		05.00 AM-06.00 AM	49.7	71.6	46.6
		06.00 AM-07.00 AM	57.8	77.5	46.5
		07.00 AM-08.00 AM	55.9	89.6	45.4
		08.00 AM-09.00 AM	56.0	98.4	41.1
		09.00 AM-10.00 AM	56.8	90.3	43.6
		10.00 AM-11.00 AM	57.0	83.1	42.6
		11.00 AM-12.00 AM	65.3	81.9	42.2
		12.00 AM-01.00 PM	51.1	75.2	41.2
		01.00 PM-02.00 PM	55.4	79.1	43.1
		02.00 PM-03.00 PM	69.8	98.8	44.8
		03.00 PM-04.00 PM	68.5	86.9	43.6
		24 Hours Measured	**64.7**	**98.8**	**45.0**
		Ldn	**63.4**		

DRL/LAB.99999/RT560011/P3145_N58003/1

A Member of TEAM GROUP
12-02-2015

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th
The Geotechnical Expert

ISO 9001:2008 CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.

REPORT DATE : 12/02/2015

PROJECT NAME : EIA for 15 MW Temporary Power Plant

MEASURED DATE : 29/01/2015-1/02/2015

MEASURED POINT : Pale Gu Village, Myanmar.

PROJECT NO. : P3145

MEASURED BY : Mr.Pornchai Chu-en

ANALYSIS NO. : N56003/1

CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	30-31/01/2015	04.00 PM-05.00 PM	55.7	76.7	44.1
		05.00 PM-06.00 PM	55.8	84.0	45.4
		06.00 PM-07.00 PM	59.4	85.6	50.7
		07.00 PM-08.00 PM	52.8	74.9	46.2
		08.00 PM-09.00 PM	48.6	65.5	46.7
		09.00 PM-10.00 PM	48.7	69.9	46.9
		10.00 PM-11.00 PM	50.1	74.9	47.9
		11.00 PM-12.00 PM	52.7	77.3	47.9
		12.00 PM-01.00 AM	47.9	51.6	46.9
		01.00 AM-02.00 AM	47.0	50.0	46.4
		02.00 AM-03.00 AM	50.1	67.3	45.1
		03.00 AM-04.00 AM	46.8	63.4	45.1
		04.00 AM-05.00 AM	46.6	69.8	44.9
		05.00 AM-06.00 AM	49.5	67.0	46.5
		06.00 AM-07.00 AM	52.4	75.2	46.3
		07.00 AM-08.00 AM	54.3	80.6	45.4
		08.00 AM-09.00 AM	53.9	79.3	44.2
		09.00 AM-10.00 AM	58.7	86.0	43.9
		10.00 AM-11.00 AM	54.6	90.5	42.8
		11.00 AM-12.00 AM	56.7	76.8	43.2
		12.00 AM-01.00 PM	55.2	74.4	40.7
		01.00 PM-02.00 PM	58.6	91.7	43.7
		02.00 PM-03.00 PM	56.8	96.0	43.5
		03.00 PM-04.00 PM	56.6	85.6	44.4
		24 Hours Measured	**54.5**	**91.7**	**46.0**
		Ldn	**57.6**		

ORI.LAB-99999/RT56003/P3145_N56003/1

A member of TEAM GROUP
12-02-2015

GFE The Geotechnical Expert
GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008 CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 12/02/2015
PROJECT NAME : EIA for 15 MW Temporary Power Plant
MEASURED DATE : 29/01/2015-1/02/2015
MEASURED POINT : Pale Gu Village, Myanmar.
PROJECT NO. : P3145
MEASURED BY : Mr.Pornchai Chu-en
ANALYSIS NO. : N58003/1
CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	31/01/2015 - 1/02/2015	04.00 PM-05.00 PM	54.4	82.3	44.3
		05.00 PM-06.00 PM	53.6	80.9	44.3
		06.00 PM-07.00 PM	52.2	70.4	46.8
		07.00 PM-08.00 PM	52.1	79.0	47.5
		08.00 PM-09.00 PM	49.6	67.8	47.7
		09.00 PM-10.00 PM	57.1	88.4	47.0
		10.00 PM-11.00 PM	49.1	70.4	47.7
		11.00 PM-12.00 PM	47.7	70.7	46.6
		12.00 PM-01.00 AM	47.4	62.2	46.1
		01.00 AM-02.00 AM	47.3	72.5	45.1
		02.00 AM-03.00 AM	46.4	64.5	45.2
		03.00 AM-04.00 AM	45.5	63.1	44.6
		04.00 AM-05.00 AM	45.6	60.9	44.6
		05.00 AM-06.00 AM	47.0	59.2	44.9
		06.00 AM-07.00 AM	53.8	78.4	45.3
		07.00 AM-08.00 AM	55.3	79.5	43.9
		08.00 AM-09.00 AM	55.4	84.5	37.4
		09.00 AM-10.00 AM	56.3	83.6	37.5
		10.00 AM-11.00 AM	56.0	78.5	40.6
		11.00 AM-12.00 AM	52.3	81.2	42.6
		12.00 AM-01.00 PM	54.9	79.2	42.4
		01.00 PM-02.00 PM	53.8	79.1	42.1
		02.00 PM-03.00 PM	54.7	80.6	43.1
		03.00 PM-04.00 PM	52.8	76.4	38.4
		24 Hours Measured	53.0	88.4	44.8
		Ldn	56.5		

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
12/2/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
12/2/2015

A Member of TEAM GROUP
12-02-2015

ORL/LAB/99999/RT560014/P3145_N58003/1

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th
The Geotechnical Expert

ISO 9001:2008
CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.

REPORT DATE : 12/02/2015

PROJECT NAME : EIA for 15 MW Temporary Power Plant

MEASURED DATE : 29/01/2015-1/02/2015

MEASURED POINT : Pagaw Zoon Village, Myanmar.

PROJECT NO. : P3145

MEASURED BY : Mr.Pornchai Chu-en

ANALYSIS NO. : N58003/2

CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
Pagaw Zoon Village	29-30/01/2015	10.00 AM-11.00 AM	58.2	93.3	46.9
(UTM 409304E 1578442N)		11.00 AM-12.00 AM	59.6	84.1	49.0
		12.00 AM-01.00 PM	57.5	80.4	49.8
		01.00 PM-02.00 PM	58.5	84.8	50.3
		02.00 PM-03.00 PM	55.8	80.0	49.5
		03.00 PM-04.00 PM	53.5	74.3	48.4
		04.00 PM-05.00 PM	54.7	84.1	48.8
		05.00 PM-06.00 PM	52.1	64.7	49.7
		06.00 PM-07.00 PM	52.9	70.0	49.6
		07.00 PM-08.00 PM	51.0	71.1	48.1
		08.00 PM-09.00 PM	49.0	67.2	48.0
		09.00 PM-10.00 PM	48.3	52.9	47.9
		10.00 PM-11.00 PM	48.5	54.3	48.0
		11.00 PM-12.00 PM	48.6	58.5	48.0
		12.00 PM-01.00 AM	49.3	58.3	47.9
		01.00 AM-02.00 AM	48.5	60.9	48.0
		02.00 AM-03.00 AM	49.7	63.3	48.1
		03.00 AM-04.00 AM	49.3	63.8	48.0
		04.00 AM-05.00 AM	50.6	69.0	48.3
		05.00 AM-06.00 AM	60.1	81.0	48.4
		06.00 AM-07.00 AM	64.5	75.0	49.5
		07.00 AM-08.00 AM	55.3	81.4	48.7
		08.00 AM-09.00 AM	56.4	76.4	50.3
		09.00 AM-10.00 AM	55.4	90.4	49.6
		24 Hours Measured	**54.4**	**93.3**	**48.7**
		Ldn	**58.0**		

ORL-LAB/S0999/RT56601-I-P3145_N58003-2

A Member of TEAM GROUP
12-02-2015

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.

REPORT DATE : 12/02/2015

PROJECT NAME : EIA for 15 MW Temporary Power Plant

MEASURED DATE : 29/01/2015-1/02/2015

MEASURED POINT : Pegaw Zoon Village, Myanmar.

PROJECT NO. : P3145

MEASURED BY : Mr.Pornchai Chu-en

ANALYSIS NO. : N58003/2

CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	30-31/01/2015	10.00 AM-11.00 AM	55.9	90.0	46.6
		11.00 AM-12.00 AM	58.9	87.5	50.5
		12.00 AM-01.00 PM	58.0	83.0	49.8
		01.00 PM-02.00 PM	53.9	82.8	49.8
		02.00 PM-03.00 PM	56.1	80.8	49.0
		03.00 PM-04.00 PM	52.4	74.9	47.6
		04.00 PM-05.00 PM	52.1	78.6	47.8
		05.00 PM-06.00 PM	52.8	69.3	49.6
		06.00 PM-07.00 PM	52.9	71.2	49.0
		07.00 PM-08.00 PM	51.5	66.3	47.2
		08.00 PM-09.00 PM	47.1	57.2	46.5
		09.00 PM-10.00 PM	46.7	56.3	46.3
		10.00 PM-11.00 PM	47.4	52.3	46.5
		11.00 PM-12.00 PM	47.6	52.3	46.7
		12.00 PM-01.00 AM	47.4	52.8	46.8
		01.00 AM-02.00 AM	47.5	57.7	46.9
		02.00 AM-03.00 AM	47.6	59.0	47.0
		03.00 AM-04.00 AM	47.9	65.4	46.9
		04.00 AM-05.00 AM	49.1	68.8	46.9
		05.00 AM-06.00 AM	48.2	66.1	47.0
		06.00 AM-07.00 AM	48.7	67.2	46.7
		07.00 AM-08.00 AM	50.3	74.6	46.1
		08.00 AM-09.00 AM	52.6	75.8	46.9
		09.00 AM-10.00 AM	52.5	75.4	46.1
		24 Hours Measured	**53.2**	**90.0**	**47.7**
		Ldn	**56.3**		

A Member of TEAM GROUP
12-02-2015

GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008 CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.

REPORT DATE : 12/02/2015

PROJECT NAME : EIA for 15 MW Temporary Power Plant

MEASURED DATE : 29/01/2015-1/02/2015

MEASURED POINT : Pagaw Zoon Village, Myanmar.

PROJECT NO. : P3145

MEASURED BY : Mr.Pornchai Chu-en

ANALYSIS NO. : N58003/2

CONTRACTED BY : Mr. Nipat Somkleeb

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	31/01/2015 - 1/02/2015	10.00 AM-11.00 AM	54.1	91.5	45.8
		11.00 AM-12.00 AM	53.3	74.2	45.4
		12.00 AM-01.00 PM	60.0	95.8	48.6
		01.00 PM-02.00 PM	53.6	77.3	46.3
		02.00 PM-03.00 PM	51.8	74.7	46.2
		03.00 PM-04.00 PM	53.5	75.6	47.0
		04.00 PM-05.00 PM	49.7	69.1	47.0
		05.00 PM-06.00 PM	50.1	74.2	47.3
		06.00 PM-07.00 PM	49.5	75.6	47.4
		07.00 PM-08.00 PM	47.6	63.1	46.8
		08.00 PM-09.00 PM	47.1	57.8	46.4
		09.00 PM-10.00 PM	47.2	50.2	46.8
		10.00 PM-11.00 PM	47.4	50.1	46.8
		11.00 PM-12.00 PM	49.3	54.6	47.5
		12.00 PM-01.00 AM	47.9	54.8	47.4
		01.00 AM-02.00 AM	48.1	63.1	47.6
		02.00 AM-03.00 AM	49.0	61.9	47.4
		03.00 AM-04.00 AM	48.4	65.0	47.4
		04.00 AM-05.00 AM	49.8	56.1	47.3
		05.00 AM-06.00 AM	49.4	66.8	47.4
		06.00 AM-07.00 AM	49.4	73.1	47.1
		07.00 AM-08.00 AM	47.9	75.7	38.3
		08.00 AM-09.00 AM	49.7	83.7	39.0
		09.00 AM-10.00 AM	48.4	64.3	38.6
		24 Hours Measured	**51.5**	**91.5**	**46.6**
		Ldn	55.8		

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
12/2/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
12/2/2015

ORI-LAB/99999-RT56001-1/P3145_N58003/2

A member of TEAM GROUP
12-02-2015

APPENDIX 5D

RESULTS OF SURFACE WATER QUALITY

The Geotechnical Expert
GEOTECHNICAL & FOUNDATION ENGINEERING CO., LTD.
151 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230 THAILAND
Tel: +66 2 363 7723 Fax: +66 2 363 7724 www.gfe.co.th

ISO 9001:2008 CERTIFIED

WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd. **REPORT DATE :** 19/02/2015

PROJECT NAME : EIA for 15 MW Temporary Power Plant **RECEIVED DATE :** 27/01/2015

SAMPLING SOURCE : Surface water and Ground water **ANALYTICAL DATE :** 28/01-13/02/2015

SAMPLING BY : Mr.Nipat Somkleab and Mr.Sutaphot Gampetch **PROJECT NO. :** P3145

SAMPLING METHOD : GRAB **ANALYSIS NO. :** W56003/1-4

CONTRACTED BY : Mr.Nipat Somkleab

PARAMETERS/ITEM	UNITS	ANALYSIS METHOD	SW1	SW2	GW1	GW2
ANALYSIS NO.			W56003/1	W56003/2	W56003/3	W56003/4
SAMPLING DATE			1/2/2015	1/2/2015	29/1/2015	1/2/2015
SAMPLING TIME			09.50 AM	10.40 AM	12.35 AM	09.30AM
SAMPLING LOCATION			Station 1	Station 2	Station 3	Station 4
DEPTH	m	-	2.0	0.8	5.3	5.0
pH	-	$4500\text{-}H^{+}$(B)	5.64	5.37	4.94	4.93
TRANSPARENCY	m	-	0.60	0.80	-	-
WATER TEMPERATURE	°C	2550(B)	27.9	24.3	25.9	28.2
CONDUCTIVITY	uS/cm	2510(B)	13.70	13.50	18.20	23.40
DISSOLVED OXYGEN	mg/L	4500-O(G)	6.72	7.01	-	-
SALINITY	ppt	2520(B)	<0.1	<0.1	<0.1	<0.1
TURBIDITY	NTU	2130(B)	1.5	2.4	1.0	1.1
CHLORIDE	mg/L	4500-Cl(B)	-	-	3.0	3.0
TOTAL HARDNESS	mg/L	2340 (C)	-	-	121.6	17.6
SULFATE	mg/L	$4500\text{-}SO_4^{2-}$(E)	-	-	<5.0	<5.0
SUSPENDED SOLIDS	mg/L	2540(D)	<5.0	<5.0	-	-
TOTAL DISSOLVED SOLIDS	mg/L	2540(C)	40.8	32.0	30.0	20.0
OIL & GREASE	mg/L	5520(D)	<5.0	<5.0	-	-

REF.@ STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER 22nd ED.,2012(APHA-AWWA-WEF)

Remark : SW1 - Yelai Sleaung, Dawei, Myanmar (UTM 407830E, 1578332N) ; Lightly SS

SW2 - , Dawei, Myanmar (UTM 405766E, 1580191N) ; Lightly SS

GW1 - Well of project area, Dawei, Myanmar (UTM 409725E, 1579501N) , Lightly

GW2 - Pagaw Taco, Dawei, Myanmar (UTM 409309E, 1578424N) ; Lightly

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICAL APPROVAL

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
18/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
18/02/2015

A Member of TEAM GROUP

รายงานผลการวิเคราะห์คุณภาพน้ำผิวดิน

โครงการ	: 15 MW (1095145)	วันที่เก็บตัวอย่าง	: –
ที่ตั้งโครงการ	: –	วันที่รับตัวอย่าง	: [illegible] กุมภาพันธ์ 2550
ชื่อ/ที่อยู่ลูกค้า	: บริษัทพรีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด	วันที่วิเคราะห์	: 5-[illegible] กุมภาพันธ์ 2550
วิธีเก็บตัวอย่าง	: GRAB	วันที่พิมพ์รายงาน	: [illegible] กุมภาพันธ์ 2550
ผู้เก็บตัวอย่าง	: บริษัทพรีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด		

พารามิเตอร์	วิธีวิเคราะห์	สถานี	
		SW 1	SW 2
BOD$_5$ (mg/L)	5 DAYS BOD TEST (5210-B)	0.5	1.2
COD (mg/L)	CLOSED REFLUX, TITRIMETRIC METHOD (5220-C)	21	25
TOTAL IRON (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	0.62	1.3
LEAD (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	<0.005	<0.005
CYANIDE (mg/L)	DISTILLATION, COLORIMETRIC METHOD (4500-CN$^-$-E)	<0.003	<0.003
ARSENIC (mg/L)	HYDRIDE GENERATION/ATOMIC ABSORPTION SPECTROMETRIC METHOD (3114-C)	<0.0003	<0.0003

หมายเหตุ

สภาพตัวอย่าง :

สถานีที่ 1 (SW1) ; ใส ตะกอนเล็กน้อย

สถานีที่ 2 (SW2) ; ใสเหลือง ตะกอนเล็กน้อย

ผลการวิเคราะห์นี้รับรองเฉพาะตัวอย่างที่ได้ทำการวิเคราะห์เท่านั้น
ห้ามคัดลอกรายงานผลการวิเคราะห์เพื่อจุดประสงค์ใดโดยไม่ได้รับอนุญาตจากห้องปฏิบัติการเป็นลายลักษณ์อักษร

APPENDIX 5E

RESULTS OF GROUNDWATER QUALITY

รายงานผลการวิเคราะห์คุณภาพน้ำผิวดิน

โครงการ	:	15 MW (10P3145)	วันที่เก็บตัวอย่าง	:	-
ที่ตั้งโครงการ	:	-	วันที่รับตัวอย่าง	:	5 กุมภาพันธ์ 2558
ชื่อ/ที่อยู่ลูกค้า	:	บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด	วันที่วิเคราะห์	:	5-18 กุมภาพันธ์ 2558
วิธีเก็บตัวอย่าง	:	GRAB	วันที่พิมพ์รายงาน	:	26 กุมภาพันธ์ 2558
ผู้เก็บตัวอย่าง	:	บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด			

พารามิเตอร์	วิธีวิเคราะห์	สถานี	
		GW 1	GW 2
NITRATE -NITROGEN (mg/L)	ULTRAVIOLET SPECTROPHOTOMETRIC SCREENING METHOD (4500-NO_3^--B)	0.26	0.13
NITRITE-NITROGEN (mg/L)	COLORIMETRIC METHOD (4500-NO_2^--B)	<0.01	<0.01
ZINC (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	0.001	0.003
COPPER (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	<0.003	<0.003
MANGANESE (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	0.063	0.010
TOTAL IRON (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	0.17	0.33
CALCIUM (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	0.422	1.20
LEAD (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	<0.005	0.020
MERCURY (mg/L)	COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD (3112-B)	<0.0005	<0.0005
ARSENIC (mg/L)	HYDRIDE GENERATION ATOMIC ABSORPTION SPECTROMETRIC METHOD (3114-C)	<0.0003	<0.0003
CADMIUM (mg/L)	INDUCTIVELY COUPLED PLASMA (ICP) METHOD (3120-B)	<0.003	<0.003
CYANIDE (mg/L)	DISTILLATION, COLORIMETRIC METHOD (4500-CN^--E)	<0.003	<0.003
E.Coli (MPN/100 mL)	ESCHERICHIA COLI PROCEDURE (9221-F)	ตรวจไม่พบ	ตรวจไม่พบ
TOTAL COLIFORM BACTERIA (MPN/100 mL)	STANDARD TOTAL COLIFORM FERMENTATION TECHNIQUE (9221-B)	>23	5.1

หมายเหตุ

สภาพตัวอย่าง ;

สถานีที่ 1 (GW1) ; ใส ตะกอนเล็กน้อย

สถานีที่ 2 (GW2) ; ใส ตะกอนเล็กน้อย

ผลการวิเคราะห์นี้รับรองเฉพาะตัวอย่างที่ได้ทำการวิเคราะห์เท่านั้น

ห้ามคัดลอกรายงานผลการวิเคราะห์เพียงบางส่วนโดยไม่ได้รับอนุญาตจากห้องปฏิบัติการเป็นลายลักษณ์อักษร

APPENDIX 5F

METHODOLOGY FOR TERRESTRIAL ECOLOGY

TABLE 5F-1

METHOD FOR IDENTIFICATION AND TAXONOMY REFERENCE FOR TERRESTRIAL ECOLOGY

Type	Item	Method	Reference
Flora	Forest, vegetation and habitat	- Select study areas based on the estimated habitats. - Interview local people for obtaining information about exact characteristics of each habitat. - Use GPS to navigate and mark coordinated between sample plots in each habitat. - Set up and observe quadrants in varying size 30x30 m to obtain essential data for predicting the forest value. - Measure and record tree height (H) and diameter at breast height (DHB) for all sampling trees in the quadrants.	- Loetsch and Haller, 1964 - Satit, 1982 - IUCN Red List (2013)
Fauna	Mammal	- Binocular was used to detect the diurnal squirrels and other day-active small mammals. - During the daytime, more ground searches were conducted to detect tracks and other signs of existing mammals such as track in soft soils and craw marks, feeding signs, dropping, quills, and etc.	- Tun Yin (1996) - Lekagul and McNeely (1977) - Corbet and Hill (1992) - IUCN Red List (2013)
	Birds	- Binoculars were also utilized for observing birds in the daytime. - All species seen were systematically recorded for their identities, the numbers seen and the prevailing behaviors observed.	- Lekagul and Round (1991) - King et al. (1995) - Welty and Baptista (1988) - IUCN Red List (2013)

TABLE 5F-1 (CONTINUED)
METHOD FOR IDENTIFICATION AND TAXONOMY REFERENCE FOR TERRESTRIAL ECOLOGY

Type	Item	Method	Reference
Fauna	Reptile/Amphibian	- These two groups of cold-blooded animals were studied together since they require the same surveying techniques and share the same natural habitats. - In the daytime, efforts were spent on the cruising method, i.e., searching randomly throughout their preferred habitats on the forest floor among litter, under stones and logs, along the streams and around the stagnant pools.	**Reptile** - Taylor (1963, 1965, 1970), Cox (1991), Matsui (1996), and Cox et al. (1998) for identification and using Pough et al. (1998) for taxonomic arrangement. - -IUCN Red List (2013) **Amphibian** - Taylor (1962), Inger (1966), Berry (1975), Frost (1985), and Matsui (1996) for mature frog identification, using Smith (1916), Smith (1917), and Inger (1966) for tadpole identification, and using Pough et al. (1998) for taxonomic arrangement. - IUCN Red List (2013)

Forest Resources

- Sampling plot size: the suitable temporary sampling plots for the forest area within south-eastern of Asia region are stratified random sampling. The three sizes of temporary sampling plots will be used, with the following purposes: (***Figure 1***).

- The rectangular sampling plot of 10 x 10 m. (area of 100 m^2) was used for collecting data on tree diameter with over 1.30 m (for terrestrial forest) and 20 cm. for mangrove forest or girth over 30 cm at breast height (DBH or GBH respectively).

- The rectangular sampling plot of 4 x 4 m. (area of 16 m^2) covered with sampling plot of 10 x 10 m was used for studying the sampling which are those small trees higher than 1.30 m and having the GBH less than 30 cm. Species and number were recorded for sapling density and other natural generation.

- The rectangular sampling plot of 1 x 1 m. (area of 1 m^2) covered with sampling plot of 4 x 4 m was used for studying the seedling which comprising these lower than 1.30 m in height and underground tree (annual, creeper, and climbing plants). They are used as an indicator of the natural regeneration of the ecosystem.

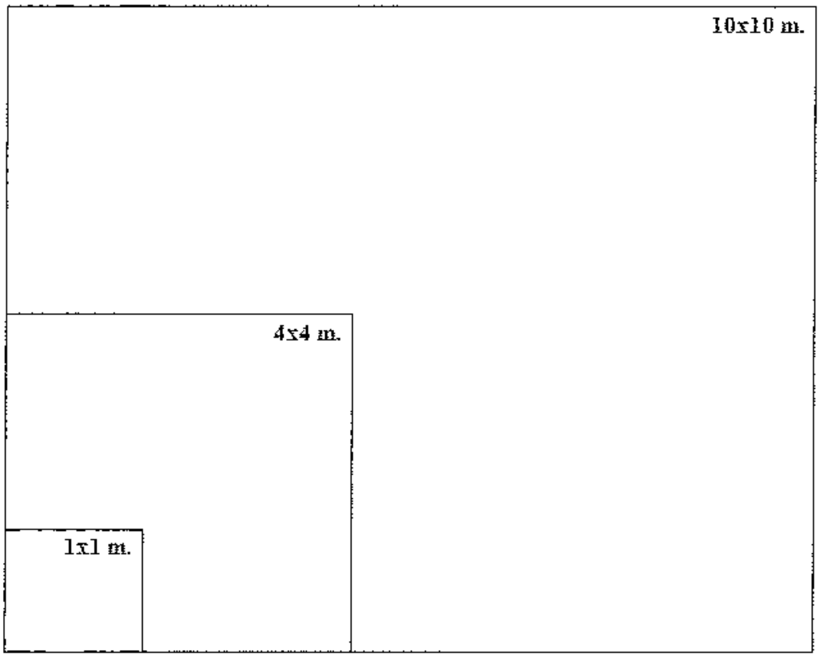


FIGURE 5F-1: TEMPORARY SAMPLING PLOT SIZES

Wildlife

- Population size: each wildlife species obtained from both direct and indirect methods will be evaluated in term of relative abundance using calculation formulated by Pettingill (1970) as following formula:

Relative abundance = (Number of seen x 100) / Number of survey

Relative abundance of each species is classified into three levels using the criteria:

Percentage range	67-100	standing for very common
	34-66	standing for common
	1-33	standing for less common

- Status: wildlife status in this study is status for conservative concerns as the details below:

Status for Concerned Conservation: Species whose population and distribution have highly declined that International Union for Conservation of Nature and Natural Resources (IUCN) A.D. 2013 (2013 IUCN Red List of Threatened Species, www.redlist.org) evaluates them as threatened, which categories will be used criteria version 3.1 A.D. 2001. The threatened species, then, are separated into three categories depending on degree of threat:

➢ Critically Endangered (CR): this category includes species, which are facing and extremely high risk of extinction in the wild in the immediate future.

- Endangered (EN): this category includes species, which are facing a very risk of extinction in the wild in the near future.
- Vulnerable (VU): this category includes species, which are facing high risk of extinction in the wild in the medium-term future.

In addition, IUCN (2013) also evaluates those species, which do not satisfy the criteria for any of the categories as mentioned above, but which are also closed to qualifying for vulnerable. Species included in this subcategory are classified as near threatened (NT).

APPENDIX 5G

QUESTIONAIRES TO INTERVIEW VILLAGE HEADMAN AND KEY INFORMANTS

KEY QUESTIONS FOR VILLAGE PROFILE SURVEY

Place ....

Date ..../ ..../ ....

PART 1 : PARTICIPANTS (Person in Charge : ....)

Participant	Position in villages
1.	
2.	
3.	
4.	
5.	
6.	

Note:

People to be interviewed:

- Community Leader and Key Informants

- 3-4 persons/villages

PART 2 : HISTORY OF COMMUNITY (Person in Charge: ....)

1. Settlement pattern of village (line type along the road, cluster type and others)

   (Specify) ....

   ....

2. Age of the community ....

4. Previous location that the residents came from ....

3. Decision on moving to this village

   1) Group decision and follow by the others.

   ....

   2) Each person relocates to this village by his/her own decision.

....

4. Reasons or incentives of people to settle in this Area ....

....

PART 3 : DEMOGRAPHIC STRUCTURE (Person in Charge:..............................)

5. Number of household at present and Population in 2014 (Approximately)

Number of	Year 2014
Population	
Households	

6. Classification of population

Description	Number of persons	%
1. Sex		
- Male		
- Female		
2. Age *		
- 0-5 years		
- 6-12 years		
- 13-19 years		
- 20-59 years		
- More than 60 years		
Note :		

* Age group can be categorized following existing information.

7. Population change during 2014

Description	Number of Persons
1. Birth	
2. Death	
3. In-migration	
4. Out-migration	
Note : Reason of in-migration:	
Reason of out-migration	

8. Ethnic minorities

Ethnic group/Indigenous	No. of household	Religion	Language	Norm/belief
1.				
2.				
3.				

9. Vulnerable groups in the village

Vulnerable Group	Number of household/s	How are they taken care?
1. Disabled in family.		
2. Head of households over 60 years old.		
3.Women who are a head of household.		
4.Only one person live alone in a household.		
5.Homeless		
6. Others (specified)		

10. Education

Level of education	Number of persons	%
1. Pre-school child		
2. Current study		
- Primary school		
- Secondary and high school		
- University		
3. Education level		
- Children before school		
- Never attended school		
- Primary school		
- Secondary and high school		
- University		

Level of education	Number of persons	%
4. Others		

11. **Public Health**

Please identify communicable diseases in this village (Priority from high to low)?

1. ....
2. ....
3. ....
4. ....
5. ....

Major medical service location

1. Hospital...................................distance..........Km.
2. Health care center............................distance..........Km.
3. Private clinic ....distance..........Km.
4. Others (specified) ....distance..........Km.

12. Roles of male and female in families or community

Who make decision in these activities?	Male	Female
Children's education		
Cooking		
Political		
Communicate/Negotiation		
Participation in activities of community		
Participation in activity of religion		
Purchase of house		
Religion activities		

PART 4 : ECONOMIC STRUCTURE

13. **Main Occupations**

Main Occupations	Number of Household	%
Agriculture		
Trade		

Fishery		
Government officer		
General wage labour		
Employee		

14. **Employment and wage in the village (skilled and unskilled labour)**

Employment	Wage/Day	
	Skilled labour	Unskilled
Boy		
Girl		
Male		
Female		
Elderly Male		
Elderly Female		

15. **Number of villagers working outside the village**

1) None...

2) Yes .... : ....Person

(1) Working outside the village all year or in some seasons

...1) Whole year

...2) In some seasons between...............to................................

(2) Type of work

Male's occupation (Specified) ....Wage/day ....kyat

Female's occupation (Specified)..................Wage/day ....kyat

16. **Land Holding and Land Use**

1. Average Land Holding ....acres /hh
2. Land Rights Document

1) ....

2) ....

3) ....

17. **Cropping pattern, both in rainy and dry seasons** (i.e., rice, corn, chili, onion, garlic, bean, etc.)

Types of Crop	Starting Month	Harvest Period (month)	Area (acres)	Production (specified)
Paddy rice				
Corn				

18. Crop distribution

Types of Crop	Reserve (kg)	Selling		
		Kg.	Price (kyat/kg.)	Buyer Source
Paddy rice				
Corn				

19. Livestock

Types of livestock	No. of household raised	Average head / household	Purpose of raising (consumption/sale)
Pig			
Pouty			
Cattle			
Fish			

20. Household income and expenditure

1. Average household income ………………………… ……………kyat/hh/year
   -Maximum……………………………………………………………kyat/hh/year
   -Minimum……………………………………………………………kyat/hh/year
2. Main sources of income
   1) ………………………………………………………………………
   2) ………………………………………………………………………
   3) ………………………………………………………………………
3. Average household expenditure ………………… ……………kyat/hh/year
   -Maximum……………………………………………………………kyat/hh/year
   -Minimum……………………………………………………………kyat/hh/year
4. Main sources of expenditure
   1) ………………………………………………………………………
   2) ………………………………………………………………………
   3) ………………………………………………………………………

PART 5 : INFRASTRUCTURE AND FACILITIES

21. Infrastructure facilities

(1) Availability of electricity (Yes/No) ……………………………………
If yeas, pls specify source of electricity ……………………………………
If no, what are sources of lighting ……………………………………

(2) What fuel use for cooking ………………………Sources?…………………

(3) Drinking water source (specified):……………………………………
Quantity/Sufficiency/Quality:……………………………………

(4) Water use sources: ……………………………………
Quantity/ Sufficiency/Quality:……………………………………

(5) Common mode of road transport from village to district: (Rank from most likely use)
1) ………………………………………………………………………
2) ………………………………………………………………………
3) ………………………………………………………………………

(6) Characteristic/type of road in village……………………………………
Problem: ……………………………………

(7) Is there any boat transportation in this village (Yes, No) …………………
If yes, pls specify:

Type of boat ....

Purpose ....

Route (from where to where) ....

(8) Is there any unexploded ordnance existing in the vicinity of the village area? (Yes, No) ....

If yes, how far ....

22. Community facilities

(1) No. of service places

Types of service	Yes/No	Number of service place	Remarks
1. Market			
2. Factory			
3. Pre-school/Nursery			
4. Primary School			
5. Secondary School			
6. Temple			
7. Church			
8. Mosque			
9. Cemetery			
10. Hospital			
11. Health Center			
12. Pharmacy			
13. Village Meeting Hall			

(2) School facilities

Types of school	No. of class	No. of teacher	No. of pupils
1. Pre-school/Nursery			
2. Primary School			
3. Secondary School			

(3) Nursing facilities

Types of nursing place	No. of doctor	No. of nurse	No. of bed
1. Hospital			

Types of nursing place	No. of doctor	No. of nurse	No. of bed
2. Health Center			

23. Are there any political and social organizations in this village?

Group name	Number of group member (identified household or person)	Functions
Political Group		
1. Group		
2. Group		
3. Group		
Social Group		
4. Group		
5. Group		
6. Group		
7. Group		

PART 6 : VILLAGE RESOURCES (Informant : ....)

24. Village area

Total village area approximately...acres

(1) Residential area ....acres

(2) Paddy field ....acres

(3) Orchard land ....acres

(4) Pasture area ....acres

(5) Public area ....acres

(6) Idle area ....acres

(7) Forest area ....acres

(8) Other (Specified) ....acres

(Specified) ....acres

(Specified) ....acres

25. Culture and aesthetics

(1) Important historic places (specified)..

(2) Archeological place (specified) ....

(3) Antiquities (specified)..

(4) Building with aesthetic value/building to be conserved (specified) ....

(5) Sacred place (specified) ....

(6) Religions places (specified) ....

(7) Life style/identical activities (specified)..

(8) Natural scenic area (specified)..

(9) Tourism site (specified) ....

26. Natural resources uses

Types	Harvested Period (month-month)	Sufficiency*
30.1 Food		
1)		
2)		
3)		
4)		
5)		
30.2 Medicine		
1)		
2)		
3)		
4)		
5)		
30.3 Household Use/ Building Materials/ Handicrafts/Fire wood		
1)		
2)		
3)		
4)		
5)		

Note:* 1) Abundance 2) Sufficient 3) Insufficient 4) Rare

PART 7 : OPINIONS TOWARD PROJECT DEVELOPMENT

27. What are your opinions about the project development?

……1) Agree, Reasons: ______

……2) No Opinion, Reasons: ______

……3) Disagree, Reasons: ______

……4) Other ______

28. Concerns about the Project:

-Construction period

In case of positive impacts (reason)	**Reason**
1) Employment .....Yes .....No	
2) CSR .....Yes .....No	
3) Amenities .....Yes .....No	
4) Modernity .....Yes .....No	
5) Others (specifies)	
In case of negative impacts	**Reason**
1) Waste water .....Yes .....No	
2) Air pollution .....Yes .....No	
3) Noise .....Yes .....No	
4) Waste .....Yes .....No	
5) Dust .....Yes .....No	
6) Traffic .....Yes .....No	

-Operation period

In case of positive impacts (reason)	**Reason**
1) Employment .....Yes .....No	
2) CSR .....Yes .....No	
3) Amenities .....Yes .....No	
4) Modernity .....Yes .....No	
5)..	
In case of negative impacts	**Reason**
1) Waste water .....Yes .....No	
2) Air pollution .....Yes .....No	

3) Noise .....Yes .....No	
4) Waste .....Yes .....No	
5) Dust .....Yes .....No	
6) Traffic .....Yes .....No	

29. Suggestions to the Project:

....
....
....

APPENDIX 5H

QUESTIONAIRES TO INTERVIEW VILLAGERS AT THE HOUSEHOLD LEVEL

QUESTIONNAIRE FOR SOCIO-ECONOMIC SURVEY
(AFFECTED HOUSEHOLD)

For the 15 MW Temporary Power Plant Projects in Dawei

Village name..

Sub-district .... **District** ....

Province..

No. of house ....

How long distance from Power Plant..................**Km.**

---

1. INFORMATION OF RESPONDENT

1.1 Gender of respondent

☐ Male ☐ Female

1.2 Age of respondent ....years

1.3 Education

☐ Illiterate ☐ Elementary

☐ Mid-Education ☐ Graduated/Higher

☐ Other (Specified)..

1.4 Ethnic group

☐ Bamar ☐ Karen

☐ Mon

☐ Other (Specified)..

1.5 Religion

☐ Buddhism ☐ Islamic

☐ Christian ☐ Others...

1.6 How long have you been in the village...................................years

2. SOCIO-ECONOMIC OF HOUSEHOLD

2.1 Number of household member .... persons

- Male .... person/s
- Female ....person/s

- Employment ………………. person/s

- Unemployment ……………. person/s

2.2 Current occupation of household (1 answer)

1) Main occupation

☐ Agriculturist ☐ Government officer

☐ Trading ☐ General wage labour

☐ Employee ☐ Handicraft

☐ Others (specified)………………………………………………………………………

2) Supplementary occupation (more than 1 answer)

☐ Agriculturist ☐ Government officer

☐ Trading ☐ General wage labour

☐ Employee ☐ Handicraft

☐ Others (specified)………………………………………………………………………

3) Household member working outside the village

☐ Yes ………………………………………………………… ………… person (specified district, province)

Type of Work…………………………………………………………

☐ No

2.3 Current land holding

1) Total number of plot ……………………………… Plot

- Inside village……………… Plot……………… acre

- Outside village Plot……………… acre

2) Total area of land holding …………………… acre

2.4 Household agricultural profile in 2013/2014

2.4.1 Agricultural activities

......1) No ......2) Yes

Types of Crop grown	Area (acre)	Water Source used	Input Cost (% of sale)	Production (kg/ton)		Sale price (kyat/ kg)	Income (kyat)
				Consump-tion	Sale		
1.							
2.							
3.							
4.							
5.							
Total							

Remark : Input cost comprises cost of plowing, seeds, insecticides, fertilizers, transportation, workers, etc.

2.4.2 Agro-forestry activities

Agro-forestry products	Average income (kyat/year)
Type (specify)	
Type (specify)	
Total	

2.4.3 Livestock in 2013/2014

......1) No ......2) Yes

Livestock	Number	Objective (sale/consumption)	Cost (kyat/year)	Sale (Head/year)	Income (kyat /year)
Cows					
Buffalos					
Swine					
Duck					
Chicken					
Eggs					
Other (specified)................					
Total					

2.4.3 Fisheries

1) Type of fishing activity

....1) River/stream/pond; name of fishing location

....

....2) Aquaculture

....3) Both

2) Aquaculture

- Specify the type...
- Total production...Kg/year
  - For home consumption .... Kg/year
  - Sale .... Kg/year
- Total Cost ....kyat/year
- Price ....kyat /Kg
- Income ....kyat/year.

3) River/stream fishing

- Type of fish ....
- Period month .... to month ....
- Total product .... kg/time
- Total Cost ....kyat/year
- Income ....kyat /year

2.5 Major Sources of income in 2014 (for the whole year)

1) Farm income

- Crop .... kyats / year
- Livestock .... kyats / year
- Fishery.. kyats / year

2) Off farm income

- Salary .... kyats / year
- Trade .... kyats / year
- Labour .... kyats / year
- Other.. kyats / year

3) Other Sources of Income from Other Household Members .... kyat / year

4) Total Income... kyat/year

2.6 Expenditure on the following items in 2014 (for the whole year)

1) Farm expenditure

- Crop .... kyats / year
- Livestock .... kyats / year
- Fishery .... kyats / year

2) Household expenditure

- Food .... kyats / year
- Clothes .... kyats / year
- Religion/donation .... kyats / year
- Education .... kyats / year
- Medical care .... kyats / year
- Cooking Fuel .... kyats / year
- Social activities .... kyats / year
- Tax .... kyats / year
- Transportation cost .... kyats / year
- House repair .... kyats / year
- Communication (Phone) .... kyats / year
- Others .... kyats / year

3) **Total household expenditure .... kyat/year**

2.7 Sufficiency of household income

☐ Sufficient ☐ Insufficient, problem solving by ....

2.8 Debt and saving

1) Debt

☐ No ☐ Yes .... kyat

2) Saving

☐ No ☐ Yes .... kyat

2.9 Pls specify number of family members who are unemployed (age 15 – 60)?

Sr No.	Function of Family member	Sex	Age	Reason
1.				
2.				
3.				
4.				
5.				

3. HEALTH CARE

3.1 Pls specify type of toilet used

....

3.2 How to dispose the garbage

☐ Throw away ☐ Buried ☐ Burn

☐ Others (specified) ....

3.3 How to dispose waste water

☐ Throw to the earth ☐ Throw to the watercourse

☐ Others (specified) ....

3.4 Common diseases found in your family and treatment methods

(Rank from high to low)

Types of disease	Treatment methods
1.	
2.	
3.	
4.	
5.	

4. INFRASTRUCTURE FACILITIES

4.1 Electricity

Type of electricity use (specified) ....

Payment rate (kyats /unit) ....

4.2 Water uses source

Source of water you are normally using for various purposes at present

Type of water use	(A) Source (name)	(B) Disinfection	Distance from home (meter)	How long per trip (minute)	(C) Quality	Sufficiency (Yes/No)
Drinking cooking						
Washing/cleaning						
Irrigation						
Other................						

A: 1 = House connection 2 = Pumping wells 3 = Yard connection (pond) 4 =Shallow wells

5 = Deep wells 6 = Rain water tanks 7 = Surface water

B: 1 = No 2 = Boiling 3 = Alum 4 = Chlorinating 5 = Others (specify)

C: 1= Good 2= fair 3= poor

5. SATISFACTION OF THE LIVING CONDITION

5.1 Environment (air, water, soil, noise....etc)

☐ 1. Satisfaction ☐ 2. Not satisfied, specified.......................................

5.2 Social Welfare Service

☐ 1. Satisfaction ☐ 2. Not satisfied, specified.......................................

5.3 Crop production condition

☐ 1. Satisfaction ☐ 2. Not satisfied, specified.......................................

5.4 Relation with people in the neighborhood

☐ 1. Satisfaction ☐ 2. Not satisfied, specified.......................................

5.5 Are you satisfied with current situation of your life?

☐ 1. Satisfaction ☐ 2. Not satisfied, specified.......................................

6. PROJECT KNOWLEDGE AND OPINIONS TOWARD THE PROJECT

6.1 Do you receive information from the project?

.....1) No (skip to **6.5**) .....2) Yes

6.2 What Type of Information Received?

1)..

2)..

3)..

6.3 Information sources (multiple choices)

....1) Government officer .....2) Project officer

....3) Village committee .....4) Neighbor

....5) Others (specified) ....

6.4 After Receiving Information, how do you React?

.....1) Nothing, because ....

.....2) Searching for more information

.....3) Confer with ....

.....4) Others (Specify) ....

6.5 What are your opinions about the project development?

......1) Agree, Reasons: ______________________________

......2) No Opinion, Reasons: ______________________________

......3) Disagree, Reasons: ______________________________

......4) Others (Specify) ______________________________

6.6 Opinions toward impacts of the project

- Construction period

In case of positive impacts	**Reason**
1) Employment .....Yes .....No......	
2) CSR .....Yes .....No.......	
3) Amenities .....Yes .....No	
4) Modernity .....Yes .....No......	
5)	
In case of negative impacts	**Reason**
1) Waste water .....Yes .....No......	
2) Air pollution .....Yes .....No.......	
3) Noise .....Yes .....No	
4) Waste .....Yes .....No	
5) Dust .....Yes .....No......	
6) Traffic .....Yes .....No......	
7) Others (specified)	

-Operation period

In case of positive impacts	**Reason**
1) Employment .....Yes .....No......	
2) CSR .....Yes .....No.......	
3) Amenities .....Yes .....No	
4) Modernity .....Yes .....No......	
5)	

In case of negative impacts	Reason
1) Waste water .....Yes .....No......	
2) Air pollution .....Yes .....No	
3) Noise .....Yes ..... No	
4) Waste .....Yes .....No	
5) Dust .....Yes .....No	
6) Traffic .....Yes .....No	
7) Others (specified)	

6.7 Other opinions and suggestions toward the project development

1) ....

2) ....

3) ....

Interviewer ....
Date ....Month ....
Year. ....Time ....

APPENDIX 5I

RESULTS OF THE INTERVIEWS

Community Profile

Table 1 No. of Household

Villages	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
No. of household	42	148	140	563	120	167	132	466	411	**2,189**

Table 2 Population

Population	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Male	70	414	200	1,100	80	371	573	831	1,076	4,715
Female	110	452	300	1,189	120	389	570	864	1,100	5,094
Total	**180**	**866**	**500**	**2,289**	**200**	**760**	**1,143**	**1,695**	**2,176**	**9,809**

Table 3

Population Changes in 2014

Population Changes	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Birth	3	N/A	10	24	3	12	0	40	15	**107**
Death	1	N/A	1	12	1	0	3	20	10	**48**
In-migration	0	N/A	20	6	2	9	26	1	0	**64**
Out-migration	60	N/A	20	800	50	200	200	400	500	**2,230**
Total	**64**	N/A	**51**	**842**	**56**	**221**	**229**	**461**	**525**	**2,449**

Table 4

Education level

Education level (%)	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Children before school	5	1	4	4	3	2	1	2	1	**3**
Pre school	0	0	0	8	6	5	4	4	3	**3**
Primary School	47	83	15	15	63	85	83	54	88	**59**
Secondary and High School	14	15	5	65	17	6	0	25	6	**17**
University	3	1	1	8	6	1	2	9	3	**4**
Monastic	31	0	60	0	5	0	0	0	0	**11**
Never attended	0	0	15	0	0	1	10	6	0	**4**
Total %	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5

Vulnerable Group

Vulnerable (Household)	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Disabled	N/A	1	0	12	0	10	4	0	0	**27**
Headmen over 60	N/A	25	6	45	0	20	30	1	20	**147**
Headwomen	N/A	5	7	24	0	15	15	6	10	**82**
One person in Household	N/A	4	2	2	0	0	5	4	5	**22**
Homeless	N/A	1	0	10	5	0	0	0	0	**16**
Total	N/A	**36**	**15**	**93**	**5**	**45**	**54**	**11**	**35**	**294**

Table 6

Ethnic Minorities / Religious

Ethnic minorities (Household)	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Dawei	42	146	135	544	116	164	127	465	411	2,150
Mon	0	1	0	4	0	1	0	0	0	6
Bamars	0	1	3	0	4	0	3	0	0	11
Karen	0	0	2	14	0	1	1	1	0	19
Rakhine	0	0	0	1	0	1	1	0	0	3
Total	42	148	140	563	120	167	132	466	411	2189

Table 7

Main Occupation

Occupation (%)	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Agriculture	99	75	0	71	70	80	90	92	91	74
Fishery	0	0	0	0	0	0	0	0	0	0
Agriculture & Collect forest products fo	0	0	95	0	0	0	0	0	0	11
Trade	0	1	0	8	0	1	4	1	0	2
Government officer	1	1	2	8	5	2	2	5	3	3
General wage labour	0	20	3	3	15	16	3	2	5	7
Employee	0	1	0	9	10	1	0	0	0	2
Unemployed person	0	2	0	2	0	0	2	0	0	1
Total %	100	100	100	100	100	100	100	100	99	100

Table 8

Employment and Wage Rate

Categories	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Average
Boy	N/A	3,000	6,000	N/A	N/A	4,000	N/A	N/A	N/A	1,444
Girl	N/A	3,000	5,000	N/A	N/A	N/A	N/A	15,000	N/A	2,556
Male	700,000	10,000	6,000	10,000	N/A	10,000	10,000	5,000,000	N/A	638,444
Female	N/A	5,000	5,000	10,000	N/A	8,000	3,500	5,000,000	N/A	559,056
Eldery Male	N/A	N/A	6,000	N/A	N/A	N/A	N/A	N/A	N/A	667
Eldery Female	N/A	N/A	5,000	N/A	N/A	N/A	N/A	N/A	N/A	556

Table 9

Number of Villagers Working Outside the Village

Item	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Average
No. of Persons	N/A	90	160	800	270	130	300	350	560	296

Table 10

No. of Household Having Livestock Raising

Type of livestock	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Pig	10	5	59	80	50	80	10	N/A	50	344
Poultry	50	77	70	447	20	167	132	N/A	200	1163
Cattle	15	4	7	16	20	11	8	N/A	80	161
Goat	N/A	0	4	20	0	0	0	N/A	0	24

Table 11

Annual Average Household Income and Expenses in Year 2014 (kyats/year)

Income	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zon	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Income per Household										
Average	2,000,000	3,500,000	3,200,000	12,500,000	4,200,000	7,500,000	3,100,000	3,900,000	3,500,000	**4,822,222**
Maximun	3,100,000	4,900,000	5,100,000	15,500,000	6,500,000	9,500,000	4,000,000	5,000,000	4,500,000	**6,455,556**
Minimm	900,000	1,100,000	1,000,000	7,900,000	2,500,000	6,500,000	1,008,000	2,000,000	1,800,000	**2,745,333**
Expenses per Household										
Average	1,800,000	3,240,000	2,550,000	12,100,000	3,900,000	6,900,000	2,920,000	3,250,000	2,800,000	**4,384,444**
Maximum	2,100,000	3,720,000	5,500,000	18,500,000	4,500,000	9,200,000	3,950,000	5,000,000	3,900,000	**6,263,333**
Minimm	900,000	1,080,000	950,000	7,700,000	1,900,000	5,300,000	1,752,000	1,500,000	1,500,000	**2,509,111**

Table 12

Distance to Health Service (km)

Type of service	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zon	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Average
To Yebyu hospital	7.77	3.98	12.83	6.77	4.69	3.7	2.56	8.06	11.01	6.81

Table 13

Availability of Infrastructure and Social Facilities in the Village

Infrastructure/Facilities	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Market	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
Factory	N/A	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A	1
Pre-school	N/A	N/A	N/A	1	N/A	N/A	N/A	1	1	3
Primary School	1	1	1	1	1	1	1	1	1	9
Middle School	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	N/A	1
Temple	1	1	1	5	1	3	1	2	1	16
Cemetery	1	1	1	1	1	1	1	1	1	9
Rural Health Sub-center	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A	1	2
Village meeting hall / Administration offi	1	N/A	N/A	1	1	1	N/A	1	1	6
Transmission line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
Electricity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
Pipeline	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0

Table 14

Existing of Unexploded Ordnance in the Vicinity of the Village Area

Social Facilities	Kin Ywar	Pale Gu	Wet Chaung	Pagaw Zun	Min Dut	The Prae Zun	Kyauk Hwet Kone	Yalai	Thit toh Taut	Total
Unexploded Ordnance	No	No	No	No	No	No	No	No	No	No

RESULT OF SOCIO-ECONOMIC SURVEY
INFORMATION OF RESPONDENT

Items	Pale Gu		Mla Dut		Tha Byay Zun		Kyauk Hwet Kom		Yalni		PagawZun		Wat Chaung		Tait To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
1.1 Gender																		
- Male	3	14.30	5	33.33	4	26.67	5	33.33	8	30.77	9	30.00	5	25.00	3	20.00	42	26.75
- Female	18	85.70	10	66.67	11	73.33	10	66.67	18	69.23	21	70.00	15	75.00	12	80.00	115	73.25
Total	**21**	**100.00**	**15**	100.00	**15**	**100.00**	15	100.00	26	**100.00**	**30**	**100.00**	20	100.00	**15**	**100.00**	**157**	**100.00**
1.2 Age of respondent(years)																		
- Maximum	74.00		75.00		82.00		77.00		69.00		76.00		80.00		70.00		75.38	
- Minimum	28.00		31.00		28.00		42.00		20.00		15.00		26.00		27.00		27.13	
- Average	49.67		47.40		55.07		58.47		45.08		47.83		47.65		50.40		50.19	
1.3 **Education**																		
- Illiterate	1	4.80	0	0.00	2	13.33	0	0.00	0	0.00	1	3.33	1	5.00	2	13.33	7	4.46
- Elementary	12	57.00	8	53.33	11	73.33	9	60.00	17	65.38	22	73.33	16	80.00	9	60.00	104	66.24
- Mid-Education	6	28.60	4	26.67	1	6.67	1	6.67	6	23.08	4	13.33	0	0.00	1	6.67	23	14.65
- Higher education/Graduated School	1	4.80	3	20.00	0	0.00	0	0.00	3	11.54	3	10.00	0	0.00	1	6.67	11	7.01
- Other	1	4.80	0	0.00	1	6.67	5	33.33	0	0.00	0	0.00	3	15.00	2	13.33	12	7.64
- Reason to master education	1	100.00			1	100.00	5	100.00					3	100.00	2	100.00	12	100.00
1.4 Ethnicity																		
- Bamar	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
- Karen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Mon	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Other	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
1.5 **Religion**																		
- Buddhism	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
- Islamic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Christ	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Other	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	21	100.00	15	100.00	15	**100.00**	15	**100.00**	26	100.00	30	**100.00**	**20**	**100.00**	15	**100.00**	**157**	**100.00**
1.6 Living in the village(years)																		
- Maximum	74.00		75.00		82.00		67.00		69.00		76.00		60.00		70.00		71.63	
- Minimum	6.00		2.00		0.00		30.00		10.00		4.00		3.00		27.00		10.25	
- Average	47.10		41.30		45.29		52.27		40.64		41.50		34.75		50.40		44.11	

SOCIO-ECONOMIC OF HOUSEHOLD

Items	Phi GaNo		Min Dut		Tha Byay Zun		Ktouk Hwet Korn		Yalai		Pagawyun		Wat Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.1 Number of household																		
- Member (persons)																		
- Maximum	11.00		8.00		13.00		8.00		12.00		11.00		9.00		9.00		10.13	
- Minimum	2.00		3.00		2.00		4.00		2.00		3.00		2.00		3.00		2.63	
- Average	6.10		5.40		5.40		2.93		4.62		6.17		4.95		5.67		5.16	
- Male (persons/s)																		
- Maximum	5.00		5.00		7.00		5.00		7.00		9.00		6.00		7.00		6.50	
- Minimum	0.00		1.00		1.00		1.00		0.00		1.00		0.00		1.00		0.63	
- Average	2.71		2.73		2.73		2.53		2.23		3.03		2.60		2.93		2.74	
- Female (persons/s)																		
- Maximum	6.00		5.00		6.00		4.00		5.00		9.00		5.00		4.00		5.50	
- Minimum	1.00		1.00		1.00		2.00		1.00		1.00		1.00		1.00		1.00	
- Average	3.38		2.67		2.67		3.00		2.38		3.10		2.30		2.73		2.73	
- Employment (persons/s)																		
- Maximum	5.00		7.00		5.00		7.00		8.00		6.00		5.00		4.00		6.38	
- Minimum	0.00		1.00		0.00		1.00		1.00		0.00		0.00		1.00		0.50	
- Average	2.95		2.20		2.67		3.00		2.50		2.63		2.10		2.33		2.62	
- Unemployment (persons/s)																		
- Maximum	6.00		6.00		5.00		5.00		5.00		9.00		7.00		8.00		6.38	
- Minimum	1.00		1.00		1.00		0.00		0.00		0.00		0.00		1.00		0.50	
- Average	3.14		3.20		2.73		1.33		2.27		2.53		3.00		3.33		2.89	
2.2 Current occupation of household																		
2.2.1 Main occupation																		
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
- Agriculturist	7	33.34	8	53.33	5	33.33	12	80.00	17	65.38	11	36.67	15	75.00	7	46.67	82	52.23
- Government officer	0	0.00	1	6.67	4	26.67	2	13.33	1	3.85	1	3.33	1	5.00	0	0.00	10	6.37
- Trading	2	9.50	1	6.67	0	0.00	0	0.00	1	3.85	1	3.33	0	0.00	1	5.67	6	3.82
- General wage labour	3	14.40	0	0.00	0	0.00	0	0.00	4	15.38	5	16.67	3	15.00	1	6.67	16	10.19
- Employee	2	9.50	0	0.00	1	6.67	0	0.00	0	0.00	2	6.67	0	0.00	1	5.67	6	3.82
- Handicraft	0	0.00	0	0.00	1	6.67	0	0.00	0	0.00	1	3.33	0	0.00	1	6.67	3	1.91
- Other	7	33.30	5	33.33	4	26.67	1	6.67	3	11.54	9	30.00	1	5.00	4	26.67	34	21.66
- Reason clothing	1	14.29	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.94
- Reason no comment	2	28.57	0	0.00	1	25.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	4	11.76
- Reason no job	2	28.57	0	0.00	1	25.00	0	0.00	0	0.00	3	33.33	0	0.00	1	25.00	7	20.59
- Reason thailand	2	28.57	1	20.00	1	25.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	5	14.71
- Reason fishery	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	3	8.82
- Reason shop keeper	0	0.00	1	20.00	0	0.00	1	100.00	0	0.00	1	11.11	0	0.00	2	50.00	5	14.71
- Reason small	0	0.00	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.94
- Reason construction worker	0	0.00	1	20.00	1	25.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	3	8.82
- Reason store	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	1	2.94
- Reason car rental	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	1	2.94
- Reason repair motorcycle	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	1	2.94
- Reason teacher	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	1	2.94
- Reason making production	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	2.94
- Reason season fruit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	1	2.94
2.2.2 Supplementary occupation																		
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	78.33	157	100.00
- Agriculturist	2	9.40	0	0.00	1	6.67	1	6.67	3	11.54	2	6.67	1	5.00	2	13.33	12	7.64
- Government officer	0	0.00	0	0.00	1	6.67	1	6.67	1	3.85	1	3.33	0	0.00	0	0.00	4	2.55
- Trading	1	4.80	0	0.00	0	0.00	0	0.00	1	3.85	1	3.33	2	10.00	0	0.00	5	3.18
- General wage labour	1	4.80	1	6.67	2	13.33	0	0.00	1	3.85	0	0.00	6	30.00	3	15.00	14	8.92
- Employee	0	0.00	0	0.00	1	6.67	0	0.00	1	3.85	1	3.33	0	0.00	0	0.00	3	1.91
- Handicraft	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Other	17	81.00	14	93.33	10	66.67	13	86.67	19	73.08	25	83.33	11	55.00	10	50.00	119	75.80
- Reason no job	14	82.35	8	57.14	7	70.00	12	92.31	17	89.47	20	80.00	11	100.00	8	80.00	97	81.51
- Reason no comment	2	11.76	1	7.14	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	2.52
- Reason rubber	1	5.88	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.84
- Reason car business	0	0.00	1	7.14	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.84
- Reason diver	0	0.00	2	14.29	1	10.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	2.52
- Reason orchard	0	0.00	1	7.14	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.84
- Reason shop seller	0	0.00	1	7.14	0	0.00	1	7.69	1	5.26	0	0.00	0	0.00	0	0.00	3	2.52
- Reason send money	0	0.00	0	0.00	1	10.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.84
- Reason shop	0	0.00	0	0.00	1	10.00	0	0.00	1	5.26	2	8.00	0	0.00	1	10.00	5	4.20
- Reason farm	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00	0	0.00	1	10.00	2	1.68
- Reason construction	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00	0	0.00	0	0.00	1	0.84
- Reason highway salient brick	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00	0	0.00	0	0.00	1	0.84
Total	17	100.00	14	100.00	10	100.00	13	100.00	19	100.00	25	100.00	11	100.00	10	100.00	119	100.00

Items	Plat GuNo		Min Dut		Tha Byay Zan		Kiouk Hwet Kora		Yalai		Pagawyun		Wat Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Type of work																		
- Employee	2	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	2.53
- Factory	1	6.25	0	0.00	0	0.00	1	8.33	2	25.00	5	31.25	0	0.00	0	0.00	9	11.39
- House maid	1	6.25	0	0.00	0	0.00	0	0.00	0	0.00	1	6.25	0	0.00	1	20.00	3	3.80
- Construction worker	0	0.00	1	12.50	1	11.11	0	0.00	1	12.50	1	6.25	1	20.00	1	20.00	6	7.59
- Garden Farm	0	0.00	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Rubber	0	0.00	0	0.00	3	33.33	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	4	5.06
- Fishery	0	0.00	0	0.00	1	11.11	1	8.33	0	0.00	0	0.00	1	20.00	0	0.00	3	3.80
- Helper	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Diver Salerepresentation	0	0.00	0	0.00	0	0.00	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Factory Rubber	0	0.00	0	0.00	0	0.00	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Selling ice boy	0	0.00	0	0.00	0	0.00	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Shop keeper	0	0.00	0	0.00	0	0.00	1	8.33	1	12.50	0	0.00	0	0.00	0	0.00	2	2.53
- Wood production	0	0.00	0	0.00	0	0.00	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	1	1.27
- Motorcycles shop	0	0.00	0	0.00	0	0.00	0	0.00	1	12.50	0	0.00	0	0.00	0	0.00	1	1.27
- General worker	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.25	0	0.00	0	0.00	1	1.27
- Shop fishery	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.25	0	0.00	0	0.00	1	1.27
- Boil peanut	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	1	1.27
- No comment	12	75.00	6	75.00	3	33.33	4	33.33	3	37.50	7	43.75	2	40.00	3	60.00	40	50.63
Total	16	100.00	8	100.00	9	100.00	12	100.00	8	100.00	16	100.00	5	100.00	5	100.00	79	100.00
2.3 Current land holding																		
2.3.1 Total number of plot (plot)																		
- Maximum	3.00		6.00		4.00		6.00		5.00		7.00		5.00		5.00		5.13	
- Minimum	0.00		1.00		0.00		0.00		1.00		0.00		0.00		1.00		0.38	
- Average	1.62		2.47		1.67		2.87		2.31		2.00		1.75		2.33		2.13	
Inside village (plot)																		
- Maximum	2.00		3.00		2.00		2.00		2.00		3.00		2.00		3.00		2.38	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.90		1.40		0.80		1.00		1.00		0.93		0.62		1.00		0.96	
Area (acre)																		
- Maximum	2.00		6.00		6.00		12.00		10.00		17.00		6.00		9.00		8.50	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.73		1.68		1.08		2.85		1.32		1.47		0.95		1.71		1.47	
Outside village (plot)																		
- Maximum	2.00		1.00		3.00		5.00		4.00		6.00		5.00		4.00		4.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.81		1.13		0.87		1.87		1.75		1.10		1.15		1.27		1.19	
Area (acre)																		
- Maximum	15.00		20.00		20.00		20.00		30.00		40.00		30.00		18.00		27.88	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	4.19		5.63		4.83		9.30		8.63		4.75		7.28		5.41		6.26	
2.3.2 Total area of land holding (acre)																		
- Maximum	15.00		41.50		30.00		25.00		31.00		45.00		32.00		18.00		29.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		1.00		0.13	
- Average	4.96		7.52		5.95		12.18		9.94		6.22		8.33		7.12		7.79	

SOCIO-ECONOMIC OF HOUSEHOLD (Continue)

Household agricultural profile in 2013/2014																		
Items	Phi Gu Nu		Min Dat		Tha Byay Zun		Kwak Hwet Kon		Yalai		Pagawyun		Wut Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.4.1 Agricultural activities (household)																		
- No	11	52.40	2	13.33	2	13.33	1	6.67	1	3.85	7	23.33	6	30.10	2	13.33	32	20.38
- Yes	10	47.62	13	86.67	13	86.67	14	93.33	25	96.15	23	76.67	14	70.00	13	86.67	125	79.62
Type of crop grown (more than 1 answer)																		
- Rubber	7	28.00	12	42.86	10	34.48	14	45.16	22	39.29	21	32.31	10	31.25	11	26.19	107	34.74
- Cashew	6	24.00	5	15.15	6	20.69	11	35.48	14	25.00	18	27.69	9	28.13	7	16.67	76	24.68
- Betel	6	24.00	7	21.21	5	21.03	3	9.68	7	12.50	8	12.31	8	25.00	5	11.90	53	17.21
- Lime/Lemon	1	4.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.54	0	0.00	0	0.00	2	0.65
- Dyan/Zol bean	1	4.00	1	3.03	0	0.00	0	0.00	1	1.79	2	3.08	0	0.00	2	4.76	7	2.27
- Paddy/Rice	2	8.00	1	3.03	1	3.45	[illegible]	9.68	5	8.93	[illegible]	10.77	1	3.13	5	11.90	25	8.12
- Chilli	1	4.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.32
- Pepper	1	4.00	0	0.00	0	0.00	0	0.00	1	1.79	0	0.00	1	3.13	1	2.38	4	1.30
- Sugar cane	0	0.00	1	3.03	1	3.45	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.65
- Mango	0	0.00	1	3.03	0	0.00	0	0.00	1	1.79	3	4.62	0	0.00	3	7.14	8	2.60
- Vegetable	0	0.00	0	0.00	1	3.45	0	0.00	1	1.79	1	1.54	0	0.00	1	2.38	4	1.30
- Coconut	0	0.00	0	0.00	1	3.45	0	0.00	1	1.79	1	1.54	1	3.13	2	4.76	6	1.95
- All kind of plants	0	0.00	0	0.00	0	0.00	0	0.00	2	3.57	1	1.54	1	3.13	1	2.38	5	1.62
- Durian	0	0.00	0	0.00	0	0.00	0	0.00	1	1.79	1	1.54	1	3.13	0	0.00	3	0.97
- Bamboo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.54	0	0.00	1	2.38	2	0.65
- Plant of tree	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.38	1	0.32
- Marian	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.38	1	0.32
- Seasonal fruit	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.38	1	0.32
Total	25	100.00	28	91.34	29	100.00	31	100.00	56	100.00	65	100.00	32	100.00	42	100.00	308	100.00
2.4.1.1 Rubber																		
Cultivated Area (acre)																		
- Maximum	5.00		40.00		22.00		40.00		15.00		13.00		10.00		6.00		18.88	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	1.38		5.22		5.97		11.25		4.31		2.75		1.94		2.00		4.18	
Water source used																		
- Well	2	28.57	2	16.67	5	50.00	3	21.43	7	31.82	0	0.00	2	20.00	3	27.27	24	22.43
- Forest water	2	28.57	0	0.00	0	0.00	0	0.00	2	9.09	2	9.52	0	0.00	0	0.00	6	5.61
- Rain water	2	28.57	0	0.00	5	50.00	8	57.14	9	40.91	5	23.81	2	20.00	1	9.09	32	29.91
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	9.52	1	10.00	0	0.00	3	2.80
- Natural water	0	0.00	1	8.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.93
- Own water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.76	0	0.00	0	0.00	1	0.93
- No Comment	1	14.29	9	75.00	0	0.00	3	21.43	4	18.18	11	52.38	5	50.00	7	63.64	40	37.38
Total	7	100.00	12	100.00	10	100.00	14	100.00	22	100.00	21	100.00	10	100.00	11	100.00	107	100.00
Input Cost(% of Sale)																		
- Maximum	10,000,000.00		4,900,000.00		50,000,000.00		20,000,000.00		25,000,000.00		20,000,000.00		100,000,000.00		66,666,667.00		35708333.38	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	483,333.33		725,666.08		7,462,666.67		2,525,333.33		1,031,369.19		1,698,500.00		553,666.65		955,055.40		1475061.60	
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Sale																		
- Maximum	0.00		0.00		1050.00		0.00		0.00		0.00		0.00		240.00		161.25	
- Minimum	0.00		0.00		0.50		0.00		0.00		0.00		0.00		0.50		0.00	
- Average	0.00		0.00		70.00		0.00		0.00		0.00		0.00		17.14		10.88	
Sale Price (Kyat) per kg/ton																		
- Maximum	0.00		0.00		1430.00		0.00		0.00		0.00		0.00		20000.00		2678.25	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		95.33		0.00		0.00		0.00		0.00		1333.33		178.58	
Income (Kyat) per Crop																		
- Maximum	2,000,000.00		600,000.00		1,500,000.00		10,800,000.00		2,000,000.00		50,000,000.00		2,650,000.00		1,666,667.00		3802083.38	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	104,761.90		45,000.00		173,333.33		3,154,121.13		472,179.46		526,944.43		170,833.30		234,441.47		476076.00	
2.4.1.2 Cashew																		
Cultivated Area (acre)																		
- Maximum	6.00		3.00		11.00		69.00		12.00		10.00		8.00		4.00		14.38	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.74		1.53		1.55		42.21		2.25		1.81		1.29		0.54		6.46	
Water source used																		
- Well	2	33.33	1	20.00	3	50.00	1	9.09	4	28.57	0	0.00	2	22.22	2	28.57	15	19.74
- Forest water	2	33.33	0	0.00	0	0.00	0	0.00	2	14.29	2	11.11	0	0.00	0	0.00	6	7.89
- Rain water	1	16.67	0	0.00	3	50.00	7	63.64	5	35.71	5	27.78	0	0.00	1	14.29	22	28.95
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.56	1	11.11	0	0.00	2	2.63
- Own water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.56	0	0.00	0	0.00	1	1.32
- No Comment	1	16.67	4	80.00	0	0.00	3	27.27	3	21.43	9	50.00	6	66.67	4	57.14	30	39.47
Total	6	100.00	5	100.00	6	100.00	11	100.00	14	100.00	18	100.00	9	100.00	7	100.00	76	100.00
Input Cost(% of Sale)																		
- Maximum	10,000,000.00		250,000.00		600,000.00		9,000,000.00		10,000,000.00		17,500,000.00		100,000,000.00		1,650,000.00		17687500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	511,907.14		56,666.67		73,333.33		810,000.00		466,730.73		912,055.57		5,251,666.65		220,621.33		1054121.40	
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum	150,000.00		0.00		0.00		0.00		100.00		0.00		0.00		0.00		18762.50	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	7142.86		0.00		0.00		0.00		3.55		0.00		0.00		0.00		893.34	
- Sale																		
- Maximum	0.00		0.00		120.00		0.00		100.00		0.00		0.00		100.00		41.13	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	5.43		0.00		10.00		0.00		67.71		0.00		0.00		6.67		10.55	
Sale Price (Kyat) per kg/ton																		
- Maximum	1000.00		0.00		500000.00		0.00		100,000.00		0.00		0.00		1000.00		87750.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	47.62		0.00		50133.33		0.00		3,584.62		0.00		0.00		66.67		5516.53	
Income (Kyat) per Crop																		
- Maximum	600,000.00		30,000.00		450,000.00		5,000,000.00		1,333,333.00		20,000,000.00		2,650,000.00		3,000,000.00		2876666.63	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	29,000.00		3,666.67		53,333.33		849,894.47		123,717.92		496,021.10		329,861.30		300,111.13		285575.99	

2.4.1.3 Betel									
Cultivated Area (acre)									
- Maximum	3.00	7.00	9.00	5.00	5.00	20.00	5.00	3.00	6.25
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.12	0.93	1.25	0.74	0.73	0.69	0.89	0.50	0.73
Water source used									
- Well	1 16.67	1 14.29	3 33.33	0 0.00	4 57.14	0 0.00	0 0.00	1 20.00	10 18.87
- Forest water	1 16.67	0 0.00	0 0.00	0 0.00	1 14.29	1 12.50	0 0.00	0 0.00	3 5.66
- Rain water	1 16.67	0 0.00	4 44.44	3 100.00	2 28.57	1 12.50	2 25.00	0 0.00	13 24.53
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	3 37.50	0 0.00	1 20.00	4 7.55
- Own water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 12.50	0 0.00	0 0.00	1 1.89
- No Comment	3 50.00	6 85.71	2 22.22	0 0.00	0 0.00	2 25.00	6 75.00	3 60.00	22 41.51
Total	6 100.00	7 100.00	9 100.00	3 100.00	7 100.00	8 100.00	8 100.00	5 100.00	53 100.00
Input Cost(% of Sale)									
- Maximum	10,000,000.00	250,000.00	250,000.00	3,000,000.00	500,000.00	550,000.00	100,000,000.00	6,595,667.00	15195633.38
- Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	452,897.62	46,666.67	16,000.00	20,000.00	53,545.12	65,533.47	5,155,000.00	595,569.52	805479.09
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.08	0.00	0.00	0.00	0.00	10,000,000.00	0.00	0.00	1250000.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	333,333.33	0.00	0.00	41666.67
- Sale									
- Maximum	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	16.88
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	1.88
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	175.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	182.00	0.00	0.00	0.00	0.00	0.00	22.75
Income (Kyat) per Crop									
- Maximum	400,000.00	700,000.00	400,000.00	1,666,667.00	3,333,333.00	10,000,000.00	325,000.00	1,666,667.00	2061458.38
- Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	20,000.00	111,666.67	51,666.67	157,777.80	96,754.55	467,777.77	23,916.65	141,333.13	126138.94
2.4.1.4 Lime/Lemon									
Cultivated Area (acre)									
- Maximum	2.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.38
- Minimum	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
- Average	0.12	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.04
Water source used									
- Well	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Forest water	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00
- Rain water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Own water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	1 50.00
- No Comment	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
Total	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	2 100.00
Input Cost(% of Sale)									
- Maximum	10,000,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1250000.00
- Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	476,190.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59523.81
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Sale									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat) per Crop									
- Maximum	400,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50000.00
- Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	19,047.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2380.95
2.4.1.5 Djeanlol bean									
Cultivated Area (acre)									
- Maximum	3.00	2.00	0.00	0.00	1.00	3.00	0.00	1.00	1.25
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.12	0.13	0.00	0.00	0.05	0.12	0.00	0.18	0.05
Water source used									
- Well	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00	0 0.00	0 0.00	1 12.50
- Forest water	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 12.50
- Rain water	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00	0 0.00	0 0.00	1 50.00	2 25.00
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Own water	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00	1 100.00	0 0.00	0 0.00	2 25.00
- No Comment	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00	2 25.00
Total	1 100.00	1 100.00	0 0.00	0 0.00	2 100.00	2 200.00	0 0.00	2 100.00	8 100.00
Input Cost(% of Sale)									
- Maximum	10,000,000.00	25,000.00	0.00	0.00	0.00	0.00	0.00	92,350.00	1291562.50
Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	476,190.45	16,666.67	0.00	0.00	0.00	0.00	0.00	5,333.33	62711.31
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Sale									
- Maximum	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat) per Crop									
- Maximum	400,000.00	25,000.00	0.00	0.00	125,000.00	0.00	0.00	50,000.00	75000.00
- Minimum	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	19,047.62	1,666.67	0.00	0.00	4,166.67	0.00	0.00	3,333.00	3526.75

2.4.1.6 Paddy/Rice																		
Cultivated Area (acre)																		
- Maximum		3.00		1.00		4.00		10.00		4.00		10.00		4.00		10.00		5.75
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.29		0.13		0.50		1.73		0.72		0.92		0.25		1.48		0.72
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	3	60.00	4	16.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	1	50.00	0	0.00	1	100.00	3	100.00	2	28.57	2	40.00	1	100.00	1	20.00	11	44.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	1	14.29	1	20.00	0	0.00	0	0.00	2	8.00
- No Comment	1	50.00	2	100.00	0	0.00	0	0.00	1	57.14	1	20.00	0	0.00	1	20.00	8	32.00
Total	2	100.00	1	100.00	1	100.00	3	100.00	7	100.00	5	100.00	1	100.00	5	100.00	25	100.00
Input Cost(% of Sale)																		
- Maximum		200,000.00		250,000.00		250,000.00		2,500,000.00		10,000,000.00		1,000,000.00		200,000.00		2,500,000.00		3125000.00
- Minimum		0		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		5,523.95		16,666.67		16,666.67		213,333.33		284,233.33		415,461.54		5,000.00		361,111.11		177512.09
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum		300800.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		37500.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		14255.71		0.00		0.00		0.00		0.00		0.00		0.00		0.00		1785.71
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		350.00		850.00		0.00		2400.00		520.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		33.33		35.35		0.00		180.00		28.46
Sale Price (Kyat) per Kyat/ton																		
- Maximum		50.00		0.00		0.00		0.00		225.00		330.00		0.00		500.00		155.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		3.81		0.00		0.00		0.00		32.07		22.69		0.00		57.33		11.32
Income (Kyat) per Crop																		
- Maximum		350,000.00		0.00		200,000.00		1,400,000.00		10,000,000.00		9,000,000.00		0.00		5,000,000.00		3243750.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		16,650.67		0.00		13,333.33		206,666.67		291,666.67		423,076.69		0.00		610,777.83		211477.35
2.4.1.7 Chilli																		
Cultivated Area (acre)																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Input Cost(% of Sale)																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sale Price (Kyat) per Kyat/ton																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Income (Kyat) per Crop																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
2.4.1.8 Pepper																		
Cultivated Area (acre)																		
- Maximum		5.00		0.00		0.00		0.00		0.00		2.00		3.00		2.00		1.38
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.26		0.00		0.00		0.00		0.00		0.03		0.05		0.17		0.06
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	100.00	2	50.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	25.00
- No Comment	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00	1	100.00	4	100.00
Input Cost(% of Sale)																		
- Maximum		0.00		0.00		0.00		0.00		0.00		33,333.00		33,333.00		1,250,000.00		164583.25
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		1,282.04		2,666.65		55,555.55		10785.25
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sale Price (Kyat) per Kyat/ton																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Income (Kyat) per Crop																		
- Maximum		0.00		0.00		0.00		0.00		0.00		333,333.00		333,333.00		225,000.00		98558.25
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		12,820.50		11,666.65		15,000.00		4935.89

2.4.1.9 Sugar cane									
Cultivated Area (acre)									
- Maximum	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.88
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.43	0.05	0.00	0.00	0.00	0.00	0.00	0.06
Water source used									
- Well	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Forest water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Rain water	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- No Comment	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 50.00
Total	0 0.00	1 100.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	2 100.00
Input Cost(% of Sale)									
- Maximum	0.00	50,000.00	200,000.00	0.00	0.00	0.00	0.00	0.00	31250.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	3,333.33	13,333.33	0.00	0.00	0.00	0.00	0.00	2083.33
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Sale									
- Maximum	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	266.67	0.00	0.00	0.00	0.00	0.00	33.33
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	62.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	4.17
Income (Kyat) per Crop									
- Maximum	0.00	50,000.00	200,000.00	0.00	0.00	0.00	0.00	0.00	31250.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	3,333.33	13,333.33	0.00	0.00	0.00	0.00	0.00	2083.33
2.4.1.10 Mango									
Cultivated Area (acre)									
- Maximum	0.00	0.00	0.00	0.00	1.35	1.00	0.00	2.00	0.50
- Minimum	0.00	0.00	0.00	0.00	0.30	0.10	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.06	0.03	0.00	0.25	0.04
Water source used									
- Well	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	2 22.22
- Forest water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Rain water	0 0.00	0 0.00	0 0.00	0 0.00	2 66.67	0 0.00	0 0.00	1 33.33	3 33.33
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 33.33	1 11.11
- Own water	0 0.00	0 0.00	0 0.00	0 0.00	1 33.33	2 100.00	0 0.00	0 0.00	2 22.22
- No Comment	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 33.33	1 11.11
Total	0 0.00	1 100.00	0 0.00	0 0.00	3 100.00	2 200.00	0 0.00	3 100.00	9 100.00
Input Cost(% of Sale)									
- Maximum	0.00	50,000.00	0.00	0.00	0.00	33,333.00	0.00	166,667.00	31250.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	3,333.33	0.00	0.00	0.00	[illegible]	0.00	[illegible]	807.48
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Sale									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat) per Crop									
- Maximum	0.00	0.00	0.00	0.00	22,500.00	333,333.00	0.00	16,666,667.00	2126562.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	5,500.00	12,620.50	0.00	1,113,777.50	147512.29
2.4.1.11 Vegetable									
Cultivated Area (acre)									
- Maximum	0.00	0.00	4.00	0.60	0.00	2.00	0.00	1.00	0.58
- Minimum	0.00	0.00	3.00	0.40	0.00	0.10	0.00	0.00	0.50
- Average	0.00	0.00	0.25	0.05	0.01	0.03	0.00	0.04	0.05
Water source used									
- Well	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	1 25.00
- Forest water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Rain water	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 25.00
- Stream water	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- No Comment	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	1 100.00	2 50.00
Total	0 0.00	0 0.00	1 100.00	0 0.00	1 100.00	1 100.00	0 0.00	1 100.00	4 100.00
Input Cost(% of Sale)									
- Maximum	0.00	0.00	0.00	0.00	5000.00	0.00	0.00	60,000.00	8500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	266.67	0.00	0.00	4,000.00	533.33
Production (kg/ton) per Crop									
- Consumption									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Sale									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale Price (Kyat) per Kyat/ton									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat) per Crop									
- Maximum	0.00	0.00	200,000.00	0.00	24,000.00	200,000.00	0.00	0.00	65500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	13,333.33	0.00	800.00	11,578.45	0.00	0.00	3308.97

2.4.1.12 Coconut																		
Cultivated Area (acre)																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		3.00		3.00		0.75
- Minimum		0.00		0.00		0.00		0.00		0.01		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.10		0.13		0.28		0.05
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	16.67
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	16.67
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	16.67
- No Comment	0	0.00	0	0.00	1	100.00	0	0.00	1	100.00	0	0.00	0	0.00	1	50.00	3	50.00
Total	0	0.00	0	0.00	1	100.00	0	0.00	1	100.00	1	100.00	1	100.00	2	100.00	6	100.00
Input Cost(% of Sale)																		
- Maximum		0.00		0.00		0.00		0.00		0.00		100,000.00		500,000.00		6,666,667.00		908333.38
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		3,846.15		25,000.00		555,555.60		73050.22
Production (kg-ton) per Crop																		
- Consumption																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sale Price (Kyat) per Kyat-ton																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Income (Kyat) per Crop																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		16,666,667.00		2083333.38
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		1,111,111.11		138888.89
2.4.1.13 All kind of plant																		
Cultivated Area (acre)																		
- Maximum		0.00		0.00		0.00		0.00		10.00		5.00		2.00		3.00		2.50
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.32		0.38		0.58		0.17		0.12
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00	2	40.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	2	100.00	0	0.00	0	0.00	3	60.00
Total	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	2	100.00	1	100.00	1	100.00	5	100.00
Input Cost(% of Sale)																		
- Maximum		0.00		0.00		0.00		0.00		9,500,000.00		500,000.00		0.00		1,250,000.00		1406250.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		71,666.67		38,461.54		0.00		83,333.33		19182.69
Production (kg-ton) per Crop																		
- Consumption																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sale Price (Kyat) per Kyat-ton																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Income (Kyat) per Crop																		
- Maximum		0.00		0.00		0.00		0.00		575,000.00		3,000,000.00		0.00		225,000.00		475000.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		19,166.67		182,307.69		0.00		15,000.00		22059.30
2.4.1.14 Durain																		
Cultivated Area (acre)																		
- Maximum		0.00		0.00		0.00		0.00		3.00		1.00		1.00		0.00		0.88
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.10		0.03		0.12		0.00		0.03
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	33.33
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	33.33
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	33.33
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00	1	100.00	0	0.00	3	100.00
Input Cost(% of Sale)																		
- Maximum		0.00		0.00		0.00		0.00		125,000.00		33,333.00		500,000.00		0.00		83291.63
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		4,166.67		1,282.05		25,000.00		0.00		3806.09
Production (kg-ton) per Crop																		
- Consumption																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Sale																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sale Price (Kyat) per Kyat-ton																		
- Maximum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Income (Kyat) per Crop																		
- Maximum		0.00		0.00		0.00		0.00		75,000.00		333,333.00		0.00		0.00		51041.63
- Minimum		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
- Average		0.00		0.00		0.00		0.00		2,500.00		12,820.40		0.00		0.00		1915.05

2.4.1.15 Bamboo																		
Cultivated Area (acre)																		
- Maximum	0.00		0.00		0.00		0.00		0.08		0.00		0.00		1.00		0.13	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.10		0.00	
- Average	0.00		0.00		0.00		0.00		0.01		0.00		0.00		0.19		0.01	
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	50.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	50.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00	2	100.00
Input Cost(% of Sale)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		1,250,000.00		156250.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		83,333.33		10416.67	
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Sale																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Sale Price (Kyat) per Kyat/ton																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat) per Crop																		
- Maximum	0.00		0.00		0.00		0.00		50,000.00		0.00		0.00		225,000.00		34375.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		1,666.67		0.00		0.00		15,000.00		2083.33	
2.4.1.16 Plam oil tree																		
Cultivated Area (acre)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		1.00		0.13	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.05		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.05		0.01	
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
Input Cost(% of Sale)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		2,000,000.00		250000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		133,333.33		16666.67	
Production (kg/ton) per Crop																		
- Consumption																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Sale																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Sale Price (Kyat) per Kyat/ton																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat) per Crop																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		225,000.00		15000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		15,000.00		1000.00	
2.4.1.17 Marian																		
Cultivated Area (acre)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		1.00		0.13	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.10		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.15		0.01	
Water source used																		
- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
Input Cost(% of Sale)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		2,000,000.00		250000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		133,333.33		16666.67	
Production (kyat/ton) per Crop																		
- Consumption																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Sale																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Sale Price (Kyat) per Kyat/ton																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat) per Crop																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		12,000.00		1500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		[illegible]		1000.00	

2.4.1.18	Seasonal fruit																		
	Cultivated Area (acre)																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		3.00		0.38	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.17		0.02	
	Water source used																		
	- Well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	- Forest water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	- Rain water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	- Stream water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	- No Comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
	Total	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
	Input Cost(% of Sale)																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		50,000.00		6250.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		3,333.33		416.67	
	Production (kg/bed) per Crop																		
	- Consumption																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	Sale																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	Sale Price (Kyat) per Kyethan																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	Income (Kyat) per Crop																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		250,000.00		25000.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		23,333.33		1666.67	
2.4.2	Agro-forestry activities																		
	Agro-forestry products No.1 (household)																		
	- Rubber	1	33.33	0	0.00	1	100.00	1	50.00	2	100.00	2	50.00	0	0.00	0	0.00	7	46.67
	- Wood	2	66.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	13.33
	- Cashew	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.67
	- Bamboo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	0	0.00	0	0.00	1	6.67
	- Betel	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	0	0.00	0	0.00	1	6.67
	- Charcoal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	1	6.67
	- Charcoal and fire wood	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	1	6.67
	- Charcoal and wood	0	0.00	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	1	6.67
	Average income (kyat/year)																		
	- Maximum	45,000.00		0.00		500,000.00		5,000,000.00		1,500,000.00		200,000.00		1,200,000.00		0.00		1068125.00	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	- Average	2,368.42		0.00		33,333.33		350,000.00		71,535.46		26,666.67		129,500.00		0.00		80425.86	
	Agro-forestry products No.2 (household)																		
	- Rubber							2	100.00									1	100.00
	Average income (kyat/year)																		
	- Maximum							1,500,000.00										187500.00	
	- Minimum							0.00										0.00	
	- Average							100,000.00										12500.00	

Livestock in 2013/2014																		
Items	Flat GuNo		Min Dut		Thu Byay Zun		Kauk Hwet Kone		Yalai		Pagawyun		Wet Chaung		Thit To Thet		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.4.3 Livestock in 2013/2014 (household)																		
- No	18	85.71	12	80.00	6	40.00	13	86.67	23	88.46	25	83.33	10	50.00	15	100.00	122	77.71
- Yes (more than 1 answer)	3	14.29	3	20.00	9	60.00	2	13.33	3	11.54	5	16.67	10	50.00	0	0.00	35	22.29
- Cows	1	33.33	0	0.00	3	20.00	0	0.00	0	0.00	1	16.67	1	6.25			6	12.24
- Buffalos	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00
- Swine	0	0.00	0	0.00	4	26.67	0	0.00	2	50.00	0	0.00	3	18.75			9	18.37
- Duck	0	0.00	0	0.00	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00			1	2.04
- Chicken	2	66.67	3	100.00	7	46.67	2	100.00	2	50.00	5	83.33	10	62.50			31	63.27
- Eggs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00
- Other	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	12.50			2	4.08
Total	3	100.00	3	100.00	15	100.00	3	100.00	4	100.00	6	100.00	16	100.00			49	100.00
2.4.3.1 Cows																		
Number																		
- Maximum	4.00		0.00		3.00		0.00		0.00		2.00		5.00		0.00		1.63	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.19		0.00		0.27		0.00		0.00		0.07		0.25		0.00		0.09	
Objective																		
- Sale	1	100.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	33.33
- Consumption	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	1	100.00	1	100.00	0	0.00	3	50.00
- Sale & Consumption	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	16.67
Cost (Kyat/year)																		
- Maximum	180,000.00		0.00		300,000.00		0.00		0.00		240,000.00		480,000.00		0.00		150000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	8,571.43		0.00		20,000.00		0.00		0.00		8,000.00		24,000.00		0.00		7571.43	
Sale (Head/year)																		
- Maximum	1.00		0.00		2.00		0.00		0.00		0.00		0.00		0.00		0.25	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.05		0.00		0.13		0.00		0.00		0.00		0.00		0.00		0.02	
Income (Kyat/year)																		
- Maximum	250,000.00		0.00		600,000.00		0.00		0.00		0.00		0.00		0.00		106250.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	11,904.76		0.00		40,000.00		0.00		0.00		0.00		0.00		0.00		6488.10	
2.4.3.2 Buffalos																		
Number																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Objective																		
- Sale	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Consumption	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Sale & Consumption	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cost (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Sale (Head/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2.4.3.3 Swine																		
Number																		
- Maximum	0.00		0.00		3.00		0.00		1.00		0.00		10.00		0.00		1.75	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.60		0.00		0.08		0.00		1.15		0.00		0.22	
Objective																		
- Sale	0	0.00	0	0.00	3	75.00	0	0.00	1	50.00	0	0.00	3	100.00	0	0.00	7	77.78
- Consumption	0	0.00	0	0.00	1	25.00	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	2	22.22
- Sale & Consumption	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cost (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		100,000.00		0.00		720,000.00		0.00		102500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		3,846.15		0.00		50,000.00		0.00		6730.77	
Sale (Head/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		3.00		0.00		0.38	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Average	0.00		0.00		0.00		0.00		0.00		0.00		0.35		0.00		0.02	
Income (Kyat/year)																		
- Maximum	0.00		0.00		250,000.00		0.00		0.00		0.00		90,000.00		0.00		42500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		13,333.33		0.00		0.00		0.00		45,000.00		0.00		8041.67	

2.4.3.4 Duck									
Number									
- Maximum	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	6.25
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.42
Objective									
- Sale	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Consumption	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Sale & Consumption	0 0.00	0 0.00	1 100.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00
Cost (Kyat/year)									
- Maximum	0.00	0.00	180,000.00	0.00	0.00	0.00	0.00	0.00	22500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	12,000.00	0.00	0.00	0.00	0.00	0.00	1500.00
Sale (Head/year)									
- Maximum	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	2.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.17
Income (Kyat/year)									
- Maximum	0.00	0.00	60,000.00	0.00	0.00	0.00	0.00	0.00	7500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	500.00
2.4.3.5 Chicken									
Number									
- Maximum	20.00	13.00	30.00	30.00	30.00	21.00	60.00	0.00	25.38
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	1.67	2.20	5.53	2.00	2.31	2.85	8.65	0.00	3.15
Objective									
- Sale	0 0.00	1 33.33	2 28.57	0 0.00	1 50.00	0 0.00	0 0.00	0 0.00	4 12.90
Consumption	1 50.00	1 33.33	5 71.43	2 100.00	0 0.00	4 80.00	5 50.00	0 0.00	18 58.06
- Sale & Consumption	1 50.00	1 33.33	0 0.00	0 0.00	1 50.00	1 20.00	5 50.00	0 0.00	9 29.03
Total	2 100.00	3 100.00	7 100.00	2 100.00	2 100.00	5 100.00	10 100.00	0 0.00	31 100.00
Cost (Kyat/year)									
- Maximum	4,500.00	216,000.00	0.00	0.00	50,000.00	300,000.00	1,440,000.00	0.00	251312.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	214.29	14,400.00	0.00	0.00	1,923.08	16,000.00	20,475.15	0.00	15751.57
Sale (Head/year)									
- Maximum	0.00	20.00	0.00	0.00	40.00	5.00	56.00	0.00	15.63
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	2.67	0.00	0.00	2.54	0.17	4.25	0.00	1.08
Income (Kyat/year)									
- Maximum	0.00	120000.00	4500.00	0.00	140,000.00	20,000.00	200,000.00	0.00	60562.50
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	10333.33	300.00	0.00	5,576.92	8,000.00	16,250.00	0.00	5082.53
2.4.3.6 Eggs									
Number									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Objective									
- Sale	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Consumption	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Sale & Consumption	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
Cost (Kyat/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale (Head/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.4.3. Other									
Number									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.25
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.01
Objective									
- Sale	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
- Consumption	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	0 0.00	1 100.00
- Sale & Consumption	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00
Cost (Kyat/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale (Head/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Income (Kyat/year)									
- Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Items	Plat GuNo		Min Dut		Tha Byay Zun		Kiouk Hwet Kon		Yalat		Pagawyun		Wat Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Fisheries																		
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.4.4.1 Type of fishing activity																		
- River/stream/pond	1	4.76	2	13.33	0	0.00	0	0.00	0	0.00	2	6.67	0	0.00	0	0.00	5	3.18
- Aquaculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Both	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No	20	95.24	13	86.67	15	100.00	15	100.00	26	100.00	28	93.33	20	100.00	15	100.00	152	96.82
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
2.4.4.2 Aquaculture																		
Specify the type																		
- No	21.00	100.00	15.00	100.00	15.00	100.00	15.00	100.00	26.00	100.00	30.00	100.00	20.00	100.00	15.00	100.00	157	100.00
Total production (Kg/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
For home consumption (Kg/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Sale (Kg/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Total Cost (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Price (Kyat/kg)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2.4.4.3 River/stream/pond																		
Specify the type																		
- No	21.00	100.00	15.00	100.00	15.00	100.00	15.00	100.00	26.00	100.00	30.00	100.00	20.00	100.00	15.00	100.00	157	100.00
Period month																		
- No	21.00	100.00	15.00	100.00	15.00	100.00	15.00	100.00	26.00	100.00	30.00	100.00	20.00	100.00	15.00	100.00	157	100.00
Total production (Kg/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Total Cost (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Income (Kyat/year)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	

Major Sources of Income 2014

Items	Flat GuNo Number	%	Min Dut Number	%	Tha Byay Zan Number	%	Ntouk Hwet Kone Number	%	Yolai Number	%	Pagawyun Number	%	Wet Chaung Number	%	Thit To Thet Number	%	Total Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.5.1 Farm income (kyats/year)																		
- Crop																		
- Maximum	1,200,000.00		1,700,400.00		5,500,000.00		11,000,000.00		12,000,000.00		4,000,000.00		520,000.00		10,860,000.00		5503750.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	205,429.57		263,666.67		365,666.67		2,653,333.33		1,380,754.92		341,000.00		482,000.00		1,470,666.67		850784.58	
- Livestock																		
- Maximum	25,000.00		130,000.00		600,000.00		0.00		140200.00		20,000.00		900,000.00		0.00		225625.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	11,904.76		10,333.33		51,666.67		0.00		5392.62		666.67		61942.11		0.00		17599.40	
- Fishery																		
- Maximum	0.00		15,000,000.00		0.00		0.00		0.00		5,000,000.00		0.00		0.00		2500000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		1,265,666.67		0.00		0.00		0.00		166,666.67		0.00		0.00		179166.67	
2.5.2 Off farm income (kyats/year)																		
- Salary																		
- Maximum	1,500,000.00		1,440,000.00		2,520,000.00		5,960,000.00		3,080,000.00		3,600,000.00		1,060,000.00		3,250,000.00		2473750.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	142,857.14		119,333.33		514,666.67		290,000.00		119,230.77		436,133.33		57,500.00		290,000.00		259840.16	
- Trade																		
- Maximum	10,500,000.00		18,000,000.00		10,500,000.00		300,000.00		5,400,000.00		11,580,000.00		1,200,000.00		3,690,000.00		7612500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	653,333.33		1,246,666.67		796,666.67		20,000.00		520,000.00		452,000.00		145,375.00		314,666.67		516588.54	
- Labour																		
- Maximum	1,200,000.00		5,100,000.00		5,500,000.00		1,000,000.00		12,000,000.00		3,600,000.00		2,400,000.00		1,200,000.00		3487500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Average	95,238.10		601,333.33		506,333.33		133,333.33		573,461.54		272,000.00		338,500.00		226,666.67		328233.28	
- Other																		
- Maximum	12,500,000.00		6,000,000.00		4,500,000.00		25,200,000.00		3,600,000.00		34,000,000.00		1,800,000.00		7,000,000.00		11325000.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	795,238.10		1,124,666.67		333,333.33		1,920,000.00		500,846.15		2,396,533.33		154,500.00		700,666.67		843760.63	
2.5.3 Other sources of Income fome Other Household Member (kyats/ye																		
- Maximum	2,400,000.00		5,400,000.00		2,400,000.00		1,820,000.00		11,160,000.00		4,500,000.00		1,860,000.00		3,500,000.00		4177500.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	570,285.71		601,333.33		324,000.00		166,666.67		618,770.27		505,100.00		295,000.00		306,666.67		434265.20	
2.5.4 Total income (kyats/year)																		
- Maximum	23,400,000.00		22,300,000.00		21,500,000.00		35,200,000.00		12,516,000.00		35,560,000.00		7,300,000.00		16,890,000.00		24083625.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		36,000.00		45600.00	
- Average	2,774,265.71		5,250,000.00		2,450,133.33		5,233,333.33		3,593,376.92		3,578,700.00		1,450,925.00		3,238,666.67		3409852.62	

Expenditure on the following items in 2014

Items	Plat GuNu	Min Dut	Tha Byay Zan	Kouk Hwet Korn	Yalai	Pagawyon	Wut Chaung	Thit To Thar	Total
	Number / %	Number / %	Number / %	Number / %	Number / %	Number / %	Number / %	Number / %	Number / %
No. of Household	21 / 13.38	15 / 9.55	15 / 9.55	15 / 9.55	26 / 16.56	30 / 19.11	20 / 12.74	15 / 9.55	157 / 100.00
2.6.1 Farm expenditure									
- Crop									
- Maximum	1,500,000.00	3,000,000.00	1,000,000.00	2,000,000.00	3,000,000.00	15,000,000.00	11,000,000.00	1,200,000.00	4712500.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	166,904.76	622,666.67	156,666.67	423,333.33	465,076.92	943,000.00	910,000.00	468,666.67	519985.38
- Livestock									
- Maximum	180,000.00	216,000.00	31,290,000.00	0.00	150,000.00	2,700,000.00	1,248,000.00	0.00	4310750.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	8,571.43	14,400.00	2,019,200.00	0.00	6,000.00	90,000.00	124,000.00	0.00	282771.43
- Fishery									
- Maximum	0.00	0.00	9,000,000.00	0.00	0.00	0.00	0.00	0.00	1125000.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	0.00	0.00	600,000.00	0.00	0.00	0.00	0.00	0.00	75000.00
2.6.2 Household expenditure									
- Food									
- Maximum	3,600,000.00	5,475,000.00	2,520,000.00	2,100,000.00	3,650,000.00	22,000,000.00	5,600,000.00	14,400,000.00	7155625.00
- Minimum	0.00	0.00	106,500.00	0.00	0.00	0.00	0.00	0.00	12562.50
- Average	1,274,952.38	1,702,656.67	1,443,766.67	1,132,533.33	1,744,038.46	2,194,266.67	1,375,150.00	2,552,333.33	1674963.44
- Clothes									
- Maximum	800,000.00	700,000.00	500,000.00	700,000.00	5,000,000.00	2,000,000.00	500,000.00	400,000.00	1325000.00
- Minimum	0.00	0.00	20,000.00	0.00	0.00	0.00	0.00	0.00	2500.00
- Average	196,190.48	172,000.00	172,000.00	263,333.33	430,000.00	291,666.67	136,500.00	220,000.00	238961.31
- Religious donation									
- Maximum	700,000.00	1,000,000.00	1,116,000.00	7,000,000.00	600,000.00	1,500,000.00	500,000.00	500,000.00	1614500.00
- Minimum	0.00	0.00	50,000.00	0.00	0.00	0.00	0.00	0.00	6250.00
- Average	223,333.33	226,666.67	361,733.33	1,050,333.33	258,846.15	253,500.00	106,575.00	213,333.33	324252.64
- Education									
- Maximum	1,500,000.00	2,500,000.00	1,200,000.00	1,700,000.00	1,750,000.00	5,500,000.00	2,000,000.00	1,560,000.00	2201250.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	183,928.57	611,666.67	255,166.67	510,000.00	321,692.31	749,000.00	276,850.00	401,666.67	413627.61
- Medical care									
- Maximum	7,000,000.00	1,500,000.00	2,600,000.00	400,000.00	700,000.00	1,000,000.00	5,050,000.00	3,000,000.00	2337500.00
- Minimum	0.00	0.00	50,000.00	0.00	0.00	0.00	0.00	0.00	6250.00
- Average	702,380.95	372,666.67	596,333.33	254,000.00	256,153.85	28,566.67	424,800.00	322,666.67	370021.02
- Cooking Fuel									
- Maximum	632,400.00	315,000.00	216,000.00	360,000.00	700,000.00	990,000.00	4,000,000.00	706,000.00	889175.00
- Minimum	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	30,000.00	4375.00
- Average	155,151.90	93,733.33	78,566.67	85,133.33	152,576.92	241,333.33	355,850.00	153,133.33	143099.85
- Social activities									
- Maximum	500,000.00	400,000.00	900,000.00	7,100,500.00	700,000.00	1,500,000.00	8,000,000.00	500,000.00	2437500.00
- Minimum	0.00	0.00	40,000.00	0.00	0.00	0.00	0.00	0.00	5000.00
- Average	142,285.71	113,333.33	23,933.33	67,133.33	185,076.92	250,666.67	503,750.00	190,333.33	184939.08
- Tax									
- Maximum	3,000.00	30,000.00	450,000.00	50,000.00	240,000.00	42,000.00	30,000.00	400,000.00	146375.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	359.48	2,033.33	30,820.00	1,080.00	7,754.62	1,651.67	1,535.00	26,666.67	9145.22
- Transportation cost									
- Maximum	600,000.00	400,000.00	1,440,000.00	350,000.00	580,000.00	700,000.00	720,000.00	500,000.00	645000.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	131,666.67	85,333.33	156,250.00	82,933.33	115,538.46	114,066.67	153,022.50	163,333.33	129011.79
- House repair									
- Maximum	1,660,000.00	2,060,000.00	2,500,000.00	5,080,000.00	5,000,000.00	5,500,000.00	4,600,000.00	10,000,000.00	4367500.00
- Minimum	0.00	0.00	50,000.00	0.00	0.00	0.00	0.00	0.00	6250.00
- Average	218,095.24	253,333.33	449,333.33	705,666.67	578,653.85	340,400.00	266,800.00	863,333.33	459576.97
- Communication									
- Maximum	300,000.00	380,000.00	360,000.00	420,000.00	240,000.00	5,550,000.00	360,000.00	590,000.00	993750.00
- Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Average	74,761.90	150,666.67	78,666.67	56,666.67	57,923.08	273,233.33	53,500.00	73,733.33	105143.96
- Other									
- Maximum	1,860,000.00	390,000.00	570,000.00	500,000.00	1,860,000.00	1,050,000.00	365,000.00	600,000.00	890625.00
- Minimum	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	1250.00
- Average	382,142.86	6,480,000.00	159,166.67	183,733.33	216,634.62	197,483.33	99,750.00	152,966.67	958897.18
2.6.3 Total household expenditure									
- Maximum	13,873,000.00	11,235,000.00	46,230,000.00	12,810,000.00	9,500,000.00	29,952,000.00	21,510,000.00	16,485,000.00	19939756.25
- Minimum	0.00	102300.00	1065980.00	150,000.00	1,360,000.00	59,000.00	1,080,000.00	1,060,000.00	608125.00
- Average	3,650,795.67	4,434,566.67	6,844,253.33	5,441,680.00	4,771,765.38	6,002,635.00	4,828,842.50	5,740,866.67	6227009.53

Debt and Saving

Items	Plut GaNe		Min Dut		Tha Byay Zon		Kaook Bwet Koru		Yalai		Paguwyun		Wat Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
2.7 Sufficiency of the household income																		
- Sufficient	1	4.76	4	26.67	0	0.00	4	26.67	6	23.08	7	23.33	1	5.00	5	33.33	28	17.83
- Insufficient	20	95.24	11	73.33	15	100.00	11	73.33	20	76.92	23	76.67	19	95.00	10	66.67	129	82.17
- Borrow money	2	10.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	1.55
- Financial	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- Loan money	6	30.00	6	54.55	8	53.33	4	36.36	5	25.00	9	39.13	10	52.63	4	40.00	52	40.31
- No less income	4	20.00	0	0.00	2	13.33	2	18.18	1	5.00	0	0.00	0	0.00	0	0.00	9	6.98
- Normal factory	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- Proverty	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- Save the money	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- Using from the race's money	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- High cost of living	0	0.00	0	0.00	1	6.67	1	9.09	3	15.00	1	4.35	0	0.00	0	0.00	6	4.65
- Less send money	0	0.00	0	0.00	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.78
- School fees	0	0.00	0	0.00	2	13.33	0	0.00	0	0.00	2	8.70	0	0.00	0	0.00	4	3.10
- Money cost expenditure	0	0.00	0	0.00	0	0.00	2	18.18	0	0.00	1	4.35	1	5.26	0	0.00	4	3.10
- Low income	0	0.00	0	0.00	0	0.00	1	9.09	2	10.00	1	4.35	1	5.26	0	0.00	5	3.88
- More outcome	0	0.00	0	0.00	0	0.00	1	9.09	0	0.00	1	4.35	0	0.00	0	0.00	2	1.55
- No in good health	0	0.00	0	0.00	0	0.00	0	0.00	1	5.00	0	0.00	0	0.00	0	0.00	1	0.78
- Pawn (gold)	0	0.00	0	0.00	0	0.00	0	0.00	1	5.00	0	0.00	0	0.00	0	0.00	1	0.78
- Poor	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.26	0	0.00	1	0.78
- Jobless	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.26	0	0.00	1	0.78
- General work	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.26	0	0.00	1	0.78
- Selling the orchard	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	10.00	1	0.78
- No comment	3	15.00	5	45.45	1	6.67	0	0.00	7	35.00	8	34.78	4	21.05	5	50.00	33	25.58
Total	20	100.00	11	100.00	15	100.00	11	100.00	20	100.00	23	100.00	19	100.00	10	100.00	129	100.00
2.8.1 Debt																		
- No	7	33.33	6	40.00	4	26.67	7	46.67	12	46.15	11	36.67	5	25.00	4	26.67	56	35.67
- Yes	14	66.67	9	60.00	11	73.33	8	53.33	14	53.85	19	63.33	15	75.00	11	73.33	101	64.33
- Maximum	5,000,000.00		3,000,000.00		15,000,000.00		20,000,000.00		5,000,000.00		15,000,000.00		15,000,000.00		20,000,000.00		12250000.00	
- Minimum	200,000.00		150,000.00		300,000.00		200,000.00		50,000.00		200,000.00		400,000.00		200,000.00		200000.00	
- Average	1,758,773.33		1,141,666.67		3,248,181.82		3,475,000.00		1,382,142.86		3,432,500.00		2,246,153.85		4,381,250.00		2617528.57	
2.8.2 Saving																		
- No	20	95.24	11	73.33	15	100.00	12	80.00	24	92.31	29	96.67	20	100.00	14	93.33	145	92.36
- Yes	1	4.76	4	26.67	0	0.00	3	20.00	2	7.69	1	3.33	0	0.00	1	6.67	12	7.64
- Maximum	500,000.00		4,000,000.00		0.00		12,000,000.00		200,000.00		1,000,000.00		0.00		60,000.00		2220000.00	
- Minimum	500,000.00		200,000.00		0.00		0.00		90000.00		1,000,000.00		0.00		60,000.00		231250.00	
- Average	500,000.00		2,100,000.00		0.00		5,700,000.00		145,000.00		1,000,000.00		0.00		60,000.00		1188125.00	
2.9 Pls specify number of family members who are unemployed																		
2.9.1 Function of Unemployed Family Member No.1																		
- Father	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Help	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- House care	1	6.67	0	0.00	2	18.18	0	0.00	0	0.00	2	9.09	0	0.00	1	11.11	6	5.83
- House wife	3	20.00	3	42.86	0	0.00	0	0.00	1	7.14	1	4.55	2	13.33	1	11.11	11	10.68
- House work	0	0.00	0	0.00	0	0.00	1	11.11	1	7.14	1	4.55	3	20.00	0	0.00	6	5.83
- Home near the house	0	0.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Husband	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.55	0	0.00	0	0.00	1	0.97
- Daughter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.55	0	0.00	0	0.00	1	0.97
- Daw san yee	0	0.00	0	0.00	0	0.00	0	0.00	1	7.14	0	0.00	0	0.00	0	0.00	1	0.97
- Daw nyow shu	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.55	0	0.00	0	0.00	1	0.97
- Ma hla theint	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.55	0	0.00	0	0.00	1	0.97
- U kyaw sa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	1	0.97
- No comment	9	60.00	4	57.14	9	81.82	7	77.78	11	78.57	15	68.18	10	66.67	6	66.67	71	68.93
Total	15	100.00	7	100.00	11	100.00	9	100.00	14	100.00	23	104.55	15	100.00	9	100.00	103	100.00
Sex																		
- Male	4	26.67	0	0.00	2	18.18	6	66.67	4	28.57	9	39.13	3	20.00	2	22.22	30	29.13
- Female	11	73.33	7	100.00	9	81.82	3	33.33	10	71.43	14	60.87	12	80.00	7	77.78	73	70.87
Total	15	100.00	7	100.00	11	100.00	9	100.00	14	100.00	23	100.00	15	100.00	9	100.00	103	100.00
Age																		
- Maximum	60.00		55.00		59.00		52.00		86.00		85.00		60.00		72.00		66.25	
- Minimum	16.00		21.00		22.00		17.00		18.00		28.00		15.00		0.00		15.88	
- Average	42.20		40.71		45.36		40.44		48.14		48.14		32.40		23.07		40.31	
Reason																		
- Cooker	1	6.67	1	14.29	1	9.09	0	0.00	0	0.00	3	13.04	0	0.00	0	0.00	6	5.83
- Depend	3	20.00	1	14.29	2	18.18	1	11.11	4	28.57	4	17.39	1	6.67	2	22.22	18	17.48
- General worker	3	20.00	0	0.00	1	9.09	3	33.33	2	14.29	2	8.70	1	6.67	0	0.00	12	11.65
- House keeper	1	6.67	0	0.00	1	9.09	0	0.00	0	0.00	0	0.00	1	6.67	0	0.00	3	2.91
- House work	0	0.00	3	42.86	1	9.09	2	22.22	0	0.00	0	0.00	0	0.00	1	11.11	7	6.80
- Jobless	1	6.67	0	0.00	1	9.09	1	11.11	0	0.00	3	13.04	0	0.00	0	0.00	6	5.83
- No good in health	2	13.33	0	0.00	2	18.18	2	22.22	0	0.00	0	0.00	1	6.67	0	0.00	7	6.80
- Not feature well	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Rubber price is lower	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Student	1	6.67	1	14.29	0	0.00	0	0.00	1	7.14	1	4.35	3	20.00	2	22.22	9	8.74
- Universal	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Care children	0	0.00	1	14.29	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Care parent	0	0.00	0	0.00	1	9.09	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- House wife	0	0.00	0	0.00	1	9.09	0	0.00	1	7.14	3	13.04	2	13.33	1	11.11	8	7.77
- Old	0	0.00	0	0.00	0	0.00	0	0.00	1	7.14	1	4.35	0	0.00	0	0.00	2	1.94
- No job	0	0.00	0	0.00	0	0.00	0	0.00	1	7.14	0	0.00	0	0.00	0	0.00	1	0.97
- No stable work	0	0.00	0	0.00	0	0.00	0	0.00	1	7.14	0	0.00	0	0.00	0	0.00	1	0.97
- General income	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.35	0	0.00	0	0.00	1	0.97
- Maid	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.35	1	6.67	0	0.00	2	1.94
- Stop the work from project delay	0	0.00	0	0.00	1	0.00	0	0.00	0	0.00	1	4.35	1	6.67	0	0.00	2	1.94
- Can't find job	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.67	0	0.00	1	0.97
- Salary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.67	0	0.00	1	0.97
- Gastric	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.67	0	0.00	1	0.97
- Paralyse	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	1	0.97
- Tuberculosis	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	1	0.97
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	3	21.43	3	13.04	1	6.67	1	11.11	8	7.77
Total	15	100.00	7	100.00	11	100.00	9	100.00	14	100.00	23	100.00	15	100.00	9	100.00	103	100.00

2.9.2 Function of Unemployed Family Member No.2																		
- Daughter	2	25.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	3	6.25
- Son	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.08
- Help	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	1	2.08
- Wife	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	1	2.08
- Ukyi aye	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	1	2.08
- No comment	5	62.50	1	100.00	6	100.00	5	100.00	8	100.00	9	69.23	3	100.00	4	100.00	41	85.42
Total	8	100.00	1	100.00	6	100.00	5	100.00	8	100.00	13	100.00	3	100.00	4	100.00	48	100.00
Sex																		
- Male	3	37.50	0	0.00	2	33.33	2	40.00	4	50.00	3	23.08	2	66.67	1	25.00	17	35.42
- Female	5	62.50	1	100.00	4	66.67	3	60.00	4	50.00	10	76.92	1	33.33	3	75.00	31	64.58
Total	8	100.00	1	100.00	6	100.00	5	100.00	8	100.00	13	100.00	3	100.00	4	100.00	48	100.00
Age																		
- Maximum	53.00		27.00		52.00		50.00		55.00		72.00		60.00		47.00		51.38	
- Minimum	10.00		27.00		16.00		16.00		15.00		18.00		24.00		0.00		15.00	
- Average	31.63		27.00		29.50		31.20		29.63		34.23		38.00		5.45		29.57	
Reason																		
- Depend	1	12.50	0	0.00	0	0.00	1	20.00	2	25.00	2	15.38	0	0.00	2	50.00	8	7.77
- General worker	1	12.50	0	0.00	2	33.33	3	60.00	1	12.50	1	7.69	1	33.33	0	0.00	9	8.74
- House clean	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- House work	1	12.50	0	0.00	0	0.00	0	0.00	2	25.00	0	0.00	0	0.00	0	0.00	3	2.91
- No vacancies	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- No good foot	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- She can't speak	1	12.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- No job	0	0.00	0	0.00	1	16.67	0	0.00	1	12.50	1	7.69	0	0.00	0	0.00	3	2.91
- Shop seller	0	0.00	0	0.00	1	16.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.97
- Student	1	12.50	1	100.00	2	33.33	1	20.00	2	25.00	3	23.08	0	0.00	1	25.00	11	10.68
- Stop the work from project delay	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	1	0.97
- General income	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.69	0	0.00	0	0.00	1	0.97
- No good in health	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	1	0.97
- Charcoal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	33.33	0	0.00	1	0.97
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	4	30.77	0	0.00	1	25.00	5	4.85
Total	8	100.00	1	100.00	6	100.00	5	100.00	8	100.00	13	53.85	3	33.33	4	75.00	48	46.60
2.9.3 Function of Unemployed Family Member No.3																		
- Daughter	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	10.00
- Son	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	0	0.00	1	10.00
- Help	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	0	0.00	1	10.00
- No comment	2	66.67	0	0.00	1	100.00	1	100.00	0	0.00	3	60.00	0	0.00	0	0.00	7	70.00
Total	3	100.00	0	0.00	1	100.00	1	100.00	0	0.00	5	100.00	0	0.00	0	0.00	10	100.00
Sex																		
- Male	1	33.33	0	0.00	1	100.00	0	0.00	0	0.00	2	40.00	0	0.00	0	0.00	4	40.00
- Female	2	66.67	0	0.00	0	0.00	1	100.00	0	0.00	3	60.00	0	0.00	0	0.00	6	60.00
Total	3	100.00	0	0.00	1	100.00	1	100.00	0	0.00	5	100.00	0	0.00	0	0.00	10	100.00
Age																		
- Maximum	32.00		0.00		13.00		21.00		0.00		0.00		0.00		0.00		8.00	
- Minimum	15.00		0.00		13.00		15.00		0.00		0.00		0.00		0.00		5.13	
- Average	22.00		0.00		13.00		16.60		0.00		0.00		0.00		0.00		6.20	
Reason																		
- Depend	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	0	0.00	2	20.00
- General worker	1	33.33	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	2	20.00
- No vacancies	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	10.00
- Student	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	4	80.00	0	0.00	0	0.00	5	50.00
Total	3	100.00	0	0.00	1	0.00	1	100.00	0	0.00	5	20.00	0	0.00	0	0.00	10	100.00
2.9.4 Function of Unemployed Family Member No.4																		
- Son	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Sex																		
- Male	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
- Female	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Age																		
- Maximum	17.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.13	
- Minimum	17.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.13	
- Average	17.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.13	
Reason																		
- No vacancies	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
2.9.5 Function of Unemployed Family Member No.5																		
- Daughter	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Sex																		
- Male	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Female	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Age																		
- Maximum	19.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.38	
- Minimum	19.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.38	
- Average	19.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		2.38	
Reason																		
- No vacancies	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
Total	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00

Health Care																			
Item	Plat GaNo		Min Dut		Tha Byay Zan		Kwak Bwet Kurn		Yalal		Pagawyun		Wat Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
3.1 Please specify type of toilet used																			
- Latrine	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	16	80.00	15	100.00	153	97.45
- No latrine	0	100.00	0	100.00	0	100.00	0	100.00	0	100.00	0	100.00	4	20.00	0	0.00	4	2.55
3.2 dispose the garbage																			
- Throw away	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Buried	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	2	3.33	0	0.00	0	0.00	2	1.27
- Burn	18	85.71	11	73.33	14	93.33	15	100.00	23	88.46	25	83.33	17	85.00	12	80.00	135	85.99
- Others	2	9.52	4	26.67	1	6.67			3	11.54	4	13.33	3	15.00	3	20.00	20	12.74
- Stream	1	50.00	0	0.00	0	0.00			0	0.00	0	0.00	0	0.00	0	0.00	1	5.00
- Throw away & Burial & Burn	1	50.00	3	75.00	1	100.00			3	100.00	3	75.00	3	100.00	3	100.00	17	85.00
- Burial & Burn	0	0.00	1	25.00	0	0.00			0	0.00	0	0.00	0	0.00	0	0.00	1	5.00
- Throw away & Burn	0	0.00	0	0.00	0	0.00			0	0.00	1	25.00	0	0.00	0	0.00	1	5.00
3.3 How to dispose used water																			
- Throw to the earth	17	80.95	10	66.67	14	93.33	14	93.33	23	88.46	25	96.15	17	85.00	12	80.00	132	84.08
- Throw to the watercourses	1	4.76	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	1.27
- Others	3	14.29	4	26.67	1	6.67	1	6.67	3	11.54	5	19.23	3	15.00	3	20.00	23	14.65
- Feed animal and pet	1	33.33	1	25.00	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	0	0.00	3	13.04
- Watering trees	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.35
- Throw to the earth & Throw to the watercourses	1	33.33	2	50.00	1	100.00	0	0.00	3	100.00	3	60.00	3	100.00	3	100.00	16	69.57
- Throw into river	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.35
- Dig into the soil	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	20.00	0	0.00	0	0.00	2	8.70
3.4 Common diseases found in your family and treatments (more than 1 answer)																			
Type of disease																			
- Fever	9	25.71	8	38.10	8	38.10	7	33.33	17	32.69	17	36.17	13	39.39	10	40.00	89	35.74
- Hypertension	6	17.14	3	14.29	1	4.76	2	9.52	5	9.62	5	10.64	5	15.15	3	12.00	30	12.05
- Arthritis of all four limbs	1	2.86	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	8.00	3	1.20
- Weak nervous system	1	2.86	0	0.00	0	0.00	0	0.00	0	0.00	1	2.13	0	0.00	0	0.00	2	0.80
- Cinduit disease	1	2.86	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Stomach ache	1	2.86	1	4.76	2	9.52	0	0.00	3	5.77	1	2.13	1	3.03	0	0.00	9	3.61
- Broke leg	1	2.86	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Blood pressure high/low	3	8.57	1	4.76	0	0.00	0	0.00	0	0.00	1	2.13	1	3.03	0	0.00	6	2.41
- Narrow heart vein	1	2.86	0	0.00	1	4.76	2	9.52	1	1.92	0	0.00	0	0.00	0	0.00	5	2.01
- Menstrual disorder	1	2.86	0	0.00	0	0.00	0	0.00	3	5.77	0	0.00	0	0.00	0	0.00	4	1.61
- Head ache/dizzy	1	2.86	0	0.00	1	4.76	0	0.00	0	0.00	2	4.26	0	0.00	0	0.00	4	1.61
- Long period disease	1	2.86	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Asthma	3	8.57	0	0.00	0	0.00	0	0.00	1	1.92	0	0.00	1	3.03	0	0.00	5	2.01
- Coughing	1	2.86	0	0.00	0	0.00	1	4.76	4	7.69	2	4.26	2	6.06	0	0.00	10	4.02
- Tuberculosis	1	2.86	0	0.00	2	9.52	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00	4	1.61
- Knee ache	2	5.71	1	4.76	1	4.76	1	4.76	2	3.85	1	2.13	0	0.00	0	0.00	8	3.21
- Pain	1	2.86	3	14.29	1	4.76	1	4.76	3	5.77	2	4.26	1	3.03	0	0.00	12	4.82
- Diabetes	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Normal disease	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Heart disease	1	0.00	1	4.76	1	4.76	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	3	1.20
- Urinary disease	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	1	2.13	1	3.03	0	0.00	3	1.20
- Stroke	0	0.00	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Menstrual disorders	0	0.00	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Suffer stiffness	0	0.00	0	0.00	1	4.76	1	4.76	1	1.92	0	0.00	0	0.00	0	0.00	3	1.20
- Paralyses	0	0.00	0	0.00	0	0.00	1	4.76	1	1.92	1	2.13	0	0.00	0	0.00	3	1.20
- Gastric	0	0.00	0	0.00	0	0.00	2	9.52	3	5.77	5	10.64	2	6.06	1	4.00	13	5.22
- Lungs disease	0	0.00	0	0.00	0	0.00	1	4.76	0	0.00	2	4.26	0	0.00	0	0.00	3	1.20
- Skin disease	0	0.00	0	0.00	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	1	0.40
- Bone disease	0	0.00	0	0.00	0	0.00	0	0.00	1	1.92	0	0.00	0	0.00	0	0.00	1	0.40
- Flu/Bird flu	0	0.00	0	0.00	0	0.00	0	0.00	2	3.85	2	4.26	1	3.03	1	4.00	6	2.41
- Piles	0	0.00	0	0.00	0	0.00	0	0.00	3	5.77	0	0.00	0	0.00	0	0.00	3	1.20
- Tonsil	0	0.00	0	0.00	0	0.00	0	0.00	1	1.92	0	0.00	0	0.00	0	0.00	1	0.40
- Liver disease	0	0.00	0	0.00	0	0.00	0	0.00	1	1.92	1	2.13	0	0.00	0	0.00	2	0.80
- Female disease	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.13	1	3.03	0	0.00	2	0.80
- Disease on limbs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	4.26	0	0.00	0	0.00	2	0.80
- Back ache	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.03	0	0.00	1	0.40
- Scares	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.03	0	0.00	1	0.40
- Appendix	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.03	0	0.00	1	0.40
- Malaria	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.03	0	0.00	1	0.40
- Cholera	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00	1	0.40
Total	35	100	21	100	21	100	21	100	52	100	47	100	33	100	19	76	249	100.00
Treatments methods																			
- Clinic	10	28.57	10	47.62	12	57.14	9	42.86	21	40.38	25	53.19	9	27.27	7	35.00	103	41.37
- Buy medicine	8	22.86	5	23.81	1	4.76	1	4.76	16	30.77	4	8.51	6	18.18	2	10.00	43	17.27
- See doctor	10	28.57	6	28.57	4	19.05	2	9.52	8	15.38	5	10.64	12	36.36	5	25.00	52	20.88
- Hospital	0	0.00	0	0.00	4	19.05	8	38.10	2	3.85	4	8.51	3	9.09	2	10.00	23	9.24
- Hospital/Clinic	5	14.29	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	2.01
- Health Assistant	2	5.71	0	0.00	0	0.00	1	4.76	5	9.62	6	12.77	3	9.09	3	15.00	20	8.03
- Cure as well as	0		0		0	0.00	0	0.00	0	0.00	3	6.38	0	0.00	0	0.00	3	1.20
Total	35	100.00	21	100.00	21	100.00	21	100.00	52	100.00	47	100.00	33	100.00	19	95.00	249	100.00

Item	Plat GuNo		Min Dut		Tha Byay Zun		Ktouk Hwet Kuro		Yalai		Pagawyun		War Chaung		Thit To Thot		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
4 Electricity																		
4.1. Type of electricity use																		
- Diesel Engine	3	14.29	3	20.00	1	6.67	0	0.00	2	7.69	3	10.00	5	25.00	4	26.67	21	13.38
- Village Electricity	15	71.43	5	33.33	8	53.33	13	86.67	10	38.46	20	66.67	0	0.00	6	40.00	77	49.04
- Power Generator	1	4.76	3	20.00	1	6.67	1	6.67	4	15.38	3	10.00	0	0.00	1	6.67	14	8.92
- Solar System	2	9.52	3	20.00	3	20.00	0	0.00	8	30.77	3	10.00	10	50.00	3	20.00	32	20.38
- Candle light Diesel oil	0	0.00	0	0.00	0	0.00	0	0.00	1	3.85	0	0.00	0	0.00	1	6.67	2	1.27
- No comment	0	0.00	0	0.00	2	13.33	0	0.00	1	3.85	1	3.33	0	0.00	0	0.00	4	2.55
- No	0	0.00	1	6.67	0	0.00	1	6.67	0	0.00	0	0.00	5	25.00	0	0.00	7	4.46
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
4.1.1 Payment rate (Kyats per month)																		
- Maximum	10,000.00		450,000.00		9,000,000.00		66,666.00		650,000.00		600,000.00		800,000.00		50,000.00		1453333.25	
- Minimum	3,000.00		3,000.00		2,100.00		7,000.00		700.00		3,500.00		3,000.00		5,000.00		3412.50	
- Average	6,054.79		48,020.00		939,810.00		38,933.20		146,245.45		61,136.36		370,600.00		14,250.00		200703.73	
4.1.2 Payment rate (Kyats per unit)																		
- Maximum	700.00		700.00		700.00		700.00		2000.00		1388.00		800.00		700.00		961.00	
- Minimum	300.00		700.00		700.00		700.00		700.00		300.00		300.00		500.00		525.00	
- Average	560.00		700.00		700.00		700.00		830.00		716.94		650.00		650.00		688.37	
4.2 Water use source																		
4.2.1 Drinking/cooking																		
Source																		
- House connection	0	0.00	0	0.00	1	6.67	0	0.00	0	0.00	1	3.33	0	0.00	0	0.00	2	1.27
- Pumping well	3	14.29	4	26.67	0	0.00	0	0.00	0	0.00	1	3.33	0	0.00	2	13.33	10	6.37
- Yard connection (pond)	7	33.33	2	13.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	9	5.73
- Shallow wells	11	52.38	9	60.00	14	93.33	15	100.00	26	100.00	28	93.33	20	100.00	13	86.67	136	86.62
Deep wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water tank	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Surface water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
Disinfection																		
- No	8	38.10	5	33.33	9	60.00	11	73.33	13	50.00	18	60.00	16	80.00	6	40.00	86	54.78
- Boiling	6	28.57	6	40.00	2	13.33	2	13.33	7	26.92	7	23.33	2	10.00	7	46.67	39	24.84
- Alum	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Chlorinating	6	28.57	4	26.67	3	20.00	2	13.33	6	23.08	5	16.67	2	10.00	2	13.33	30	19.11
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Others	1	4.76	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	1.27
- Sometimes	1	100.00			0	0.00											1	50.00
- Boiling & Chlorinating	0	100.00			1	100.00											1	50.00
Distance from house(meters)																		
- Maximum	400.00		18.00		40.00		2000.00		400.00		10.00		800.00		400.00		508.50	
- Minimum	3.00		2.00		5.00		5.00		2.00		0.00		9.00		0.00		3.25	
- Average	64.00		8.79		24.17		508.75		55.54		3.56		247.85		90.70		124.17	
How long per round(minutes)																		
- Maximum	20.00		10.00		5.00		40.00		20.00		10.00		30.00		10.00		18.13	
- Minimum	1.00		1.00		1.00		1.00		0.00		0.00		2.00		1.00		0.88	
- Average	6.44		3.86		2.71		10.00		4.33		3.18		11.78		3.13		5.68	
Quality																		
- Good	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
- Fair	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Poor	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
Sufficiency																		
- yes	13	61.90	14	93.33	15	100.00	12	80.00	25	96.15	26	86.67	11	55.00	14	93.33	130	82.80
- no	8	38.10	1	6.67	0	0.00	3	20.00	1	3.85	4	13.33	9	45.00	1	6.67	27	17.20
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00

4.2.2	**Washing/cleaning**																		
	Source																		
	- House connection	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.33	0	0.00	0	0.00	**1**	**0.64**
	- Pumping well	3	14.29	3	20.00	0	0.00	0	0.00	0	0.00	1	3.33	0	0.00	2	13.33	**9**	**5.73**
	- Yard connection (pond)	7	33.33	2	13.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**9**	**5.73**
	- Shallow wells	10	47.62	10	66.67	11	73.33	7	46.67	23	88.46	26	86.67	20	100.00	13	86.67	**120**	**76.43**
	- Deep wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Rain water tank	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Surface water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	1	4.76	0	0.00	4	26.67	8	53.33	3	11.54	2	6.67	0	0.00	0	0.00	**18**	**11.46**
	Total	**21**	**100.00**	**15**	**100.00**	**15**	**100.00**	**15**	**100.00**	**26**	**100.00**	**30**	**100.00**	**20**	**100.00**	**15**	**100.00**	**157**	**100.00**
	Disinfection																		
	- No	7	33.33	5	33.33	5	33.33	4	26.67	10	38.46	16	53.33	16	80.00	6	40.00	**69**	**43.95**
	- Boiling	3	14.29	6	40.00	2	13.33	1	6.67	7	26.92	7	23.33	2	10.00	7	46.67	**35**	**22.29**
	- Alum	3	14.29	1	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**4**	**2.55**
	- Chlorinating	6	28.57	3	20.00	3	20.00	2	13.33	6	23.08	5	16.67	2	10.00	0	0.00	**27**	**17.20**
	- No comment	1	4.76	0	0.00	4	19.05	8	[illegible]	3	11.54	2	6.67	0	0.00	2	13.33	**20**	**12.74**
	- Others	1	4.76	0	0.00	1	4.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**2**	**1.27**
	- Sometimes	1	100.00			0	0.00											**1**	**50.00**
	- Boiling & Chlorinating	0	100.00			1	100.00											**1**	**50.00**
	Distance from house(meters)																		
	- Maximum	400.00		18.00		10.00		2000.00		400.00		10.00		800.00		400.00		**504.75**	
	- Minimum	0.00		1.00		0.00		0.00		0.00		0.50		9.00		0.00		**1.25**	
	- Average	57.60		8.59		2.86		202.00		47.32		2.49		247.85		90.78		**82.43**	
	How long per round(minutes)																		
	- Maximum	20.00		10.00		5.00		40.00		20.00		10.00		30.00		10.00		**18.13**	
	- Minimum	0.00		1.00		0.00		0.00		0.00		0.00		2.00		1.00		**0.50**	
	- Average	6.13		3.89		1.75		5.35		3.79		3.14		12.78		3.13		**4.84**	
	Quality																		
	- Good	20	95.24	15	100.00	11	73.33	7	46.67	23	88.46	28	93.33	20	100.00	15	100.00	**139**	**88.54**
	- Fair	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Poor	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	1	4.76	0	0.00	4	26.67	8	53.33	3	11.54	2	6.67	0	0.00	0	0.00	**18**	**11.46**
	Total	**21**	**100.00**	**15**	**100.00**	**15**	**100.00**	**15**	**100.00**	**26**	**100.00**	**30**	**100.00**	**20**	**100.00**	**15**	**100.00**	**157**	**100.00**
	Sufficiency																		
	- yes	13	61.90	14	93.33	11	73.33	4	26.67	23	88.46	24	80.00	11	55.00	14	93.33	**114**	**72.61**
	- no	7	33.33	1	6.67	0	0.00	3	20.00	0	0.00	4	13.33	9	45.00	1	6.67	**25**	**15.92**
	- No comment	1	4.76	0	0.00	4	26.67	8	53.33	3	11.54	2	6.67	0	0.00	0	0.00	**18**	**11.46**
	Total	**21**	**100.00**	**15**	**100.00**	**15**	**100.00**	**15**	**100.00**	**26**	**100.00**	**30**	**100.00**	**20**	**100.00**	**15**	**100.00**	**157**	**100.00**
4.2.3	**Irrigation**																		
	Source																		
	- House connection	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Pumping well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Yard connection (pond)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Shallow wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Deep wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Rain water tank	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Surface water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	Total	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
	Disinfection																		
	- No	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Boiling	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Alum	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Chlorinating	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Others	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	Distance from house(meters)																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	How long per round(minutes)																		
	- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
	Quality																		
	- Good	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Fair	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- Poor	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	Total	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
	Sufficiency																		
	- yes	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- no	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
	Total	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**

4.2.4 Other																		
Source																		
- House connection	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Pumping well	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Yard connection (pond)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Shallow wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Deep wells	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Rain water tank	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Surface water	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**0**	**0.00**	**0**	**0.00**	**0**	0.00	**0**	**0.00**	**0**	0.00	0	**0.00**	**0**	0.00	0	**0.00**	**0**	**0.00**
Disinfection																		
- No	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Boiling	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Alum	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- Chlorinating	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Others	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Distance from house(meters)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
How long per round(minutes)																		
- Maximum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
- Minimum	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
- Average	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		**0.00**	
Quality																		
- Good	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Fair	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- Poor	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**0**	**0.00**	0	**0.00**	**0**	0.00	**0**	**0.00**	**0**	0.00	**0**	**0.00**	**0**	0.00	0	**0.00**	**0**	0.00
Sufficiency																		
- yes	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- no	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
- No comment	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	**0.00**
Total	0	**0.00**	**0**	0.00	**0**	**0.00**	0	**0.00**	**0**	0.00	**0**	**0.00**	0	**0.00**	**0**	**0.00**	0	**0.00**

Item	Phat GaNo		Min Dut		Tha Byay Zun		Kouk Thwet Kon		Yalel		Pagawyun		Wai Chaung		Thit To Thet		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Satisfaction of the living condition																		
No. of Household	21	13.38	15	9.55	15	9.55	15	9.55	26	16.56	30	19.11	20	12.74	15	9.55	157	100.00
5.1 Environmental Condition (Air,water,Soil,Noise,etc)																		
- Satisfaction	20	95.24	15	100.00	15	100.00	14	93.33	26	100.00	29	96.67	18	90.00	15	100.00	152	96.82
- Not satisfied	1	4.76	0	0.00	0	0.00	1	4.76	0	0.00	1	3.33	2	20.00	0	0.00	5	3.18
- River water level rise	1	100.00					0	0.00			0	0.00	0	0.00			1	20.00
- Rubber bed	0	0.00					1	100.00			0	0.00	0	0.00			1	20.00
- More windy	0	0.00					0	0.00			1	100.00	0	0.00			1	20.00
- Poor	0	0.00					0	0.00			0	0.00	1	50.00			1	20.00
- To difficult to get water	0	0.00					0	0.00			0	0.00	1	50.00			1	20.00
5.2 Social welfare services																		
- Satisfaction	18	85.71	13	86.67	15	100.00	15	100.00	25	96.15	29	96.67	20	100.00	14	93.33	149	94.90
- Not satisfied	3	14.29	2	13.33	0	0.00	0	0.00	1	3.85	1	3.33	0	0.00	1	6.67	8	5.10
- No comment	3	100.00	2	100.00					1	100.00	1	100.00			1	100.00	8	100.00
5.3 Crop production condition																		
- Satisfaction	16	76.19	12	80.00	12	80.00	12	80.00	23	88.46	21	70.00	19	95.00	13	86.67	128	81.53
- Not satisfied	5	23.81	3	20.00	3	20.00	3	20.00	3	11.54	9	30.00	1	5.00	2	13.33	29	18.47
- Don't know way	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.45
- New planting	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.45
- Decrease	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.45
- No comment	3	60.00	2	66.67	0	0.00	0	0.00	0	0.00	4	44.44	0	0.00	1	50.00	10	34.48
- Low production	0	0.00	0	0.00	1	33.33	0	0.00	3	100.00	1	11.11	0	0.00	0	0.00	5	17.24
- According to climate situation	0	0.00	0	0.00	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.45
- No land	0	0.00	0	0.00	1	33.33	1	33.33	0	0.00	0	0.00	1	100.00	0	0.00	3	10.34
- Less production	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	22.22	0	0.00	0	0.00	2	6.90
- Flood in stream	0	0.00	0	0.00	0	0.00	2	66.67	0	0.00	0	0.00	0	0.00	0	0.00	2	6.90
- No Planting	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	0	0.00	1	50.00	2	6.90
- Dry season can't get water resource	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	11.11	0	0.00	0	0.00	1	3.45
5.4 Relation with people in the neighborhood																		
- Satisfaction	21	100.00	15	100.00	15	100.00	15	100.00	26	100.00	30	100.00	20	100.00	15	100.00	157	100.00
- Not satisfied	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
5.5 Are you Satisfied with Current situation of your life																		
- Satisfaction	17	80.95	14	93.33	14	93.33	13	86.67	26	100.00	29	96.67	15	75.00	13	86.67	141	89.81
- Not satisfied	4	19.05	1	6.67	1	6.67	2	13.33	0	0.00	1	3.33	5	25.00	2	13.33	16	10.19
- Poverty in financial	2	50.00	0	0.00	0	0.00	0	0.00			0	0.00	0	0.00	0	0.00	2	12.50
- No comment	2	50.00	0	0.00	0	0.00	0	0.00			0	0.00	0	0.00	0	0.00	2	12.50
- Low income	0	0.00	1	100.00	0	0.00	0	0.00			0	0.00	0	0.00	2	100.00	3	18.75
- Not in good health	0	0.00	0	0.00	1	100.00	1	50.00			0	0.00	0	0.00	0	0.00	2	12.50
- No property	0	0.00	0	0.00	0	0.00	1	50.00			1	100.00	0	0.00	0	0.00	2	12.50
- Bad in financial	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00	2	40.00	0	0.00	2	12.50
- Poor property	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00	1	20.00	0	0.00	1	6.25
- Social problems	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00	1	20.00	0	0.00	1	6.25
- Want to rich	0	0.00	0	0.00	0	0.00	0	0.00			0	0.00	1	20.00	0	0.00	1	6.25

APPENDIX 5J

RESULTS OF TRAFFIC COUNTING

Result of Traffic Counting at TC1, 30 January 2015

Vehicle Type	Direction	06.00-07.00 am	07.00-08.00am	08.00-09.00 am	09.00-10.00 am	10.00-11.00 am	11.00-12.00 am	00.00-01.00 pm	01.00-02.00 pm	02.00-03.00 pm	03.00-04.00 pm	04.00-05.00 pm	05.00-06.00 pm
Bicycle	In						2	1					
	Out		*1*		*1*		*1*	*1*	*1*				
Motorcycle	In	10	10	10	29	21	21	8	17	16	17	44	22
	Out	*5*	*26*	*38*	*28*	*16*	*16*	*13*	*15*	*24*	*14*	*22*	*18*
Sedan car, SUV	In	1		1	1			3	1		4	3	1
	Out	*1*	*1*	*2*	*1*	*2*		*3*	*2*	*6*	*2*	*2*	*1*
Light truck, Pick-up	In		1	1			1	1	2	1	1		
	Out		*4*	*3*	*3*			*1*	*2*	*1*			*1*
Medium truck	In			1	5		1	1	1	2	3	3	1
	Out	*3*	*3*	*5*	*2*	*2*		*2*		*2*		*1*	*2*
10 Wheel truck	In		5			3			1	2	2	2	
	Out	*1*	*5*	*2*	*1*		*1*		*1*	*1*	*1*		
Heavy truck, Trailor	In												
	Out												
Light bus, Van	In			2	1			1					
	Out		*3*	*1*			*1*				*1*		
Medium bus	In				1			1	2				
	Out		*1*			*1*				*2*			
Heavy bus	In										1		
	Out												
Total	In	11	16	15	37	24	25	16	24	21	28	52	24
	Out	*10*	*44*	*51*	*36*	*21*	*19*	*20*	*21*	*36*	*18*	*25*	*22*
Total (No. of Vehicle / hr.)		21	60	66	73	45	44	36	45	57	46	77	46

Result of Traffic Counting at TC1, 31 January 2015

Vehicle Type	Direction	06.00-07.00 am	07.00-08.00am	08.00-09.00 am	09.00-10.00 am	10.00-11.00 am	11.00-12.00 am	00.00-01.00 pm	01.00-02.00 pm	02.00-03.00 pm	03.00-04.00 pm	04.00-05.00 pm	05.00-06.00 pm
Bicycle	In	1	1							1			
	Out	*1*									*1*		
Motorcycle	In	10	15	13	19	9	16	16	14	19	25	19	22
	Out	*11*	*29*	*23*	*16*	*13*	*25*	*17*	*19*	*16*	*16*	*15*	*14*
Sedan car, SUV	In		1	2	2	1	1	1	1	1	3	6	4
	Out	*1*	*2*	*4*		*3*	*4*	*3*	*3*	*2*	*3*	*2*	*4*
Light truck, Pick-up	In	1	3	2		2	1		1	2	1		
	Out	*1*	*1*	*2*	*3*	*2*	*1*	*1*	*3*	*1*			
Medium truck	In				2	4	1		2	1	1		3
	Out	*2*	*1*			*1*	*3*	*1*			*3*	*2*	*1*
10 Wheel truck	In			1				1		1			
	Out		*1*	*1*			*1*						
Heavy truck, Trailor	In												
	Out												
Light bus, Van	In	1		2		1				2			1
	Out			*1*						*2*			
Medium bus	In		1						2	1			1
	Out		*4*									*1*	
Heavy bus	In												
	Out												
Total	In	13	21	20	23	17	19	18	20	28	30	25	31
	Out	*16*	*38*	*31*	*19*	*19*	*34*	*22*	*25*	*21*	*23*	*20*	*19*
Total (No. of Vehicle / hr.)		29	59	51	42	36	53	40	45	49	53	45	50

APPENDIX 6A

CALCULATION OF CONSTRUCTION MATERIAL QUANTITY

CALCULATION OF CONSTRUCTION MATERIAL QUANTITY

Area of concrete slab	0.6	ha	
	6,000	m2	
Assume slab thickness	10	in.	
	25	cm	
Total concrete volume	1,524	m3	
	1,992	cubic yard	1 cubic yard=0.765
Concrete ratio	1:2:4		
Roughly, it takes 42 cu.ft of materials to make	1 cubic yard of concrete		
Volume of materials required	83,671	ft3	
cement	11,953	ft3	
fine aggregrate (sand)	23,906	ft3	
coarse aggregrate	47,812	ft3	
Weight of 1cubic feet of			
cement	94	lb/ft3	
fine aggregrate (sand)	100	lb/ft3	
coarse aggregrate	100	lb/ft3	
Total weight of cement , tonnes	510	tonnes	
Total weight of sand , tonnes	1,084	tonnes	
Total weight of coarse aggregrate , tonnes	2,168	tonnes	
Total weight of materials	3,762	tonnes	
Concreting period	3	months	
	41.80	tonnes/day	
	0.21	trips/hour	
Water volume required	0.126	ft3/ft3 of materials	
	10,542	ft3	
	299	m3	

APPENDIX 6B

RESULT OF AIR MODELLING

and

ISOPLETE OF AVERAGE CONCENTRATION OF NO_2 FROM AIRMOD MODEL

(OPERATION PHASE,

15 UNITS OF 1MW GE JENBACHER JGS 320)

SUMMARY OF AIR QUALITY MODELING RESULTS

Results	maximum concentration (μg/m³)			net maximum concentration including background level [1/] (μg/m³)		
	NO₂ (15 Units)			NO₂ (15 Units)		
	1-hr	24-hr	1-yr	1-hr	24-hr	1-yr*
maximum concentration	16.81	1.58	0.57	50.81	19.58	0.57
Coordinate (UTM(WGS84))	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N	409202E, 1579865N	409102E, 1579665N	409102E, 1579665N
Location of the maximum value	Project site	Project site	Project site	Project site	Project site	Project site
Sensitive receptors						
1. Wet Chang School	0.06	0.004	0.0004	34.06	18.004	0.0004
2. Pagaw Zoon School	0.23	0.016	0.0027	34.23	18.016	0.0027
3. Yalai School	0.15	0.043	0.0089	34.15	18.043	0.0089
4. Tha Prac Zoon School	0.04	0.002	0.0004	34.04	18.002	0.0004
5. Thit to Taut School	0.04	0.006	0.0013	34.04	18.006	0.0013
6. Ka nyin gauk School	0.33	0.015	0.0009	34.33	18.015	0.0009
7. Dauk Lauk School	0.31	0.019	0.0006	34.31	18.019	0.0006
8. Pale Gu School	0.30	0.019	0.0013	34.30	18.019	0.0013
9. Wet Chaung	0.06	0.004	0.0004	34.06	18.004	0.0004
10. Dauk Lauk	0.32	0.020	0.0009	34.32	18.020	0.0009
11. Ka Nyin Gauk	0.32	0.014	0.0008	34.32	18.014	0.0008
12. Thit to Daung1	0.04	0.006	0.0006	34.04	18.006	0.0006
13. Thit to Daung2	0.08	0.007	0.0006	34.08	18.007	0.0006
14. Thit to Taut	0.05	0.007	0.0013	34.05	18.007	0.0013
15. Yalai 1	0.08	0.011	0.0021	34.08	18.011	0.0021
16. Yalai 2	0.07	0.012	0.0030	34.07	18.012	0.0030
17. Pagaw Zoon 1	0.23	0.037	0.0075	34.23	18.037	0.0075
18. Pagaw Zoon 2	0.27	0.019	0.0035	34.27	18.019	0.0035
19. No Name	0.07	0.006	0.0002	34.07	18.006	0.0002
20. Tha Prac Zoon	0.04	0.002	0.0004	34.04	18.002	0.0004
21. Pale Gu	0.32	0.021	0.0013	34.32	18.021	0.0013
22. Kin Ywar	0.56	0.024	0.0006	34.56	18.024	0.0006
23. Min Dut	0.18	0.015	0.0020	34.18	18.015	0.0020
24. Thit to Tauk Village	0.04	0.007	0.0018	34.04	18.007	0.0018
25. Thit to Daung Village	0.04	0.006	0.0007	34.04	18.006	0.0007
26. Tha Byay Zun Village	0.04	0.002	0.0004	34.04	18.002	0.0004
27. Min Dut Village	0.09	0.006	0.0009	34.09	18.006	0.0009
28. Yalai Village	0.10	0.024	0.0068	34.10	18.024	0.0068
29. Pagaw Zoon Village	0.34	0.043	0.0061	34.34	18.043	0.0061
30. Pale Gu Village	0.44	0.023	0.0015	34.44	18.023	0.0015
31. Dauk Lauk Village	0.22	0.010	0.0005	34.22	18.010	0.0005
32. Kin Ywar Village	0.37	0.016	0.0008	34.37	18.016	0.0008
33. Lain gra ywa Village	0.33	0.025	0.0007	34.33	18.025	0.0007
34. Wet Chaung Village	0.08	0.005	0.0004	34.08	18.005	0.0004
Standard				**200** [2/]	**150** [3/]	**40** [2/]

Remark : [1/] maximum concentration of background level

- NO_2 1 hr = 34 μg/m³
- NO_2 24 hr = 34 μg/m³

[2/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007

[3/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

* Data is as same as maximum concentration due to data of annual NO^2 concentration is not available

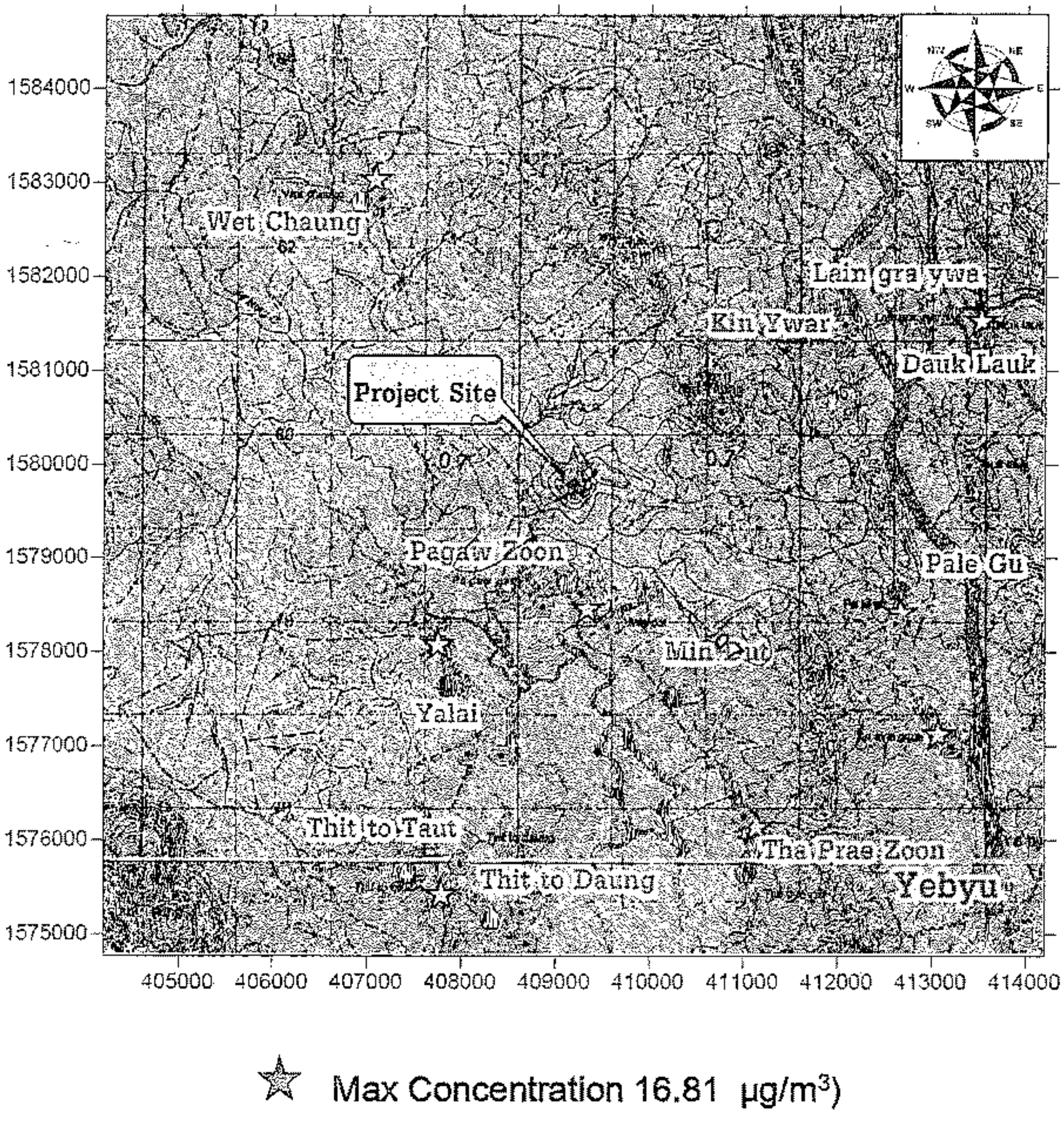


FIGURE 6.5-1 : ISOPLETE OF 1-HOUR AVERAGE CONCENTRATION OF NO_2 (15 Units)

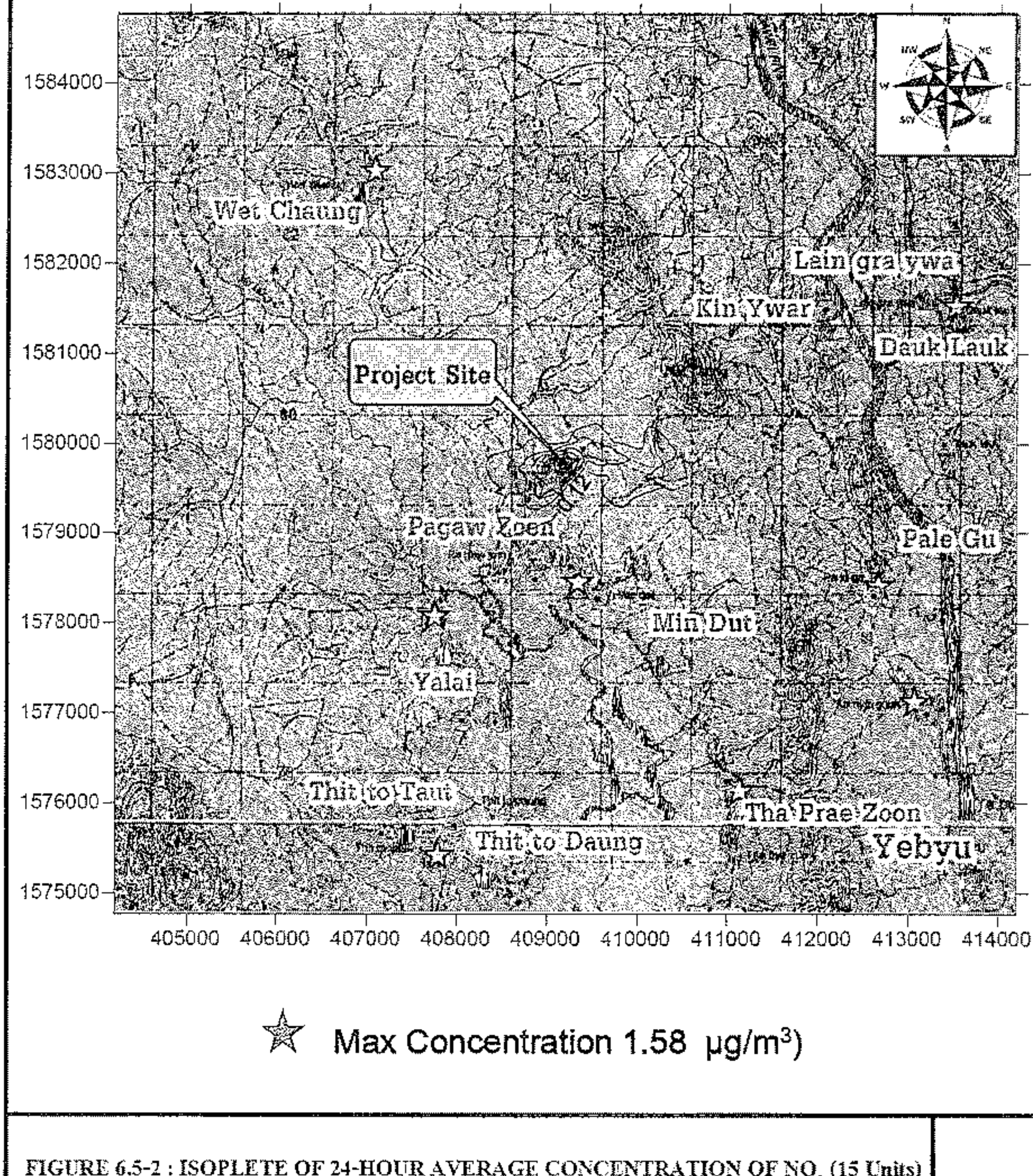


FIGURE 6.5-2 : ISOPLETE OF 24-HOUR AVERAGE CONCENTRATION OF NO_2 (15 Units)

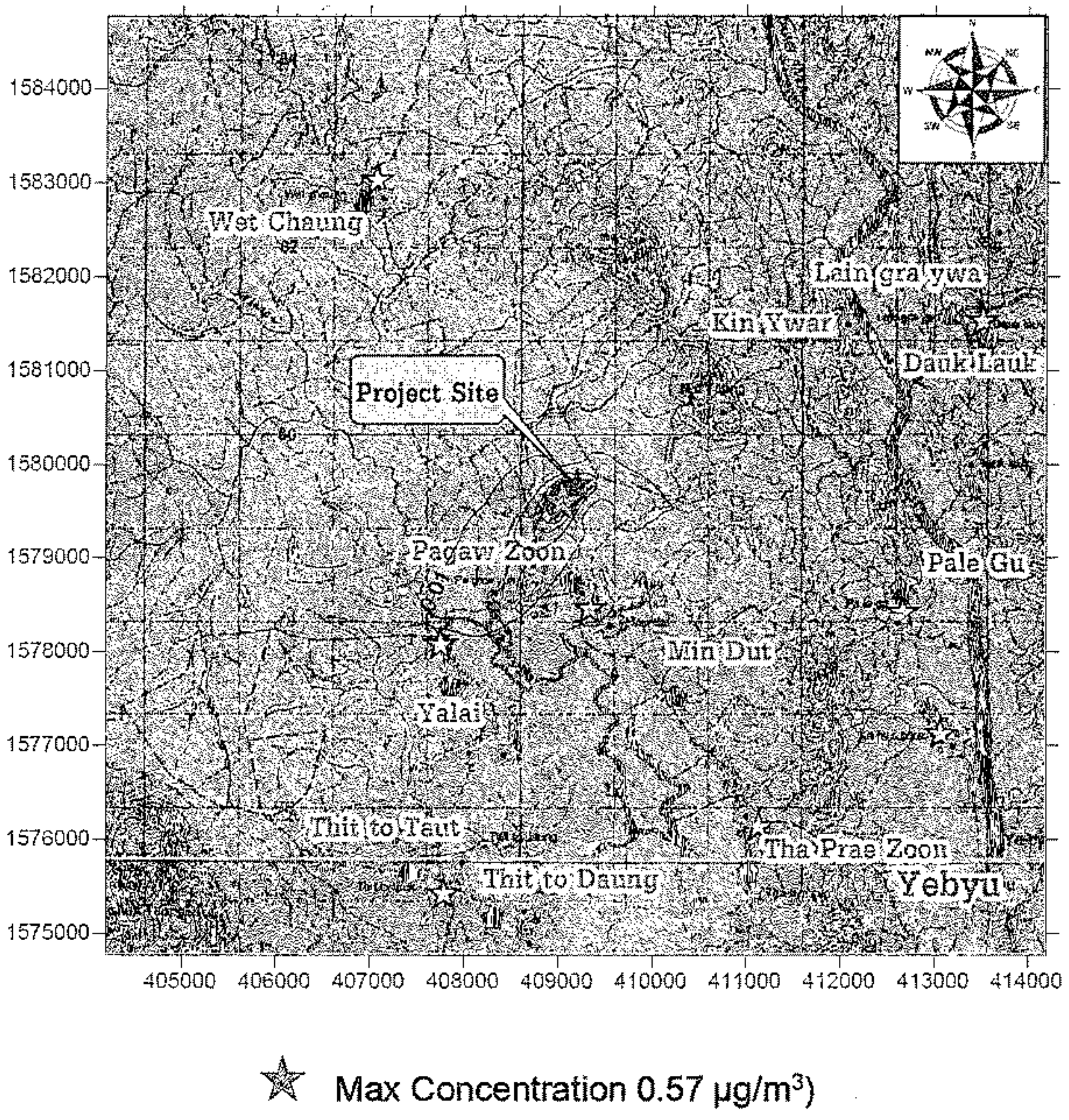


FIGURE 6.5-3 : ISOPLETE OF ANNUAL AVERAGE CONCENTRATION OF NO_2 (15 Units)

APPENDIX 6C

TYPES OF NATURAL GAS EXPLOSION

Types of Natural Gas Explosion

Taken from: Is Natural Gas Really So Safe, March 23, 2010, *depletedcranium.com/is-natural-gas-really-so-safe/*

- **Boiling Liquid Expanding Vapor Explosion –** This type of explosion occurs in liquid natural gas vessels, typically when a fire starts outside the main vessel, such as might occur if a leak catches fire. The heat causes the tank temperature to rise and the liquid to boil. Eventually the tank ruptures and the liquid inside flash evaporates and catches fire to explode. (Known as a BLEVE) BLEVE explosions are more common with LPG than natural gas, but can happen in liquid natural gas storage facilities.
- **Combustion within gas container or pipeline** - This type of explosion is relatively rare. It occurs when improper procedure or equipment malfunction allows air to enter a gas storage tank or pipeline. Normally gas cannot burn in such circumstances, as there is no oxygen. The most common cause of this is when an empty gas tank is open to the atmosphere and then later filled with gas without first being purged of oxygen. In enclosed systems like a tank or pipeline, it does not take very much to set off an explosion.
- **Gas contained within a structure -** This occurs when a gas leak allows natural gas to enter a building or other structure, where it mixes with air and is contained, not allowed to disperse. Since the structure contains the natural gas, only a small leak is required to build up a huge volume of gas, given enough time. As natural gas is lighter than air, it will often tend to build up at ceiling level and as more and more gas fills the structure, the level will slowly move down. The explosion can occur if the level of the gas eventually reaches that of an ignition source such as a pilot light or if another source, such as an electrical switch, static electricity or friction causes it to ignite. This type of explosion is common in vacant structures.
- **Gas cloud explosion** – This occurs when a large volume of gas is released from a leak, purge or other operation. The time that the gas lingers can depend on a number of factors, including temperature, winds, structures and the temperature of the gas. A large cloud of lingering gas can easily ignite and explode.
- **Tank rupture and explosion** – This occurs when a tank or pipe containing compressed gas explodes due to the internal pressure. The reason for the failure may be corrosion, materials fatigue or defects in the vessel. It can also happen if the pressure is too high and exceeds the design specs of the tank or pipe. The rupture can be violent and send pieces of the tank flying. The gas does not always ignite when a tank bursts, but it often does due to the violence of the rupture producing sparks.

APPENDIX 9A-1

LIST OF PARTICIPANT IN 1ST CONSULTATION MEETING WITH DSEZ SUPPORT WORKING BODY

and

1st PUBLIC CONSULTATION MEETING

At

- WET CHAUNG VILLAGE
- PALE GU VILLAGE
- PAGAW ZOON VILLAGE
- YALAI VILLAGE

Public Consultation Attendance List

Date 20 / 1 / 2017

စဉ်	အမည်	ဌာန	ရာထူး	လက်မှတ်
1	U Thein Htike	SWB	Section	[signature]
2	U Linn Zaw Htwe	SWB	Member	[signature]
3	U Thet Oo	SWB	"	[signature]
4	U Aye Lwin	- " -	AIO	[signature]
5	U Khin Mg Zaw	- " -	S.O/DICA	[signature]
6	Mr. Sorawit	ITD		[signature]
7	Mr. Mana Bangwai	ITD	CSR	[signature]
8	Mr. [illegible]	TEAM		[signature]
9	R [illegible]	Team		[signature]
10.	Ms. Ratna Ryanprakit	TEAM	Socio-economic	Ratna
11	Mr. [illegible]	TEAM	Environmental Engineer	[signature]
12	Mr. Natt Dumrong	TEAM	Environmental Scientist	[signature]
13	Mr. Sutheer Niyomnuch	TEAM	Environmental Scientist	Sutheer K.
14	Sai Kyaw Tun Oo	TRS/TEAM	Socio-Economic Specialist	[signature]
15	Mr. Kritt Sammamchit	ITD.	Civil Engineer	[signature]
16	Mr. Phaiboon Nillchamnan	ITD	Project Engineer	Road Work Section [signature]
17	Mr. Jongrak Hung	ITD	Civil Eng.	[signature]
18	Mr. [illegible]	ITD	[illegible]	[signature]
19	Mr. [illegible]	LNG+	Supervisor/Director	[signature]
20	Mr. [illegible] Sowhit	LNG+	Supervisor/[illegible]	[signature]

Certificated by ....

Position..

Wet Chaung

ဝက်ချောင်း

Public Consultation Attendance List

Date 29.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	ဝက်ချောင်း	[illegible]	[illegible]
2	[illegible]	〃		[illegible]
3	[illegible]	〃		[illegible]
4	[illegible]	〃		[illegible]
5	[illegible]	〃		[illegible]
6	[illegible]	〃		[illegible]
7	[illegible]	〃		[illegible]
8	[illegible]	〃		[illegible]
9	[illegible]	〃		[illegible]
10	[illegible]	〃		[illegible]
11	[illegible]	〃		[illegible]
12	[illegible]	〃		[illegible]
13	[illegible]	〃		[illegible]
14	[illegible]	〃		[illegible]
15	[illegible]	〃		[illegible]
16	[illegible]	〃		[illegible]
17	[illegible]	〃		[illegible]
18	[illegible]			[illegible]
19	[illegible]			[illegible]
20	[illegible]			[illegible]
21	[illegible]	〃		[illegible]
22	[illegible]			[illegible]

Certificated by [illegible signature]

Position..

Wet Chaung

Public Consultation Attendance List

Date 29. 1. 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	〃	[illegible]	[illegible]
26	[illegible]	〃	〃	[illegible]
27	[illegible]	〃	〃	[illegible]
28	[illegible]	〃	〃	[illegible]
29	[illegible]	〃	〃	[illegible]
30	[illegible]	〃	〃	[illegible]
31	[illegible]	〃	〃	[illegible]
32	[illegible]	〃	〃	+
33	[illegible]	〃	〃	[illegible]
34	[illegible]	〃	〃	[illegible]
35	[illegible]	〃	〃	[illegible]
36	[illegible]	〃	〃	[illegible]
37	[illegible]	〃	〃	[illegible]
38	[illegible]	〃	〃	[illegible]
39	[illegible]	〃	〃	[illegible]
40	[illegible]	〃	〃	[illegible]
41	[illegible]	〃	〃	[illegible]
42	[illegible]	〃	〃	[illegible]
43	[illegible]		〃	[illegible]
44	[illegible]	〃	〃	[illegible]

Certificated by [signature]

Position..

Wet Chaung

Public Consultation Attendance List

Date 29. 1. 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	〃	〃	[illegible]
47	[illegible]	〃	〃	[illegible]
48	[illegible]	〃	〃	[illegible]
49	[illegible]	〃	〃	[illegible]
50	[illegible]	〃	〃	[illegible]
51	[illegible]	〃	〃	[illegible]
52	[illegible]	〃	〃	[illegible]
53	[illegible]	〃	〃	[illegible]

Certificated by [signature]

Position ....

[illegible] Pa le Gu

Kin Yan & [illegible]

[illegible]

1:30 pm

Date 29. 1. 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]	[illegible]	[signature]
2	[illegible]	〃	〃	[signature]
3	[illegible]	〃	〃	[signature]
4	[illegible]	〃	〃	[signature]
5	[illegible]	〃	〃	[signature]
6	[illegible]	[illegible]	〃	[signature]
7	[illegible]	[illegible]	〃	[signature]
8	[illegible]	[illegible]	〃	[signature]
9	[illegible]	[illegible]	〃	[signature]
10	[illegible]	〃	〃	[signature]
11	[illegible]	[illegible]	〃	[signature]
12	[illegible]	〃	〃	[signature]
13	[illegible]	[illegible]	〃	[signature]
14	[illegible]	〃	〃	[signature]
15	[illegible]	〃	〃	[signature]
16	[illegible]	〃	〃	[signature]
17	[illegible]	〃	〃	[signature]
18	[illegible]	〃	〃	[signature]
19	[illegible]	〃	〃	[signature]
20	[illegible]	〃	〃	[signature]
21	[illegible]	〃	〃	[signature]
22	[illegible]	〃	〃	[signature]

Certificated by ....[signature]........

Position..

[illegible]

Date 29.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23	[illegible]	[illegible]	ရွာသား	[illegible]
24	[illegible]	〃	〃	[illegible]
25	[illegible]	〃	〃	[illegible]
26	[illegible]	〃	〃	[illegible]
27	[illegible]	〃	〃	[illegible]
28	[illegible]	[illegible]	〃	[illegible]
29	[illegible]	[illegible]	〃	[illegible]
30	[illegible]	[illegible]	〃	[illegible]
31	[illegible]	〃	〃	[illegible]
32	[illegible]	[illegible]	〃	[illegible]
33	[illegible]	[illegible]	〃	[illegible]
34	[illegible]	〃	〃	[illegible]
35	[illegible]	〃	〃	[illegible]
36	[illegible]	〃	〃	[illegible]
37	[illegible]	〃	〃	[illegible]
38	[illegible]	〃	〃	[illegible]
39	[illegible]	〃	〃	[illegible]
40	[illegible]	〃	〃	[illegible]
41	[illegible]	〃	〃	[illegible]
42	[illegible]	〃	〃	[illegible]
43	[illegible]	〃	〃	[illegible]
44	[illegible]	〃	〃	[illegible]

Certificated by [illegible]

Position

[illegible]

Date ၂၉ . 1 . 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	"	"	[illegible]
47	[illegible]	[illegible]	"	[illegible]
48	[illegible]	"	"	[illegible]
49	[illegible]	[illegible]	"	[illegible]
50	[illegible]	[illegible]	[illegible]	[illegible]
51	[illegible]	"	[illegible]	[illegible]
52	[illegible]	"	"	[illegible]

Certificated by [illegible]

Position

ပြည်သူလူထု တွေ့ဆုံဆွေးနွေးပွဲ တက်ရောက်သူစာရင်း

Date 31. 1. 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	"	[illegible]	[illegible]
3	[illegible]	"	[illegible]	[illegible]
4	[illegible]	"	[illegible]	[illegible]
5	[illegible]	"	[illegible]	[illegible]
6	[illegible]	"	[illegible]	[illegible]
7	[illegible]	"	[illegible]	[illegible]
8	[illegible]	"	[illegible]	[illegible]
9	[illegible]	"	[illegible]	[illegible]
10	[illegible]	[illegible]	"	[illegible]
11	[illegible]	"	[illegible]	[illegible]
12	[illegible]	[illegible]	"	[illegible]
13	[illegible]	"	"	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	"	[illegible]	[illegible]
16	[illegible]	"	[illegible]	[illegible]
17	[illegible]	"	[illegible]	[illegible]
18	[illegible]	"	[illegible]	[illegible]
19	[illegible]	"	[illegible]	[illegible]
20	[illegible]	"	"	[illegible]
21	[illegible]	"	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]

Certificated by ....

Position..............................

ဖြစ်ပွားမှု ... ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 31.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23	ဦး[illegible]	[illegible]	[illegible]	[illegible]
24	ဦး[illegible]	〃	〃	[illegible]
25	[illegible]	〃	[illegible]	[illegible]
26	[illegible]	〃	〃	[illegible]
27	[illegible]	〃	[illegible]	[illegible]
28	[illegible]	〃	[illegible]	[illegible]
29	[illegible]	〃	[illegible]	[illegible]
30	[illegible]	〃	[illegible]	[illegible]
31	[illegible]	〃	[illegible]	[illegible]
32	[illegible]	〃	〃	[illegible]
33	[illegible]	〃	〃	[illegible]
34	[illegible]	[illegible] (Yelgyi)	[illegible]	[illegible]
35	[illegible]	[illegible]	[illegible]	[illegible]
36	[illegible]	〃	〃	[illegible]
37	[illegible]	〃	〃	[illegible]
38	[illegible]	〃	〃	[illegible]

Certificated by [illegible]

Position ....

Y[illegible], [illegible] Khum
, Thin [illegible] Daung

[illegible] တက်ရောက်သူစာရင်း

Date 31 - 1 - 2015 , 14. 00 [illegible]

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]	[illegible]	[signature]
2	[illegible]	〃	[illegible]	[signature]
3	[illegible]	〃	[illegible]	[signature]
4	[illegible]	[illegible] 〃	〃	[signature]
5	[illegible]	〃	〃	[signature]
6	[illegible]	〃	[illegible]	[signature]
7	[illegible]	〃	[illegible]	[signature]
8	[illegible]	〃	[illegible]	[signature]
9	[illegible]	〃	[illegible]	[signature]
10	[illegible]	〃	[illegible]	[signature]
11	[illegible]	〃	〃	[signature]
12	[illegible]	〃	[illegible]	[signature]
13	[illegible]	〃	〃	[signature]
14	[illegible]	〃	〃	[signature]
15	[illegible]	〃	〃	[signature]
16	[illegible]	〃	[illegible]	[signature]
17	[illegible]	〃	〃	[signature]
18	[illegible]	〃	[illegible]	[signature]
19	[illegible]	〃	[illegible]	[signature]
20	[illegible]	〃	〃	[signature]
21	[illegible]	〃	[illegible]	[signature]
22	[illegible]	〃	[illegible] 〃	[signature]

Certificated by [signature]

Position

[illegible] တက်ရောက်သူစာရင်း

Date 11.1.2015 14.00

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23	[illegible]	[illegible]	[illegible]	[signature]
24	[illegible]	〃	[illegible]	[signature]
25	[illegible]	〃	[illegible]	[signature]
26	[illegible]	〃	〃	[signature]
27	[illegible]	〃	[illegible]	[signature]
28	[illegible]	〃	[illegible]	[signature]
29	[illegible]	〃	[illegible]	[signature]
30	[illegible]	〃	〃	[signature]
31	[illegible]	〃	〃	[signature]
32	[illegible]	〃	〃	[signature]
33	[illegible]	〃	〃	[signature]
34	[illegible]	〃	〃	[signature]
35	[illegible]	〃	〃	[signature]
36	[illegible]	〃	〃	[signature]
37	[illegible]	〃	〃	[signature]
38	[illegible]	〃	〃	[signature]
39	[illegible]			[signature]
40	[illegible]			[signature]
41	[illegible]			[signature]
42	[illegible]			[signature]
43	[illegible]			[signature]
44	[illegible]	〃	[illegible]	[signature]

Certificated by [signature]

Position

[illegible]

Date 31-1-2015 14.00 [illegible]

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	〃	[illegible]	[illegible]
47	[illegible]	〃	[illegible]	[illegible]
48	[illegible]	〃	–	[illegible]
49	[illegible]	〃	[illegible]	[illegible]
50	[illegible]	〃	[illegible]	[illegible]
51	[illegible]	〃	[illegible]	[illegible]
52	[illegible]	[illegible]	〃	[illegible]
53	[illegible]	[illegible]	〃	[illegible]
54	[illegible]	〃	〃	[illegible]
55	[illegible]	〃	〃	[illegible]
56	[illegible]	〃	〃	[illegible]
57	[illegible]	〃	〃	[illegible]
58	[illegible]	〃	〃	[illegible]
59	[illegible]	〃	〃	[illegible]
60	[illegible]	〃	〃	[illegible]
61	[illegible]	〃	〃	[illegible]
62	[illegible]	〃	〃	[illegible]
63	[illegible]	〃	〃	[illegible]
64	[illegible]	〃	〃	[illegible]
65	[illegible]	〃	〃	[illegible]
66	[illegible]	〃		[illegible]

Certificated by [illegible]

Position ....

14.4.4

Public Consultation Attendance List

Date 31. 1. 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
67	[illegible]	[illegible]	[illegible]	[illegible]
68	[illegible]	〃	[illegible]	[illegible]
69	[illegible]	〃	[illegible]	[illegible]
70	[illegible]	〃	[illegible]	[illegible]
71	[illegible]	〃	[illegible]	[illegible]
72	[illegible]	[illegible]	〃	[illegible]
73	[illegible]	〃	〃	[illegible]
74	[illegible]	[illegible]	〃	[illegible]
75	[illegible]	〃	〃	[illegible]
76	[illegible]	[illegible]	〃	[illegible]
77	[illegible]	[illegible]	〃	[illegible]
78	[illegible]	[illegible]	[illegible]	Myint Aung

Certificated by [illegible]

Position..........

APPENDIX 9A-2

LIST OF PARTICIPANT IN

2nd CONSULTATION MEETING WITH

DSEZ SUPPORT WORKING BODY

and

2nd PUBLIC CONSULTATION MEETING

At

- WET CHAUNG VILLAGE
- PALE GU VILLAGE
- PAGAW ZOON VILLAGE
- YALAI VILLAGE

Public Consultation Attendance List.

Date 2/11/2015

စဉ်	အမည်	နေရပ်	ဌာန/ရာထူး	လက်မှတ်
1.	U Kyaw Naing	Yaphyu	GAD	
2	U THAN HLA AUNG	IMMIGRATION	IMMIGRATION	
3	U Thet Oo	ETD, SWB	DOL	
4.	U Aung Htun Than	SWB	GAD	
5	U Ko Ko Naing	SWR	DOL	
6	U KYAW MAW HTUN	SW/R	IMMIGRATION	
7	U Khin Mg Win	SWB	Asst (MAD)	
8	U Rhin Mg Than	Dawei	D.O	
9	U Khin Mg Cho	Dawei	Director of GAD	
10	U Yan Naing Maung	Dawei	GAD	
11	U Hla Win Aung	Yaphyu	GAD	
12	U Htun Win Myint.	Dept. of fisheries.	Director (Regional fisheries officer)	
13	U Ag Khine Soe	ECD (TNI)	D.D	
14	U Khin Maung Soe.	"	Deputy SO.	
15	U Soe Thant	Department Fishery	Senior Officer	Soe
16	Daw Zin Mar Win	ECD (TNI)	DSO	
17	U Zaw Lin Phyo			
18	U Htun Wai Oo	Dawei	EPC / AE	
19.	U Aung Kyaw Moe.	Dawei		
20	U Kyaw Kyaw Latt	GA Dawei District	UD	

Certificated by ....

Position ....

Public Consultation Attendance List

Date 1/4/2015

စဉ်	အမည်	ရာထူး	ဌာန/အဖွဲ့အစည်း	လက်မှတ်
21	Mr. Chinnavuth Limungkum	SVP-GDD2 ~~GGCO~~	GGCO	[signature]
22	Ms. Srilak Sorakmongkol	AVP-Environment	GCCO	Srilak
23	Mr. Supalap Sattathan	PE	ITD	[signature]
24	Mr. Rawangrit Somsarai	PM	ITD	S.R.M.
25	MR. Kasin Aksornlech	ENGINEER	ITD	[signature]
26	MS. Supansa Krugsin	Environmental Engineer	MJE	[signature]
27	Mrs Parichat Makornrean	Deputy Envi Mgr.	MJE	[signature]
28	MISS YASWARA CHAIBANG	Ecologist	TEAM	[signature]
29	Mr. Chakrit Nantakam	Env. Scientist	TEAM	CHAKRIT N.
30	Mr. Yongyut Khamphunkit	Env. Scientist	TEAM	Yongyut
31	Mr. Nipat Sumkhlai	Env. Scientist	TEAM	Nipat Sumkhlai
32	Mr. Phiew Manoyo	Env. Scientist	TEAM	[signature]
33	Mr. SONGRUCK Kumri	ENG.	ITD	[signature]
34	Ms. Supichaya Hongchinawit	TEAM-Env. Scientist	TEAM	Supichaya
35	Mr. Natt Domkum	ENV. Scientist	TEAM	[signature]

Certificated by..................................

Position..................................

[illegible] ၉:၀၀

Date: 5.12.15

စဉ်	အမည်	နေရပ်	[illegible]	လက်မှတ်
၁	[illegible]	[illegible]	-	[illegible]
၂	[illegible]	"		[illegible]
၃	[illegible]	"		[illegible]
၄	[illegible]	"		[illegible]
၅	[illegible]	"		[illegible]
၆	[illegible]	"		[illegible]
၇	[illegible]	"		[illegible]
၈	[illegible]	"		[illegible]
၉	[illegible]	"		[illegible]
၁၀	[illegible]	"		[illegible]
၁၁	[illegible]	"		[illegible]
၁၂	[illegible]	"		[illegible]
၁၃	[illegible]	"		[illegible]
၁၄	[illegible]	"		[illegible]
၁၅	[illegible]	"		[illegible]
၁၆	[illegible]	"		[illegible]
၁၇	[illegible]	"		[illegible]
၁၈	[illegible]	"		[illegible]
၁၉	[illegible]	"		[illegible]
၂၀	[illegible]	"		[illegible]
၂၁	[illegible]	"		[illegible]
၂၂	[illegible]	"		[illegible]

Certificated by [illegible]

Position..........

ပြည်ထောင်စု ... ဝန်ကြီး ... တက်ရောက်သူများ စာရင်း ၇၀၀

Date ၅.၁၂.၁၅

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	ဦးမောင်မြင့်	ဝ.က ကျော့		မောင်မြင့်
၂၄	ဦးအောင်ဝင်း	״		[signature]
၂၅	ဦးစိုးကြည်ကျော်	״		[illegible]
၂၆	ဦးအောင်ဆန်းမြင့်	״		[illegible]
၂၇	ဦးချစ်လှ	״		[illegible]
၂၈	ဒေါ်ဝင်းရီ	״		ဝင်းရီ
၂၉	ဒေါ်ထွေးမြင့်	״		[illegible]
၃၀	ဒေါ်ခင်အေး	״		ခင်အေး
၃၁	ဦးလှဒင်	״		[illegible]
၃၂	ဒေါ်မကြည်	״		[illegible]
၃၃	ဦးသန်းဇော်	״		[illegible]
၃၄	ဦးခင်ဝေ	״		[illegible]
၃၅	ဦးတင့်သိုး	״		[illegible]
၃၆	ဒေါ်ထွေးရီ	״		[illegible]
၃၇	ဒေါ်သန်းရွှေ	״		[illegible]
၃၈	ကိုကြီးမိုး	״		[illegible]
၃၉	ဦးညွန့်ဝင်း	״		[illegible]
၄၀	ဒေါ်မြင့်ရင်	״		[illegible]
၄၁	ဒေါ်မမြ	״		[illegible]
၄၂	ဒေါ်ဝင်းဝေ	״		[illegible]
၄၃	ဒေါ်မြရီ	״		[illegible]
၄၄	ဒေါ်ခင်သန်း	״		[illegible]

Certificated by [signature]

Position........................

[illegible] တက်ရောက်လာသူများစာရင်း ၅·၀၀

Date 5.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	ဦးအောင်သိန်း	တက်ခေါင်ရွာ		[signature]
46	ဦးကြည်ဝင်း	〃		[signature]
47	ဒေါ်မှုန်	〃		[signature]
48	ဦးမိုးကျော်	〃		[signature]
49	ဒေါ်ကြင်ဝင်း	〃		[signature]
50	ဒေါ်မြမေအေး	〃		[signature]
51	[illegible]	〃		[signature]
52	[illegible]	〃		[signature]

Certificated by [signature]

Position

[illegible] ၁၉၈

Date ၅.၁၂.၁၅

စဉ်	အမည်	နေရပ်	[illegible]	လက်မှတ်
၁	[illegible]	[illegible]		[illegible]
၂	[illegible]			[illegible]
၃	[illegible]	[illegible]		[illegible]
၄	[illegible]	[illegible]		[illegible]
၅	[illegible]	[illegible]		[illegible]
၆	[illegible]			[illegible]
၇	[illegible]			[illegible]
၈	[illegible]			[illegible]
၉	[illegible]			[illegible]
၁၀	[illegible]			[illegible]
၁၁	[illegible]			[illegible]
၁၂				[illegible]
၁၃	[illegible]			[illegible]
၁၄	[illegible]			[illegible]
၁၅	[illegible]			[illegible]
၁၆	[illegible]			[illegible]
၁၇	[illegible]			[illegible]
၁၈	[illegible]			
၁၉	[illegible]			[illegible]
၂၀	[illegible]			[illegible]
၂၁	[illegible]			[illegible]
၂၂	[illegible]			[illegible]

Certificated by [illegible]

Position……………………………………

၁၀၀

Public Consultation Attendance List Date ၅.၁၂.၁၅

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	[illegible]	[illegible]		[illegible]
၂၄	[illegible]	〃		[illegible]
၂၅	[illegible]	〃		[illegible]
၂၆	[illegible]			[illegible]
၂၇	[illegible]	〃		[illegible]
၂၈	[illegible]	〃		[illegible]
၂၉	[illegible]	〃		[illegible]
၃၀	[illegible]	〃		[illegible]
၃၁	[illegible]	〃		[illegible]
၃၂	[illegible]	〃		[illegible]
၃၃	[illegible]	〃		[illegible]
၃၄	[illegible]	〃		[illegible]
၃၅	[illegible]	〃		[illegible]
၃၆	[illegible]	〃		[illegible]
၃၇	[illegible]	〃		[illegible]
၃၈	[illegible]	〃	[illegible]	[illegible]
၃၉	[illegible]	〃		[illegible]
၄၀	[illegible]	〃		[illegible]
၄၁	[illegible]	〃		[illegible]
၄၂	[illegible]	〃		[illegible]
၄၃	[illegible]	〃		[illegible]
၄၄	[illegible]	〃		[illegible]

Certificated by [illegible signature]

Position..

1:00

Public Consultation Attendance List

Date 15.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	[illegible]	[illegible]		[illegible]
46	[illegible]	〃		[illegible]
47	[illegible]	〃		[illegible]
48	[illegible]	〃		[illegible]
49	[illegible]	〃		[illegible]
50	[illegible]	〃		[illegible]
51	[illegible]	〃		[illegible]
52	[illegible]	〃		[illegible]
53	[illegible]	〃		[illegible]
54	[illegible]	〃		[illegible]
55	[illegible]	〃		[illegible]
56	[illegible]	〃		[illegible]
57	[illegible]	〃		[illegible]

Certificated by [illegible]

Position ....

ပြည်သူလူထုနှင့်တွေ့ဆုံဆွေးနွေးပွဲ တက်ရောက်မှုစာရင်း ၄:၀၀

Public Consultation Attendance List Date ၆ ၊ ၁၂ ၊ ၁၅

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၁	[illegible]	[illegible]		
၂	[illegible]	〃		[illegible]
၃	[illegible]	〃		[illegible]
၄	[illegible]	〃		[illegible]
၅	[illegible]	〃		[illegible]
၆	[illegible]	〃		[illegible]
၇	[illegible]	〃		[illegible]
၈	[illegible]	〃		[illegible]
၉	[illegible]	〃		[illegible]
၁၀		〃		
10	[illegible]	〃		[illegible]
၁၂		〃		
11	[illegible]	〃		[illegible]
12	[illegible]	〃		[illegible]
13	[illegible]	〃		[illegible]
14	[illegible]	〃		[illegible]
15	[illegible]	〃		[illegible]
၁၆	[illegible]	〃		[illegible]
၁၇	[illegible]	〃		[illegible]
၁၈	[illegible]	〃		[illegible]
၁၉	[illegible]			[illegible]
၂၀	[illegible]	〃		[illegible]

Certificated by ....

Position..........

9:00

Public Consultation Attendance List

Date 6.12.15

စဉ်	အမည်	နေရပ်	ဆက်သွယ်ရန်/ဖုန်း	လက်မှတ်
၈၁	[illegible]	[illegible]		[illegible]
၈၂	[illegible]	〃		[illegible]
၈၃	[illegible]	〃		[illegible]
၈၄	[illegible]	〃		[illegible]
၈၅	[illegible]	〃		[illegible]
၈၆	[illegible]	〃		[illegible]
၈၇	[illegible]	〃		[illegible]
၈၈	[illegible]	〃		[illegible]
၈၉	[illegible]	〃		[illegible]

Certificated by [signature]

Position

Public Consultation Attendance List

Date 6.12.15.

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ဌာန	လက်မှတ်
1	[illegible]	[illegible]		[illegible]
2	[illegible]	"		[illegible]
3	[illegible]	"		[illegible]
4	[illegible]	"		[illegible]
5	[illegible]	"		[illegible]
6	[illegible]	"		[illegible]
7	[illegible]	"		[illegible]
8	[illegible]	"		[illegible]
9	[illegible]	"		[illegible]
10	[illegible]	"		[illegible]
11	[illegible]	"		[illegible]
12	[illegible]	"		[illegible]
13	[illegible]	"		[illegible]
14	[illegible]	"		[illegible]
15	[illegible]	"		[illegible]
16	[illegible]	"		[illegible]
17	[illegible]	"		[illegible]
18	[illegible]	"		[illegible]
19	[illegible]	"		[illegible]
20	[illegible]	"		[illegible]
21	[illegible]	"		[illegible]
22	[illegible]	"		[illegible]

Certificated by [illegible]

Position

Public Consultation Attendance List

Date 6 . 12 . 15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23	[illegible]	[illegible]		[signature]
24	[illegible]	"		[signature]
25	[illegible]	"		[signature]
26	[illegible]	"		[signature]
27	[illegible]	"		[signature]
28	[illegible]	"		[signature]
29	[illegible]	"		[signature]
30	[illegible]	"		[signature]
31	[illegible]	"		[signature]
32	[illegible]	"		[signature]
33	[illegible]	"		[signature]
34	[illegible]	"		[signature]
35	[illegible]	"		[signature]
36	[illegible]	"		[signature]
37	[illegible]	"		[signature]
38	[illegible]	"		[signature]
39	[illegible]	"		[signature]
40	[illegible]	"		[signature]
41	[illegible]	"		[signature]
42	[illegible]	"		[signature]
43	[illegible]	"		[signature]
44	[illegible]	"		[signature]

Certificated by [signature]

Position..................

APPENDIX 9A-3

LIST OF PARTICIPANT IN

3rd PUBLIC CONSULTATION MEETING

အစည်းအဝေးတက်ရောက်သူစာရင်းချုပ်

Summary of Attendant

March 28, 2018; Morning

စဉ် No.	အစည်းအဝေးတက်ရောက်သူ Attendants	ဦးရေ Numbers	မှတ်ချက် Remark
1	အစိုးရအဖွဲ့ Government / မီဒီယာများ Local Media	38	
2	ဒေသခံများ Villagers	154	
3	NGO	12	

Local Community

ဒေသခံများ

တာဝန်ယူအကြံပြုလူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် ဧပြီလ ၂၈ရက် (နေ့လည်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးအောင်ဆိုင်	၅၈	[illegible]	၀၉ [illegible]	[illegible]
	ဦးဇော်ထွန်း	၄၂	[illegible]	၀၉ [illegible]	[illegible]
	ဦးကြည်ဝင်း	၅၄	[illegible]	၀၉ [illegible]	[illegible]
	[illegible]	၄၂	[illegible]	၀၉	[illegible]
	[illegible]	၃၆	[illegible]	[illegible]	[illegible]
	[illegible]	၆၅	" "		[illegible]

Government Sector / Local Media

အစိုးရဌာန/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မေလ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	ဦးလှဆွေဦး	၃၇	[illegible]	[illegible]	၀၉ [illegible]	[signature]
၂	ဦးအောင်မင်းထွန်း	၃၆	"	[illegible]	၀၉၄၅၃၁၀၅၅၃၃	[signature]
၃	ဦး[illegible]	၄၀	"	[illegible]		[signature]
	ဦး[illegible]	၃၆		[illegible]	၀၉[illegible]	[signature]

Page……….

Government Sector / Local Media

အစိုးရဌာန/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထွေထွေစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၂။	[illegible]	[illegible]	〃	[illegible]	[illegible]	[illegible]
၃။	[illegible]	[illegible]	〃	〃	[illegible]	[illegible]
၄။	[illegible]	[illegible]	〃	[illegible]	[illegible]	[illegible]
၅။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၆။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၇။	[illegible]	၃၃	[illegible]	[illegible]	[illegible]	[illegible]
၈။	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
၉။	[illegible]	[illegible]	〃		[illegible]	[illegible]
၁၀။	[illegible]	[illegible]	〃		[illegible]	[illegible]
၁၁။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Page.........

Government Sector / Local Media

အစိုးရဌာန/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထွေထွေစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Page……….

Government Sector / Local Media

အစိုးရဌာန/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

ရက်စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	[illegible]	၀၉-263605376	[illegible]
၂	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၃	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၄	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၅	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	၀၉-5-20 1245	[illegible]
၇	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၈	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၉	[illegible]	[illegible]	[illegible]	[illegible]	၀၉-2506858383	[illegible]
၁၀	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Government Sector / Local Media

အစိုးရကဏ္ဍ/ဒေသခံမီဒီယာ

တဝိသအကြိုနှိုင်လှုလှုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် ဇတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[signature]

Local Community

ဒေသခံများ

ဒုတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မေလ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
1.	[illegible]	၅၂	[illegible]	[illegible]	[illegible]
2.	[illegible]	၇၀	[illegible]	[illegible] -	[illegible]
3.	[illegible]	၅၉	"	[illegible]	[illegible]
4.	[illegible]	၅၄	[illegible]	-	[illegible]
5.	[illegible]	၃၅	[illegible]	[illegible]	[illegible]
6.	[illegible]	၅၅	[illegible]	-	[illegible]
7	[illegible]	၄၅	"	-	[illegible]
8	[illegible]	၅၂	"	-	[illegible]
9.	[illegible]	၅၉	"	-	[illegible]
10	[illegible]	၄၂	"	[illegible]	[illegible]
11.	[illegible]	၅၂	[illegible]	[illegible]	[illegible]

Page……….

Local Community

ဒေသခံများ

တတိယအကြိမ် လူထုတွေ့ဆုံ ဆွေးနွေးပွဲ အစည်းအဝေးသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁၂	ဦးကျော်မြင့်အောင် [illegible]	၄၉	ဝဇွန်း[illegible]	၀၉-၉၆၀၅၂၁၇၇၄	[illegible]
	ဦးမြ၊ ဦး[illegible]	၅၁	[illegible]	၀၉-၃၈၀၄၆၆၄၅	[illegible]
	[illegible]	၃၀	[illegible]	၀၉-[illegible]	[illegible]
	[illegible]	၄၀	〃	၀၉-၇၉၅၃၂၃၅၅၃	[illegible]
	ဦး[illegible]	၄၉	[illegible]	၀၉-၂၅၀၆၈၅၀၃၈	[illegible]
	ဦးဝင်း[illegible]	၃၄	〃	—	[illegible]
	ဦး[illegible]	၅၂	〃	—	[illegible]
	ဦး[illegible]	၄၆	〃	—	[illegible]
	ဦးအောင်[illegible]	၄၂	〃	၀၉-၂၅၀[illegible]	[illegible]
	ဦး[illegible]	၆၁	〃	၀၉-၂၅၀[illegible]၄၅၂	[illegible]
	ဦး[illegible]	၄၁	〃	၀၉-၂၅၀၉၄၈၂[illegible]	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	၃၃	[illegible]	[illegible]	[illegible]
	[illegible]	၃၄	〃	[illegible]	[illegible]
	[illegible]	၄၆	[illegible]	[illegible]	[illegible]
	[illegible]	၅၆	[illegible]	[illegible]	[illegible]
	[illegible]	၅၅	[illegible]	[illegible]	[illegible]
	[illegible]	၄၇	[illegible]	-	[illegible]
	[illegible]	၆၂	〃	[illegible]	[illegible]
	[illegible]	၄၄	[illegible]	-	[illegible]
	[illegible]	၄၂	〃	-	[illegible]
	[illegible]	၄၅	[illegible]	-	[illegible]
	[illegible]	၃၄	〃	-	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၉ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	၅၀	[illegible]	[illegible]	[illegible]
	[illegible]	30	[illegible]	09 78 1484 594	[illegible]
	[illegible]	၅၆	[illegible]	09 4516 83 4 65	[illegible]
	[illegible]	40	[illegible]	09 4445 4155 2	[illegible]
	[illegible]	26	[illegible]	09 7 92525 646	[illegible]
	[illegible]	၅၄	[illegible]	09 7 9405 01	[illegible]
	[illegible]	70	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	09 252 7 914 50	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	40	"	09	[illegible]
	[illegible]	60	[illegible]	09	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦး[illegible]	၃၅	[illegible]	–	
	ဦး[illegible]	၃၃	[illegible]	09-[illegible]	
	[illegible]	၃၆	[illegible]	09-[illegible]	
	ဦး[illegible]	၆၆	[illegible]	–	
	ဦး[illegible]	၅၇	[illegible]	–	
	ဦး[illegible]	[illegible]	〃	09-[illegible]	
	ဦး[illegible]	၆၁	[illegible]	–	
	ဦး[illegible]	[illegible]	[illegible]	–	
	ဦး[illegible]	၅၃	[illegible]	09-[illegible]	
	ဦး[illegible]	၆၄	〃	–	
	ဦး[illegible]	[illegible]	[illegible]	09-[illegible]	

Page.........

Local Community

ဒေသခံများ

တာဝန်ယူဆောင်ရွက်ခြင်းဆိုင်ရာ ဆွေးနွေးပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် ဖေဖော်ဝါရီလ ၂၈ရက် (နေ့တိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံး

No. ခုံ	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	[illegible]	[illegible]	၀၉	[illegible]
	[illegible]	[illegible]	〃	၀၉	[illegible]
	[illegible]	44	〃	၀၉	[illegible]
	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	〃		
	[illegible]	45	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	〃	—	[illegible]
	[illegible]	[illegible]	〃	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	—	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်ပြည်သူလူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ - ၂၀၁၈ခုနှစ် [illegible]လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦး[illegible]	၆၀	[illegible]	094[illegible]	[signature]
	ဦး[illegible]	[illegible]	[illegible]	—	[signature]
	ဦး[illegible]	[illegible]	[illegible]	—	[signature]
	ဦး[illegible]	[illegible]	[illegible]	094[illegible]	[signature]
	ဦး[illegible]	[illegible]	"	09[illegible]	[signature]
	ဦး[illegible]	[illegible]	[illegible]	09[illegible]	[signature]
	ဦး[illegible]	[illegible]	[illegible]	09[illegible]	[signature]
	ဦး[illegible]	[illegible]	[illegible]	09[illegible]	[signature]
	ဦး[illegible]	[illegible]	"	—	[signature]
	ဦး[illegible]	[illegible]	"	09[illegible]	[signature]
	ဦး[illegible]	[illegible]	[illegible]	09[illegible]	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ - ၂၀၁၀ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. ရပ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	[illegible]	[illegible]	—	[illegible]
	[illegible]	[illegible]	[illegible]	—	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	〃	[illegible]	[illegible]
	[illegible]	[illegible]	〃	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	〃	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Local Community

ဒေသခံများ

ထားဝယ်အကြံပြုသူလူထုတွေ့ဆုံပွဲအစည်းအဝေးသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ ခုနှစ် မတ်လ ၂၈ ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. ဝင်ဦ	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	—	[illegible]
	[illegible]	[illegible]	"	"	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	"	[illegible]	[illegible]

Local Community

ဒေသခံများ

ဟယ်သိယအခြေခံလူထုတွေ့ဆုံပွဲအစည်းအဝေးသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးခန်း

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	ဦး [illegible]	[illegible]	[illegible]	[illegible]	[signature]
၂	ဦး [illegible]	[illegible]	[illegible]	—	[signature]
၃	ဦး [illegible]	[illegible]	〃	[illegible]	[signature]
၄	ဦး [illegible]	[illegible]	〃	[illegible]	[signature]
၅	ဦး [illegible]	[illegible]	〃	—	[signature]
၆	ဦး [illegible]	43	[illegible]	[illegible]	[signature]
၇	ဦး [illegible]	54	[illegible]	[illegible]	[signature]
၈	ဦး [illegible]	[illegible]	〃	[illegible]	[signature]
၉	ဦး [illegible]	42	[illegible]	—	[signature]
၁၀	ဦး [illegible]	[illegible]	[illegible]	—	[signature]
၁၁	ဦး [illegible]	[illegible]	〃	[illegible]	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးခန်း

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၂။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၃။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၄။	[illegible]	[illegible]	"	[illegible]	[illegible]
၅။	[illegible]	[illegible]	"	[illegible]	[illegible]
၆။	[illegible]	[illegible]	[illegible]		[illegible]
၇။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၈။	[illegible]	[illegible]	"	[illegible]	[illegible]
၉။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၁၀။	[illegible]	[illegible]	"	[illegible]	[illegible]
၁၁။	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Local Community ([illegible])

အသင်းများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအစည်းအဝေးသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (နေ့တစ်ပိုင်း)

နေရာ - ထားဝယ်အသေးစားစီးပွားရေးဖွံ့ ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁၁	ဦးအောင်ညို	[illegible]	[illegible]	[illegible]	
၁၂	ဦးအောင်မြင့်	[illegible]	"		
၁၃	ဦးနိုင်ဝင်း	[illegible]	"	[illegible]	
၁၄	ဦး[illegible]	[illegible]	"	——	
၁၅	ဦး[illegible]	[illegible]	[illegible]	[illegible]	
၁၆	ဦး[illegible]	[illegible]	"	[illegible]	
၁၇					
၁၈					
၁၉					
၂၀					
၂၁					
၂၂					

Local Community ([illegible])

ဒေသခံများ

တတိယအကြိမ်မြောက်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	ဦး[illegible]	၆၀	[illegible]	---	[illegible]
၂	ဦး[illegible]	၄၂	[illegible]	[illegible]	[illegible]
၃	ဦး[illegible]	၃၆	"		[illegible]
၄	ဦး[illegible]	၄၅	[illegible]	[illegible]	[illegible]
၅	ဦး[illegible]	[illegible]	"	[illegible]	[illegible]
၆	ဦး[illegible]	[illegible]	[illegible]		[illegible]
၇	ဦး[illegible]	၃၂	[illegible]	[illegible]	[illegible]
၈	ဦး[illegible]	၃၅	[illegible]	[illegible]	[illegible]
၉	ဦး[illegible]	[illegible]	[illegible]		[illegible]
၁၀	ဦး[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၁၁	ဦး[illegible]	[illegible]	"	[illegible]	[illegible]

Page.........

Local Community

ဒေသခံများ

ပထဝီသအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	52	[illegible]	[illegible]	[illegible]
	[illegible]	47	[illegible]	[illegible]	[illegible]
	[illegible]	64	[illegible]	09—	[illegible]
	[illegible]	45	[illegible]	—	[illegible]
	[illegible]	60	[illegible]	—	[illegible]

Page.........

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၂	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၃	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၄	[illegible]	[illegible]	[illegible]		[illegible]
၅					
၆					
၇					
၈					
၉					
၁၀					
၁၁					

Local Community

ဒေသခံများ

တဝေါ်ယဒး[illegible]ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	[illegible]	[illegible]		[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအစမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် ဖတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးခန်း

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	[illegible]	34	[illegible]	၀၉- [illegible]	[illegible]
	[illegible]	46	[illegible]	—	[illegible]

Page.........

NGO

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. နံပါတ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	Tin Maung Tha	၆၁	WWF	Govt. Relation Manager	[illegible]	[signature]
၂	[illegible]	၃၉	TWU	Joint General Secretary	[illegible]	
[illegible]	[illegible]	[illegible]	DDA	[illegible]	[illegible]	[signature]
၄	[illegible]	၃၄	DDA	P.O	[illegible]	[signature]
၅	Thida [illegible]	၃၁	TWU	[illegible]	[illegible]	[signature]
	Ohn Ohn Bank	၃၀	Cudo	Legal Advisor	[illegible]	[signature]
	Saw [illegible]	[illegible]	EAZ	Team Secretary	"	[signature]
	[illegible]	[illegible]	[illegible]	[illegible]		[signature]
[illegible]	[illegible]	[illegible]	[illegible] Dawei Watch	[illegible]	[illegible]	[signature]
[illegible]	[illegible]	[illegible]	Pelikan Media	Reporter	[illegible]	[signature]
[illegible]	[illegible]	[illegible]				

NGO

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၈ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Agency/Organization အဖွဲ့အစည်း	Function in the Agency/ Organization ရာထူး	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	U Hyman Oo		TCT	Researcher	09451514159	[signature]

APPENDIX 9B-1

MINUTE OF CONSULTATION MEETING WITH

DSEZ SUPPORT WORKING BODY

and

1st PUBLIC CONSULTATION MEETING

At

- WET CHAUNG VILLAGE
- PALE GU VILLAGE
- PAGAW ZOON VILLAGE
- YALAI VILLAGE

Minutes of the Meeting at Wet Chaung Village

Date: 29 January, 2015

Time: 9:30-11.30 hrs.

Venue: Wet Chaung Temple

Subject: Information disclosure about the 15 MW Temporary Power Plant Project

Participants:

1. Villagers of Wet Chaung	53 prs, (names attached in Appendix 7A)
2. ITD officers	
Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kyaw Kyaw	
3. DDC officer	
Ms. Supansa Kruajan	Environmental Officer
4. LNG Plus	
Ms. Kulravee Soentiluk	Supervisor - Project Coordinator
Mr. Khajohnsak Pongpamorn	Site Supervisor
5. TBS staff	
Mr. Sai Kyaw Toon Ou	Socio-Economic / Public Consultation Specialist
6. TEAM Consulting Engineering and Management Co, Ltd.	
Dr. Siriluck Sirisup	Socio-Economic / Public Consultation Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist
Mr. Tanawit Pansong	Technician

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- The fuel will be LNG gas. No water used for cooling system.
- The conduct of environmental and social study in the study area, in late January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on impacts on environment and agriculture, an employment opportunity and the electricity supply from the power plant. The consultant and ITD had responded accordingly. Summary is shown below:

Questions from Villagers	Response from the consultant and ITD
Afraid of impacts on environment and agriculture. Are there any relevant measures, and how they function?	- There are very small and temporary impacts on environment and agriculture. The Project size will be small, about 150 x 200 m. So, it won't affect on farmlands. - The consultant will investigate impacts in detail. Preventive and mitigation measures will be formulated accordingly. These will be presented to the public in early May. - At the moment, the Project studies on existing environmental and social conditions of surrounded communities. This information will be baseline for monitoring, at 6 month time. Villagers' representative will be a member of tri-partite committee for environmental monitoring.
The Project will develop only the power plant?	- At this period, only the power plant. - Initial industrial phase will be developed later.
Any employment opportunity for villagers?	Local employment is the priority of the project. However it is depending on qualification to be suited with the position.
Asked for electricity supply, after establishment of the power plant?	- The power plant will be a very small-scale. Its production will be supplied for construction in the project area. It is a temporary of 2 year project, and will be demolished after that. - The villagers should request and have consultation with the township and regional office. However the developer will raise this issue to the Government too.

The consultation meeting was closed around 11.30 hrs.

Minutes of the Meeting at Pale Gu Village

Date: 29 January, 2015

Time: 13:30-15.30 hrs.

Venue: Pale Gu Temple

Subject: Information disclosure about the 15 MW Temporary Power Plant Project

Participants:

1. Villagers of Kin Ywar, Dauk Lauk and Pale Gu 52 prs, (*Appendix 7A*)
2. ITD officers

Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kyaw Kyaw	

3. DDC officer

Ms. Supansa Kruajan	Environmental Officer

4. LNG Plus

Ms. Kulravee Soentiluk	Supervisor - Project Coordinator
Mr. Khajohnsak Pongpamorn	Site Supervisor

5. TBS staff

Mr. Sai Kyaw Toon Ou	Socio-Economic / Public Consultation Specialist

6. TEAM Consulting Engineering and Management Co, Ltd.

Dr. Siriluck Sirisup	Socio-Economic / Public Consultation Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist
Mr. Tanawit Pansong	Technician

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- The fuel will be LNG gas. No water used for cooling system.
- The conduct of environmental and social study in the study area, in late January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on impacts from vibration, emissions, safety, wondering about the purpose of consultation meeting and afraid to be claimed by the Project in case of local economy improved. The consultant and ITD had responded accordingly. Summary is shown below:

Questions from Villagers	Response from the consultant and ITD
Afraid of vibration.	All machines/devices will be assembled in Thailand and transported in the container to the project site. Installation will be unit by unit on the concrete floor. Each unit is only 1 MW capacity. Construction here is only concrete floor. Thus, there will be very light vibration. At the moment, the Project studies on existing environment condition. This information will be baseline for formulating preventive and mitigation measures. Monitoring will be carried out at 6 month time. Villagers' representative will be a member of tri-partite committee for environmental monitoring.
Afraid of emissions. Any effects on respiratory system? In case it occurs, how the Project response? How to prevent and mitigate them?	The power plant's size is small. Installation will be 1 MW at each time. All gas will be combusted. There will be no emissions left.
As the Project will be approved by the Government of Myanmar, why the Project has to conduct the consultation meeting.	The meeting aims to inform villagers about the Project information, and collecting opinions / concerns so that the Project can formulate preventive and mitigation measures accordingly.
In case economy condition of villagers are improved in the future, afraid to be claimed as it is the Project contribution.	The analysis will also cover external influences, not only from the Project influences.
Some villagers used to stay near Rathchaburi Power Plant in Thailand, and found no harm from the plant. Asking whether the Project will have the same operation as the one in Rathchaburi.	Similar to Rathchaburi Power Plant, but safer.

The consultation meeting was closed around 15.30 hrs.

Minutes of the Meeting at Pagaw Zoon Village

Date: 31 January, 2015

Time: 9:30-11.30 hrs.

Venue: Pagaw Zoon Temple

Subject: Information disclosure about the 15 MW Temporary Power Plant Project

Participants:

1. Villagers of Pagaw Zoon, Min Dut and The Pra Zun 38 prs,
2. ITD officers

   Mr. Panno Kraiwanit Project Manager, Infrastructure Development

   Mr. Kyaw Kyaw
3. DDC officer

   Ms. Supansa Kruajan Environmental Officer
4. LNG Plus

   Ms. Kulravee Soentiluk Supervisor - Project Coordinator

   Mr. Khajohnsak Pongpamorn Site Supervisor

4. TBS staff

   Mr. Sai Kyaw Toon Ou Socio-Economic / Public Consultation Specialist
5. TEAM Consulting Engineering and Management Co, Ltd.

   Dr. Siriluck Sirisup Socio-Economic / Public Consultation Specialist

   Mr. Natt Dumkum Environmental Scientist

   Mr. Nipat Somkleeb Environmental Scientist

   Mr. Tanawit Pansong Technician

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- The fuel will be LNG gas. No water used for cooling system.
- The conduct of environmental and social study in the study area, in late January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on road accessibility, an employment opportunity and the electricity supply from the power plant. The consultant and ITD had responded accordingly. Then villagers appreciated with the response. Summary is shown below:

Questions from Villagers	Response from the consultant and ITD
Will the villagers can still use the road after upgrading by the project?	Yes, can do.
Afraid that the road to Min Dut village, at km 17 will be closed by the project, as it is a location of the power plant.	The road will not be closed, villagers can use as usual. In case some parts are closed for the project used, by pass will be constructed for villagers.
Any employment opportunity for villagers?	Local employment is the priority of the project. However it is depending on qualification to be suited with the position.
Will the villagers have electricity supply, after establishment of the power plant?	- The power plant will be a very small-scale. Its production will be supplied for construction in the project area. It is a temporary of 2 year project, and will be demolished after that. - The villagers should request and have consultation with the township and regional office. However the developer will raise this issue to the Government too.
Appreciated with the information disclosure, which is transparency process.	Noted.

The consultation meeting was closed around 11.30 hrs.

Minutes of the Meeting at Yalai Village

Date: 31 January, 2015

Time: 13:30-16.00 hrs.

Venue: Yalai Temple

Subject: Information disclosure about the 15 MW Temporary Power Plant Project

Participants:

1. Villagers of Yalai, Thit toh Taut and Kyauk Hwet Kone 78 prs, (names attached in Appendix 7A)
2. ITD officers

Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kyaw Kyaw	

3. DDC officer

Ms. Supansa Kruajan	Environmental Officer

4. LNG Plus

Ms. Kulravee Soentiluk	Supervisor - Project Coordinator
Mr. Khajohnsak Pongpamorn	Site Supervisor

5. TBS staff

Mr. Sai Kyaw Toon Ou	Socio-Economic / Public Consultation Specialist

6. TEAM Consulting Engineering and Management Co, Ltd.

Dr. Siriluck Sirisup	Socio-Economic / Public Consultation Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist
Mr. Tanawit Pansong	Technician

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- The fuel will be LNG gas. No water used for cooling system.
- The conduct of environmental and social study in the study area, in late January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on electricity supply from the power plant, emissions and heat from stack, wastewater, vibration and inaccessible to their farms. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Will the villagers have electricity supply, after establishment of the power plant?	- The power plant will be a very small-scale. Its production will be supplied for construction in the project area. It is a temporary of 2 year project, and will be demolished after that. - The villagers should request and have consultation with the township and regional office. However the developer will raise this issue to the Government too.
Afraid of emissions.	All gas will be combusted. There will be no emissions left.
Afraid of heat from stack, whether it affects to crops or not?	- We'll study this issue in detail. The heat will be analysed. It will be controlled, within the standard. Results of the study will be presented to villagers in early May. - There will be heat control and heat detector. The system will automatically stop when it is overheat, above the standard.
Any danger for the health?	We'll work on risk assessment, especially for health. Preventive and mitigation measures will be formulated to protect health.
Afraid of water pollution.	The water will not be used for production, only consumption by staffs. The used water will be treated and reused in the power plant area, no discharged outside.
Afraid of vibration.	All machines/devices will be assembled in Thailand and transported in the container to the project site. Installation will be unit by unit on the concrete floor. Each unit is only 1 MW capacity. Construction here is only concrete floor. Thus, there will be very light vibration.
Will villagers still can work on their farms, where are next to the power plant?	Yes, can do. There will be buffer zone in the project area. Surrounding area will not be harmed.

- The consultant had added that
  - Monitoring will be carried out 6 month time, to ensure that the environment is within the safety standard.
  - Tri-partite committee will be set up to work on participatory monitoring. Representatives of villagers will be recruited to be members of the committee. In case of trouble, villagers can complaint via this committee.
- There were other concerns associated with compensation by ITD in the past. The response was made by the ITD engineer.

The consultation meeting was closed around 16.00 hrs.

APPENDIX 9B-2

MINUTE OF CONSULTATION MEETING WITH DSEZ SUPPORT WORKING BODY

and

2nd PUBLIC CONSULTATION MEETING

At

- WET CHAUNG VILLAGE
- PALE GU VILLAGE
- PAGAW ZOON VILLAGE
- YALAI VILLAGE

Minutes of the Meeting with Myanmar Officials

Date: 2nd December, 2015

Time: 09:00-11:00 hrs.

Venue: ITD Hall

Subject: Information disclosure about the Initial Phase Power Plant Project

Participants:

1. Twenty Myanmar officials, comprising

Mr. U Khin Maung Cho	Dawei District	Directory of General Administration Department
Mr. U Khin Maung Than	Dawei District	Deputy Director
Mr. U Yan Naing Maung	Dawei District	General Administration Department
Mr. U Kyaw Kyaw Hlatt	Dawei District	General Administration Department
Mr. U Zaw Lin Phyo	Dawei District	
Mr. U Aung Kyaw Moe	Dawei District	
Mr. U Htun Wai Oo	Dawei District	Electric Power Corporation
Mr. U Thet Oo	ITD, SWB	Department of Labor
Mr. U Aung Hom Than	SWB	General Administration Department
Mr. U Ko Ko Naing	SWB	Department of Labor
Mr. U Khin Maung Win	SWB	Myanmar Port Authority
Mr. U Kyaw Maw Htun	SWB	Immigration
Mr. U Than Hla Aung	Immigration	Immigration
Mr. U Aung Khine Soe	ECD(TNI)	Deputy Director
Mr. U Khin Mang Soe	ECD(TNI)	Department Senior Officer
Mr. Daw Zin Mar Win	ECD(TNI)	Department Senior Officer
Mr. U Htun Win Myint	Department of Fisheries	Director (Regional Fisheries Officer)
Mr. U Soe Thant	Department Fishery	Senior Officer
Mr. U Kyaw Naing	Yebyu	General Administration Department
Mr. U Hla Win Aung	Yebyu	General Administration Department

2. ITD officers

Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kasin Aksorndech	Engineer
Mr. Ruangrit Sornnarai	Engineer
Mr. Kyaw Kyaw	

6. MIE officer

Mr. Sawan Phoothiwut	Environmental Engineer
Ms. Supansa Kruajan	Environmental Officer
Mrs. Parichat Makakhan	Environmental Officer

7. LNG Plus

Ms. Kulravee Soentiluck	Supervisor Project Coordinator

8. EGCO Staffs

Mr. Chinnavuth Liurungwang	SVP-BDD2
Ms. Siriluck Soonbrnruengyot	AVP Environment

9. TBS Staffs

Ms. Thet Htar Myint	Socio-Economic / Public Consultation Specialist
Mr Shwe Thein	Assistant

10. TEAM Consulting Engineering and Management Co, Ltd.

Mr. Plian Maneeya	Human Specialist
Dr. Sirilluck Sirisup	Socio-Economic / Public Consultation Specialist
Ms. Yaowapa Chuwong	Socio-Economic / Public Consultation Specialist
Mrs. Chalida Nyiewbubpha	Marine Expect
Dr. Suphichaya Wogchiwanit	Environmental Scientist
Mr. Yongyut Khonchantet	Environmental Scientist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist

Minutes:

The consultant disclosed information about:

- Objectives of EIA study for the Initial Phase Power Plant Project
- Project location and layout

- Project Information which consists of:
  - 420 MW capacity, using natural gas as primary fuel to be supplied by the adjacent LNG terminal
  - A 115 kV conventional air/gas insulated switchyard located in the plant boundary.
  - Once-through seawater cooling system
  - Continuous Emission Monitoring System (CEMs)
  - Five phases of Construction
  - 30 years operation period
- The conduct and results of environmental and social study in the study area, in October 2015 comprise:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Open for discussion.
- Questions from Myanmar officials and answers/qualifications by the consultant are summarized as follows:

Question	Answer
Wonder whether villagers can access and across the two lane road link or not.	• No fence during initial phase so that villagers can access and use the road. • There will be some bands installed at the particular places for traffic safety.

Recommendations by the Myanmar officials:

- ➢ To consider on provision of access road to link village and two lane road
- ➢ Villagers are willing to maintain the road constructed by the developer in case they can use as well.

The consultation meeting was closed around 11.00 hrs.

Minutes of the Meeting at Wet Chaung Village

Date: 5th December, 2015

Time: 09:30-10:30 hrs.

Venue: Wet Chaung Temple

Subject: Information disclosure about the Temporary 15MW Power Plant Projects

Participants:

2. Villagers of Pa Gaw Zun 44 prs
2. ITD officers
   - Mr. Panno Kraiwanit Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw
11. MIE officer
   - Mr. Sawan Phoothiwut Environmental Engineer
12. LNG Plus
   - Ms. Kulravee Soentiluck Supervisor Project Coordinator
13. TBS Staffs
   - Ms. Thet Htar Myint Socio-Economic / Public Consultation Specialist
   - Mr Shwe Thein
14. TEAM Consulting Engineering and Management Co, Ltd.
   - Mr. Plian Maneeya Human Specialist
   - Mr. Natt Dumkum Environmental Scientist
   - Mr. Nipat Somkleeb Environmental Scientist

Minutes:

The consultant disclosed information about:

- Project description, results of existing environmental and social condition, impact assessment and proposed mitigation measures
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Suggestion: The Head of Village requests to improve the surface of the road from ITD main road to the end of village.	ITD will consider checking the condition of the road and discussing with the developer.

The consultation meeting was closed around 10.30 hrs.

Minutes of the Meeting at Pale Gu Village

Date: 5th December, 2015

Time: 13:30-15:30 hrs.

Venue: Pale Gu Village Primary School

Subject: Information disclosure about the Temporary 15MW Power Plant Projects

Participants:

3. Villagers of Pale Gu — 56 prs
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw
15. MIE officer
   - Mr. Sawan Phoothiwut — Environmental Engineer
16. LNG Plus
   - Ms. Kulravee Soentiluck — Supervisor Project Coordinator
17. TBS Staffs
   - Ms. Thet Htar Myint — Socio-Economic / Public Consultation Specialist
   - Mr Shwe Thein
18. TEAM Consulting Engineering and Management Co, Ltd.
   - Mr. Plian Maneeya — Human Specialist
   - Mr. Natt Dumkum — Environmental Scientist
   - Mr. Nipat Somkleeb — Environmental Scientist

Minutes:

The consultant disclosed information about:

- Project description, results of existing environmental and social condition, impact assessment and proposed mitigation measures
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Will the direction of CO_2 emission will reach this village or not since the location is only 1.5km far away from the village?	There is mitigation measure about the emission in the presentation slide. Since the emission of CO_2 gas is very few, it will not impact the village. Moreover, there are many trees around the village; the plants will absorb the CO_2.
Some of our villager own plantation land is inside demarcation area of project; hence this areas are not issued Form (105) from Department of Land Use. However, there is not compensation has been rewarded to the villagers. As a result, the villagers are worried whether continue to their plantation or not as well as whether they would get the full compensation or not? The land lock of the plantation inside demarcation area would like to get Form (150) because the plantation area beside them but outside of demarcation project area got Form (150).	The compensation has provided to the entire land owner within temporary 15MW Power Plant Project demarcation area. For the township development, if a particular area is being developed, then that area owner will get compensation. This issue will be proposed to the SWB. The land lock should have any official documents such as; land tax bill, Form (7) or Form (150) and apply for compensation. The compensation fee will be decided according to the actual area in the document.

The consultation meeting was closed around 15.30 hrs.

Minutes of the Meeting at Pa Gaw Zoon Village

Date: 6th December, 2015

Time: 09:30-11:30 hrs.

Venue: Pa Gaw Zoon Village Administration Office

Subject: Information disclosure about the Temporary 15MW Power Plant Projects

Participants:

4. Villagers of Pa Gaw Zoon 28 prs
2. ITD officers
   - Mr. Panno Kraiwanit Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw
19. MIE officer
   - Mr. Sawan Phoothiwut Environmental Engineer
20. LNG Plus
   - Ms. Kulravee Soentiluck Supervisor Project Coordinator
21. TBS Staffs
   - Ms. Thet Htar Myint Socio-Economic / Public Consultation Specialist
   - Mr Shwe Thein
22. TEAM Consulting Engineering and Management Co, Ltd.
   - Mr. Plian Maneeya Human Specialist
   - Mr. Natt Dumkum Environmental Scientist
   - Mr. Nipat Somkleeb Environmental Scientist

Minutes:

The consultant disclosed information about:

- Project description, results of existing environmental and social condition, impact assessment and proposed mitigation measures
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Will the villagers have electricity supply?	This is two year temporary Power Plant. However, this issue will be discussed within our developer, government. After that, there will be a solution. This issue will also be recorded in the report.
According to the presentation, the local people should get first priority to be recruited, however, the workers from Rakhine, Ayeyarwaddy got recruited.	In our policy, we have to consider offering job opportunity to the nearest local community in priority list. There are other companies that bring workers from other part of Myanmar. After that project finish, the workers settle down in that area. Therefore, we cannot realize that they are not from local community. If the applicants have already registered in SWB office, they will be considered in recruitment process. But, if the developers got enough workforces, they will stop recruitment. The migrated worker will be considered as recruitment only if there is no skill labor that fit with the job vacancy.
Compensation to the land lock is not provided since 2011 till now. Why?	ITD got the notice from central government to stop this project and hence, all the compensation process was automatically stopped.
Mr. U Than Zaw and his father, U Tun Lwin informed that his plantation land is interfered with construction team from ITD. They are disagree because they have got no compensation.	He can make a complaint report to SWB group according to the policy.
Villagers complain that they have asked SWB about the compensation and they also submitted their documents to regional office but there were no response from them. Is there any other way to directly ask for compensation fee from ITD office?	After the villagers reported to SWB, please follow up ITD office also. ITD is welcomed everyone to discuss their difficulties concerning with the project. Moreover, they can also find Mr. Panno (Project engineer) in the office. By the time he is in Bangkok, the villagers can contact the assistant in his office to raise the compensation issue.

Questions from Villagers	Response from the consultant and ITD
The Head of Villager suggested that if the road from Ye Phyu to Wet Chuang, Ka Mout Chaung has to be blocked during construction, ITD should consider making other access road since this road is used for different people with different purposes.	Please, go directly to the office and talk with Mr. Apinan. If he cannot understand, bring him to that area and show him. He should provide another temporary road.
The villagers would like ITD to construct new access road to the new pagoda that re-located from the old site because this pagoda settles inside demarcation area.	This issue would be considered and discussion with developer.

The consultation meeting was closed around 11.30 hrs.

Minutes of the Meeting at Yalai Village

Date: 6th December, 2015

Time: 13:30-15:30 hrs.

Venue: Yalai Village Administration Office

Subject: Information disclosure about the Temporary 15MW Power Plant Projects

Participants:

5. Villagers of Yalai	44 prs
2. ITD officers	
Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
23. MIE officer	
Mr. Sawan Phoothiwut	Environmental Engineer
24. LNG Plus	
Ms. Kulravee Soentiluck	Supervisor Project Coordinator
25. TBS Staffs	
Ms. Thet Htar Myint	Socio-Economic / Public Consultation Specialist
Mr Shwe Thein	
26. TEAM Consulting Engineering and Management Co, Ltd.	
Mr. Plian Maneeya	Human Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist

Minutes:

The consultant disclosed information about:

- Project description, results of existing environmental and social condition, impact assessment and proposed mitigation measures
- Any questions and suggestions are welcome.

Villagers have no question about the project. There are some suggestions from villagers consultant and ITD had responded accordingly, as shown below:

Suggestions from Villagers	Response from the consultant and ITD
They would like to know the plan of entire project.	The schedule will be in coming March or April after received the notice to process from central government.
The villagers are worrying whether they can do plantation in their land which is inside the demarcation area.	The villagers can do plantation until get the compensation.
Private own land within the demarcation area should have been compensate prior to construction.	
The villagers are happy and agree this project and want the project runs as soon as possible.	

The consultation meeting was closed around 15.30 hrs.

APPENDIX 9B-3

MINUTE OF 3rd PUBLIC CONSULTATION MEETING

At DSEZ ITD Meeting Hall

TEAM GROUP

MINUTES OF MEETING	
Project ESIA for 15MW Temporary Power Plant Project in DSEZ	**Project No** P05145

Venue	Dawei Special Economic Zone, Meeting Hall	**Date**	28th March, 2018
Subject	Public Consultation Meeting III	**Time**	Morning section

Participants: (attachment 1)

1. Mr. Phyo Min Tun — Deputy Chairman of DSEZ Committee
2. Dr.Myint San — Vice Chairman-2 of DSEZ Committee
3. Environmental Conservation Department (Naypyitaw and Dawei)
4. Dawei Special Economic Zone Management Committees
5. Myandawei Industrial Estate Company Limited
6. Ministry of Construction, Naypyitaw (Department of Highways)
7. Karen National Union
8. Representatives from project affected villages
9. NGOs (WWF, TWU, DDA, ERZ)
10. Media (Dawei Watch, Hinn Thar)
11. TEAM Consulting, Engineering and Management Co., Ltd.
12. Total Business Solution Co., Ltd.

Minutes: The consultant disclosed information (**Attachment 2**) about:

- Project location
- Project information
- Objective of EIA study
- Approval of Scoping and ESIA Reports from MONREC
- Major concerned laws and regulations on environmental and social management
- Mitigation measures/commitments needed to complied during project development
- Environmental management plans for project development
- Environmental monitoring stations
- Actions need to be complied
- Open for discussion
- Questions from villagers and related government departments and answers/clarifications by the consultant, project proponent and DSEZ committee can be summarized as follows:

Questions and responses:

No.	Question	Response
1.	**Mr.Lay Lwin (Villager)** - Is there any EIA for whole DSEZ? - All of the villages need Electricity. should the project produce more than 15 MW and supply the surplus to surrounding communities. - All of the villager willingness to pay for electricity (do not intend to ask for free). - Once he contacted to contact person as given address, the contact phones are not working. He want to know which channel or contact point should be used?	**Dr. Myint San answered.** - Power plant project will distribute electricity only for DSEZ. - Government has plan to get electricity from Kan Bouk within 2 to 3 years for villages nearby DSEZ area. **TEAM replied,** - IEE for all DSEZ have been studied once at the earlier stage. - Concerning contact point, villager can direct contact to filed office and also contact to DSEZ committee office.

Recorded by: Ms. THIRI TIN HTUT
Date 28th March, 2018

Participants of TEAM

1	Ms.Budsaba Israngura Na Ayudhya	Environmental Specialist
2	Ms.Yaowapa Chuwong	Social Specialist
3	Mr.Plian Maneeya	Environmental Specialist
4	Mr.Yongyut Khonchantet	Environmental Specialist
5	Dr. Supichaya Wongchinawit	Environmental Specialist
6	Ms.Thiri Tin Htut	Environmental Engineer

Participants of TBS

1. Mr.Lin Htet Sein

APPENDIX 9C-1

PRESENTATION FOR 1ST CONSULTATION MEETING WITH DSEZ SUPPORT WORKING BODY AND 1ST PUBLIC CONSULTATION MEETING

[illegible]

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့်သစ်တောရေးရာဝန်ကြီးဌာန၏
(၂၀၁၂)ပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်ရေးဥပဒေအရ
သဘာဝဓာတ်ငွေ့လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ ဆောက်လုပ်ရာ တွင်
ပတ်ဝန်းကျင်နှင့်လူမှုစီးပွား
အကျိုးသက်ရောက်မှုစစ်ဆေးအကဲဖြတ်ခြင်းကို ကြိုတင်
ဆောင်ရွက်ရမည်ဟု ပြဋ္ဌာန်းထုတ်ပြန်ထားပြီးဖြစ်သည်။

ESIA ရည်ရွယ်ချက်

- စီမံကိန်းဧရိယာအတွင်းတည်ရှိနေသော ပတ်ဝန်းကျင်အခြေအနေကို လေ့လာခြင်း။
- စီမံကိန်း၏ အသွင်သဏ္ဍာန်ကိုလေ့လာသုံးသပ်ခြင်း။
- အဆိုပြုထားသည့် လျှပ်စစ်စက်ရုံမှ ပတ်ဝန်းကျင် (ရုပ်ပိုင်းဆိုင်ရာ၊ ဂေဟစနစ်၊ လူအသုံးချမှုပုံစံ၊ ဘဝ၏အရည်အသွေးနှင့် ကျန်းမာခြင်းတန်ဖိုးများ) အပေါ် ကောင်းကျိုးနှင့်ဆိုးကျိုးသက်ရောက်နိုင်ချေတို့ကို ရှာဖွေသတ်မှတ်ခြင်း။
- ကြိုတင်ကာကွယ်ခြင်း၊ ဆိုးကျိုးလျော့ချနည်းများနှင့် စောင့်ကြည့်စစ်ဆေး တိုင်းတာမှုများကို အဆိုပြုခြင်း။

[illegible]

- ၁။ လျှပ်စစ်ဓာတ်အားပေးစက်ရုံဧရိယာ၏ ၅ကီလိုမီတာအတွင်း လေ့လာခြင်း။
- ၂။ ပတ်ဝန်းကျင်ဆိုင်ရာမူဝါဒများ ၊ ဥပဒေများ လမ်းညွှန်ချက်များကို ဆန်းစစ်သုံးသပ်ခြင်း။
- ၃။ စီမံကိန်းအသွင်ပြင်အင်္ဂါရပ်ဖော်ပြချက်များကိုစုဆောင်းခြင်း။
- ၄။ ကွင်းဆင်းစစ်ဆေးခြင်း နှင့် စာရင်းကောက်ယူခြင်း
- ၅။ ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုဆိုင်ရာစီမံခန့်ခွဲရေးအစီအစဉ်အတွက်အကြံပြုခြင်း(EMP)
- ၆။ လူထုနှင့်တွေ့ဆုံဆွေးနွေးခြင်း

စီမံကိန်း၏သဘောတရားအကျဉ်းချုပ်ဖော်ပြချက်

- LNG Plus International Co., Ltd. (LNG Plus) and Shell Eastern Petroleum (Pte) Ltd., ၏ကိုယ်စား အီတာလျှံ-ထိုင်းဖွံ့ဖြိုးတိုးတက်ရေးကုမ္ပဏီလီမိတက် သည်ဦးဆောင်လုပ်ကိုင်မည်။
- ထုတ်လုပ်သည့် ၁၅ မီဂါဝပ်လျှပ်စစ်ဓါတ်အားသည် ထားဝယ်အထူးစီးပွားရေးဇုန် တည်ဆောက်ချိန်ကာလအတွင်းသုံးစွဲရန်ဖြစ်သည်။
- ဤလျှပ်စစ်ဓါတ်အားစက်ရုံ၏သက်တမ်းသည် ၂နှစ် (၂၀၁၅ မှ ၂၀၁၇ ခုနှစ်)ဖြစ်ပြီး အခြားသဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားစက်ရုံတင်လည်ပတ်နိုင်ချိန်တွင်ဖျက်သိမ်းမည်။
- ဤလျှပ်စစ်ဓါတ်အားစက်ရုံ၏လောင်စာဆီသည် သန့်စင်ပြီးသောသဘာဝဓါတ်ငွေ့ အရည် (LNG) ဖြစ်သည်။

TEAM GROUP

စီမံကိန်း၏သဘောတရားအကျဉ်းချုပ်ဖော်ပြချက်

ယာယီလျှပ်စစ်ဓါတ်အားစက်ရုံတွင်အဓိကပါဝင်သောအရာများ

၁. စွမ်းအားထုတ်လွှတ်ပေးသည့် အထောက်ကူပြုများ

- ၁ မီဂါဝပ် ထုတ် သဘာဝဓာတ်ငွေ့သုံး မီးအားပေးစက် Multiple Unit (ဓာတ်ငွေ့ အင်ဂျင်)
- ဆက်စပ် လျှပ်စစ်သုံး ကိရိယာတန်ဆာပလာနှင့် နည်းစနစ်

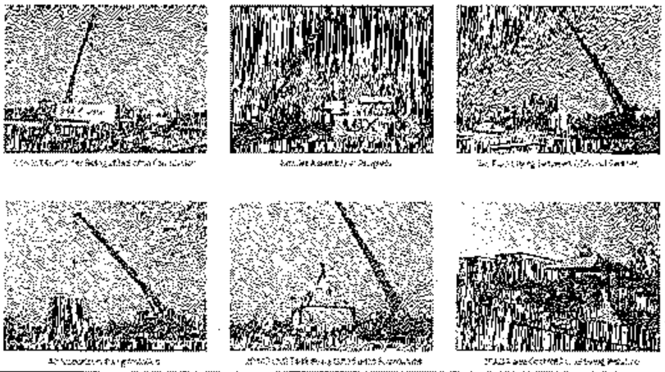
၂. သဘာဝဓာတ်ငွေ့ ဖြန့်ချိခြင်း အထောက်ကူပြုများ

- ၄၅ m3 LNG သိုလှောင်ကန်
- LNG ရွှေ့ပြောင်း ဘုံဘိုင်
- ပြင်ပတ်လည်ဝန်းရံထားသောဓါတ်ငွေ့အငွေ့ပျံစက်
- ဆက်စပ်နေသည့် ထိန်းချုပ်မှု နှင့် လုံခြုံမှုစနစ်

TEAM GROUP

စီမံကိန်း၏သဘောတရားအကျဉ်းချုပ်ဖော်ပြချက်

၁၅ မဂ္ဂါဝပ် LNG လျှပ်စစ်ဓါတ်အားစက်ရုံ တပ်ဆင်တည်ဆောက်ရန်ကရိယာတန်ဆာပလာများ

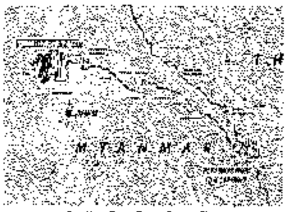


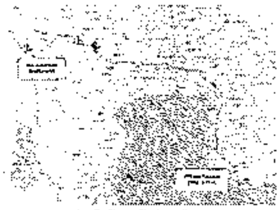
TEAM GROUP

စီမံကိန်း၏သတင်းအချက်အလက်

LNG သဘာဝဓါတ်ငွေ့အရည်ပို့ဆောင်မှုလမ်းကြောင်း

လျှပ်စစ်ဓါတ်အားပေးစက်ရုံအတွက် LNG ကို ထိုင်းနိုင်ငံ မှရယူမည်ဖြစ်ပြီး ထားဝယ်ရေနက်ဆိပ်ကမ်းအထူးစီးပွားရေးဇုန်စီမံကိန်းသို့ ကုန်းလမ်းဖြင့် ထော်လီယာဉ်ဖြင့်သယ်ယူပို့ဆောင်မည်။

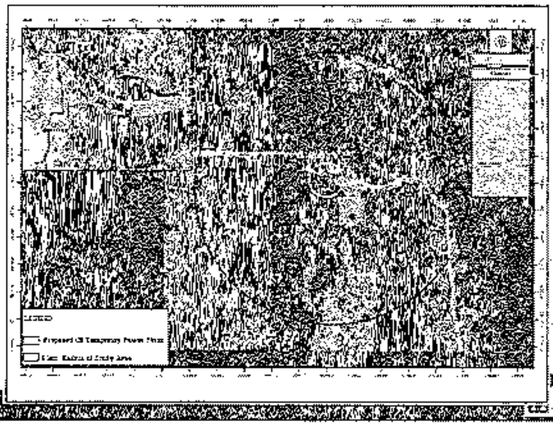




TEAM GROUP

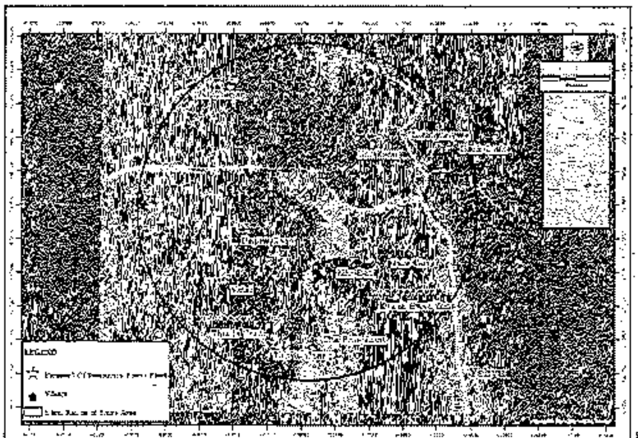
လျှပ်စစ်ဓါတ်အားပေးစက်ရုံတည်နေရာပြမြေပုံ

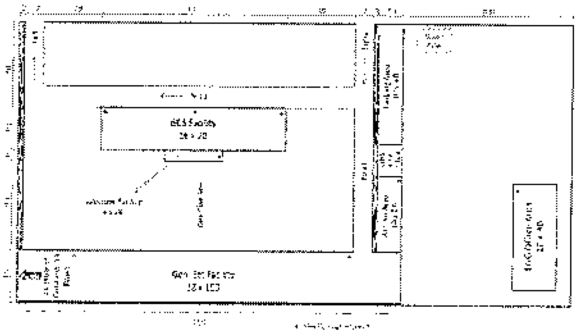
အဆိုပြုထားသည့် စက်ရုံသည် ထားဝယ်ကီလိုမီတာလမ်းမကြီး၏ ထားဝယ်စက်မှုဇုန်အတွင်း တည်ရှိမည်ဖြစ်သည်



TEAM GROUP

စီမံကိန်းဧရိယာပြမြေပုံ





Note: Operative from year 2015 to 2017 in order to support the construction period and will be removed after Bol- GT Gas Power Plant starts to operate.

TEAM GROUP

၁. လေအရည်အသွေး/အသံဆူညံမှု/တုန်ခါမှု	[illegible], At each station integrated sampling (72 hr) of NO, NO2, NOx, TSP, PM10 including wind speed and direction [illegible]
၂. မြေမျက်နှာပြင်ပေါ်ရေအရည်အသွေး/ [illegible]	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]
၃. မြေအောက်ရေ	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]
၄. မြေဆီလွှာ	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]
၅. [illegible]	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]
၆. မြေအသုံးချမှု	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]
၇. [illegible]	• [illegible]
၈. [illegible]	• [illegible]
၉. [illegible]	• အဆိုပြုထားသည့် စီမံကိန်း [illegible]

GROUP

သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ရေးနယ်မှာ

- လေအရည်အသွေး/အသံဆူညံမှု/တုန်ခါမှု
  ကင်းရွာနှင့် ပုဒ်ကွင်းရွာ (၂၉ ဇန်နဝါရီမှ ၁ ဖေဖော်ဝါရီလ ၂၀၁၅)

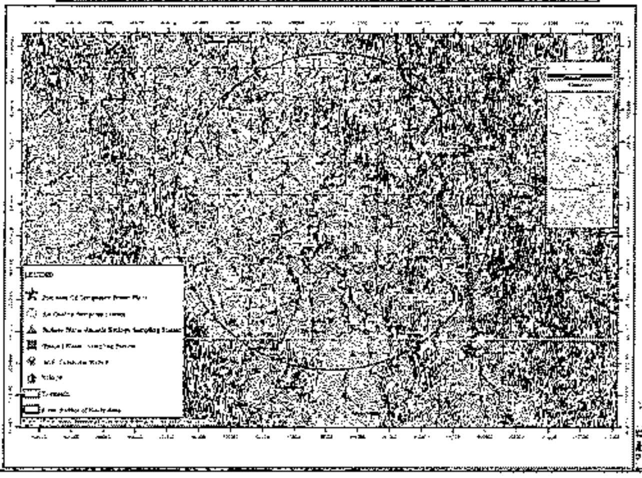
- မြေမျက်နှာပြင်ပေါ်ရေနှင့် မြေအောက်ရေ
  ရွာ ၄ ခု (၂၄ ရက်မှ ၂၈ရက် ဇန်နဝါရီလ ၂၀၁၅)

- မြေဆီလွှာ
  ရွာ ၂ ခု (၂၄ရက် ဇန်နဝါရီလ ၂၀၁၅)

- LNG ပို့ဆောင်ရေးအတွက် အဆိုပြုထားသည့် လမ်းကြောင်းပေါ်တွင် ကုန်စည်နှင့် ခရီးသည်များပို့ဆောင်ရေးကို ရေတွက်ခြင်း
  ၂၅ရက်မှ ၂၈ရက် ဇန်နဝါရီလ ၂၀၁၅

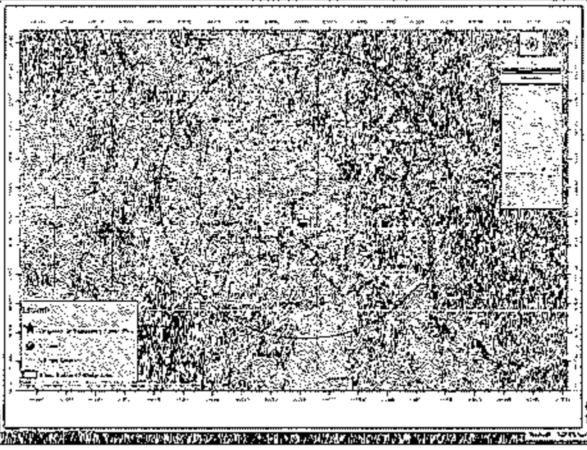
ပင်လယ် မြေအသုံးချမှုနှင့် ကုန်းပေါ်ဂေဟစနစ် လေ့လာအကဲဖြတ်ခြင်း
၂၆ရက်မှ ၂၈ရက် ဇန်နဝါရီလ ၂၀၁၅

TEAM GROUP



[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	၃၀
[illegible]	[illegible]	၁၅
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	၂၀
[illegible]	[illegible]	၁၅
[illegible]	[illegible]	၂၀
[illegible]	[illegible]	၃၀
[illegible]	[illegible]	၁၅
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

- ဝန်ကြီးဌာန
- အစိုးရ တာဝန်ရှိပုဂ္ဂိုလ်များနှင့် ဒေသခံအာဏာပိုင် အဖွဲ့စည်းများ
- ကျေးရွာအခြေပြုအဖွဲ့စည်းများ
- လူမှုအဖွဲ့အစည်းများ
- လျှပ်စစ်ဓာတ်အားပေးစက်ရုံအနီးဝန်းကျင်တွင် နေထိုင်သော ကျေးရွာလူကြီးနှင့်ရွာသူ/သားများ



ကျေးဇူးတင်ပါသည်

APPENDIX 9C-2

PRESENTATION FOR 2ND CONSULTATION MEETING WITH DSEZ SUPPORT WORKING BODY AND 2ND PUBLIC CONSULTATION MEETING

SLIDE PRESENTATION FOR 2ND PUBLIC CONSULTATION MEETING

15 MW … (ESIA)

၂၀၁၂ ခုနှစ်မှာပြဋ္ဌာန်းခဲ့သော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ နှင့် ၂၀၁၄ ခုနှစ် ထိန်းညှိဥပဒေအရ (၅၀)မီဂါဝပ်နှင့်အထက်ရှိသော သဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံသည်ပတ်ဝန်းကျင်ထိခိုက်မှုရှိ/မရှိလေ့လာဆန်းစစ်ပြီးဆောက်လုပ်ခွင့်ပြုချက်ကြိုတင်ယူရမည်ဖြစ်သည်။

ဤဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံသည် (၁၅)မီဂါဝပ် သာရှိသော်လည်းပတ်ဝန်းကျင်အခြေအနေကိုအလေးထားသောအားဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုရှိ/မရှိလေ့လာဆန်းစစ်ခြင်း ESIA ပြုလုပ်သွားမည်ဖြစ်သည်။

TEAM GROUP

ESIA

- စီမံကိန်းဧရိယာတည်ရှိပတ်ဝန်းကျင်အခြေအနေများအားလေ့လာရန်
- လျှပ်စစ်စက်ရုံစီမံကိန်း၏ ပတ်ဝန်းကျင်(ရုပ်ဝတ္ထုဆိုင်ရာ၊ ဇီဝဗေဒဆိုင်ရာ၊လူမှုအသုံးချမှုများ၊လူ့ဘဝအရည်အသွေးနှင့်ကျန်းမာရေးတန်ဖိုးများ)အပေါ်သက်ရောက်မည့်ကောင်းကျိုးဆိုးကျိုးတို့၏အရည်အသွေးနှင့်အရေအတွက်တို့အားဖော်ထုတ်သတ်မှတ်ရန်
- ဆိုးကျိုးသက်ရောက်မှုအားကာကွယ်ရန်၊လျှော့ချရန်နှင့် စောင့်ကြည့်ရန်နည်းလမ်းများကိုတင်ပြပေးရန်

TEAM GROUP

- Dawei Power Generation Company Limited (DPG) မှယာယီလျှပ်စစ်ဓါတ်အားပေးစက်ရုံ အား ထားဝယ်အထူး စီးပွားရေးဇုံ တည်ဆောက်နေစဉ်အတွင်းအထောက်အပံ့ဖြစ်စေရန် တည်ဆောက်လိုပါသည်
- ဓါတ်အားစက်ရုံ၏သက်တမ်းသည် (၂)နှစ် (၂၀၁၅-၂၀၁၇)ဖြစ်ပြီး Boil-Off သဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံပြီးစီးပါက ဤစက်ရုံအားပြန်ဖြုတ်သိမ်းမည်
- ဤစက်ရုံသည်သဘာဝဓါတ်ငွေ့အရည် (LNG)အားအသုံးပြုမည်ဖြစ်ပြီး ဒီဇယ်ဆီအားအရံအဖြစ်ထားရှိမည်မဟုတ်ပါ။

TEAM GROUP

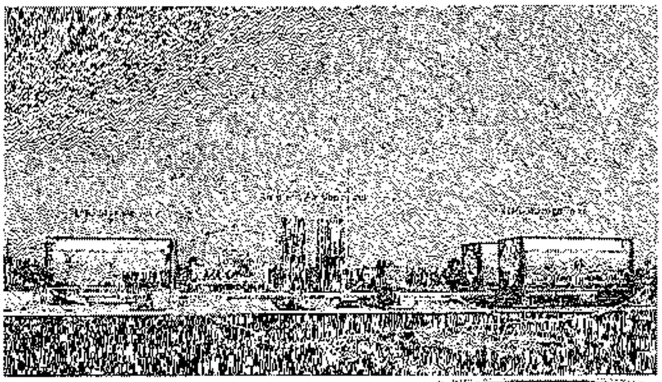
- ITD ၏အခြေစိုက်စခန်းအပေါ် ရှိ (၁၇)ဟက်တာ ကိုင်တွင် စီမံကိန်းဧရိယာအကျယ် (၆.၂၅)ဧကရှိပါသည်။
- ဖြတ်ရက္ခဝယ်တစ်ဆင့်ရက္ခဝယ်ကူသော အသေးစား ရှင်နရော အမျိုးအစားများဖြစ်သည်။
- ချေးမြင့်အအေးခံစနစ်မရှိပါ
- LNG ဓါတ်ငွေ့ရည်အား ထိုင်းနိုင်ငံမှ ကုန်းလမ်းဖြင့်သယ်ဆောင်ပါမည်။

TEAM GROUP

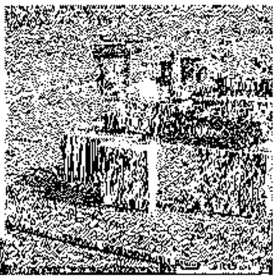
စက်ရုံ၏အဓိကအစိတ်အပိုင်းများ

- ဓါတ်အားလည်ပတ်ထုတ်လုပ်မှုအပိုင်း
  - ၁မီဂါဝပ်ထုတ်နိုင်သောဓါတ်ငွေ့သုံး မီးစက် (၁၈)လုံး အထိ တပ်ဆင်ရန်(၁၅ လုံးကိုလည်ပတ်ပြီး ၃ လုံးကိုအရန်ထားရှိရန်)
  - (circuit cooling system) အအေးခံစနစ်အား မီးစက်တွင် တွဲလျက်ပါရှိမည်
- ဓါတ်ငွေ့ဖြန့်ဖြူးရေးအခြေအနေ
  - LNG ဓါတ်ငွေ့သိုလှောင်ကန် (၁ခါ အမြင့်ဆုံး ၇၂၀ ကုဗမီတာ)
  - ပို့လွှတ်သည့်ပန့်၊ အငွေ့ပျံ စက် စသဖြင့်..

TEAM GROUP

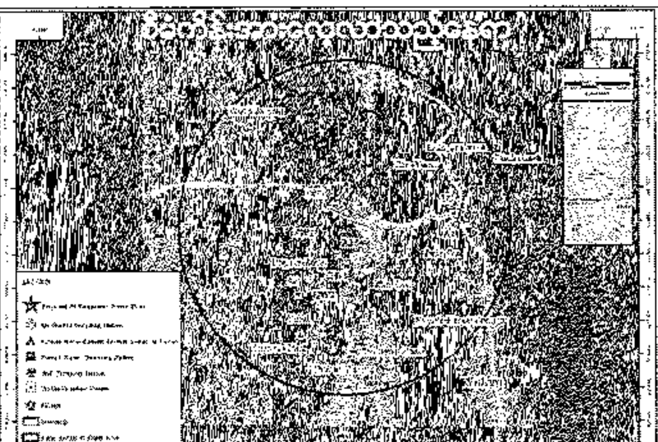


- CUMMINS QSK60 or GE JGS 320
  - Lean-burn နည်းပညာ ⟶ Nox လျော့ချခြင်း
  - ဆူညံသံလျော့ချခြင်း ⟶ အသံတိတ်လည်ပတ်ခြင်း
  - အငွေ့မရှိခြင်း
- (၂၀) ပေအရှည်ကွန်တိန်နာ အရွယ်အစားကဲ့သို့ ဒီဇိုင်းဖြစ်သောကြောင့် လွယ်ကူစွာ သယ်ယူနိုင်၊ တပ်ဆင်နိုင်ခြင်း

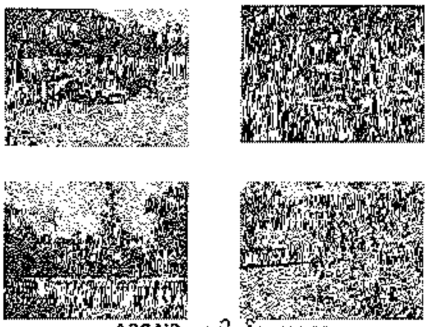


Description	Duration (days)	2016 Q1	Q2	Q3	Q4
Earth and Foundation works	60				
Building Structures (Concrete and Steel Structures)	60				
Fence and Gates	30				
Generator (Gas Engine) Installation (1-3 MW)	30				
Associated Equipment Installation	30				
Load Test and Trial Energised Date	15				
Commission Test	15				
Commencement of Power Plant Phase 1 (1-3 MW)					

- ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု(လေ၊ ဆူညံသံ၊ရေအရည်အသွေး)
- ဇီဝပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု(ကုန်းမြေနှင့် ပင်လယ်ဂေဟစံနစ်)
- လူမှု-စီးပွား ဖွဲ့စည်းပါဝင်မှု
- ယဉ်ကျေးမှုနှင့်မျက်မြင်နိုင်သောသွင်ပြင်လက္ခဏာ
- အများပြည်သူနှင့်တွေ့ဆုံတိုင်ပင်ခြင်း



ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု



A2&N2 ပုဂေါ်ခွန်းကျေးရွာ

TEAM GROUP

ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု

- လေအရည်အသွေး
  - လေထုသန့်စင်သည် ညစ်ညမ်းမှုအခြေအနေအားလုံး သည်ခွင့်ပြုထားသည့် သတ်မှတ်စံချိန်စံညွှန်းအောက်လျော့နည်းပါသည်။
  - ထားဝယ်မြစ်ကူးဆိပ်ဘေးရှိလေထုသည် သတ်မှတ်စံချိန်စံညွှန်းထက်ပိုပါသည်
  - NO_2 နှင့် SO_2 ပါဝင်မှုအလွန်နိမ့်ပါသည်
- ဆူညံသံ
  - ၂၄ နာရီတွင်ပျမ်းမျှဆူညံသံ အဆင့်သည် (Leq 24 hr) US.EPA ၏လက်ခံနိုင်သောသတ်မှတ် စံချိန်စံညွှန်းထက်နိမ့်ပါသည်

1 = Pollution Prevention and Abatement Handbook, World Bank Group 1998

TEAM GROUP

ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု

GW1 စိမ့်ဝါဒိန်းနေရာ

GW2 ပုဂေါ်ခွန်းစာသင်ကျောင်း

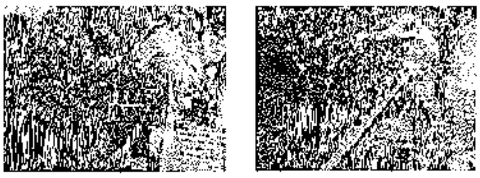
မြေအောက်ရေနမူနာ(၂)နေရာစလုံး အနည်းငယ်အက်စစ်ပါဝင်မှုရှိသည်။ အသုံးပြုရန် သင့်တော်သော်လည်းသောက်သုံးရန်မသင့်တော်ပါ

(4th Edition of WHO Guidelines for Drinking-water).

TEAM GROUP

ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု

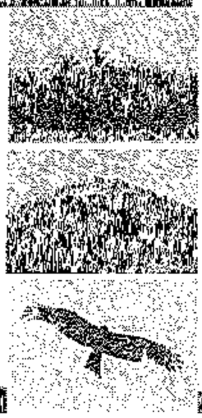
ရလိုင်ချောင်းအတွင်းရှိ ရေနမူနာ (၂)နေရာ



ရေနမူနာ (၂)နေရာစလုံး အခြေအနေကောင်းပြီးအောက်ဆီဂျင်ပျော်ဝင်မှု မြင့်သည်၊ သတ္တုပျော်ဝင်မှုနှင့်အနယ်အနှစ်ပျော်ဝင်မှု အနည်းငယ်သာရှိပြီး ရေနေဂေဟစနစ်အားပံ့ပိုးပေးရန်သင့်တော်ပါသည်။

TEAM GROUP

ဇီဝပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု

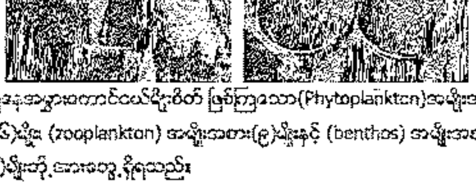


- သစ်တောအမျိုးအစားနှစ်မျိုးတွေ့ရှိရ ရောနှောသစ်တော (MDF) နှင့် အမြဲစိမ်း ခြောက်သွေ့တော (DEF)
- အဆိုပြုထားသောစီမံကိန်း နေရာတွင် အပင်မျိုးစိတ်ပေါင်း (၇၁)မျိုးနှင့် သတ္တဝါမျိုးစိတ် ပေါင်း (၂၉)မျိုးတွေ့ရှိရသည်။
- အဆိုပြုထားသောစီမံကိန်းမြေနေရာတွင် တွေ့ရသည့်အပင်မျိုးစိတ်နှင့်သတ္တဝါမျိုးစိတ် တို့သည်မျိုးတုံးပျောက်ကွယ်တော့မည့် မျိုးစိတ်များ မတွေ့ကြပါ။

TEAM GROUP

ဇီဝပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှု

ရေအရည်အသွေးနမူနာယူသည့်နေရာ တွေဖြစ်ပါသည်

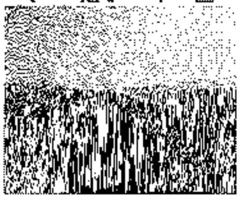


- ရေနေအဏုဇီဝကောင်ငယ်မျိုးစိတ် ဖြစ်ကြသော(Phytoplankton)အမျိုးအစား (၁၆)မျိုး၊ (zooplankton) အမျိုးအစား(၉)မျိုးနှင့် (benthos) အမျိုးအစား (၃)မျိုးတို့အားတွေ့ရှိရသည်။
- မျိုးစိတ်ကွဲပြားမှုအညွှန်းကိန်း (SDI) သည် (2.46 – 2.54)အတွင်းရှိပြီးနမူနာ (၂)နေရာစလုံးတွင်ရေနေဂေဟစနစ်ကောင်းမွန်လျက်ရှိနေပါသည်။

TEAM GROUP

လူမှု စီးပွားအခြေအနေ

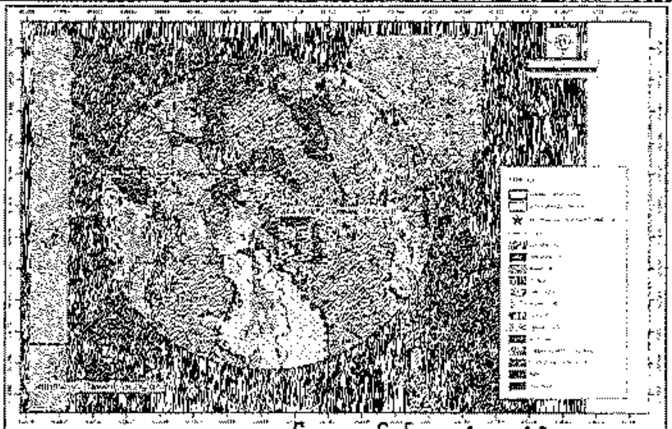
- မော်တော်ဆိုင်ကယ်သည်အဓိကအသုံးများဆုံးဖြစ်ပြီး မော်တော်ကားသည်ဒုတိယအများဆုံးဖြစ်သည်။
- လမ်းပေါ်တွင်ယာဉ်သွားလာမှုများပြားပြီး ယခုထက်ပိုမိုများလာနိုင်သည်။



ထားဝယ်မြစ်ကူးတံတားအနီး ITD လမ်းပေါ်တွင်ယာဉ်များရှောက်စဉ်

လူမှု စီးပွားအခြေအနေ

[illegible]	[illegible]	[illegible]
[illegible]	593.11	3.06
[illegible]	16,192.26	83.43
[illegible]	251.34	1.29
[illegible]	2,370.39	12.22
[illegible]	19,407.09	100.00



လေ့လာသည့်နေရာ၏မြေအသုံးချမှုပုံစံ

လူမှု စီးပွားအခြေအနေ

Village	Township
Pagaw Zun	Yebyu
Min Oat	Yebyu
Yebri	Yebyu
Wet Chaung	Yebyu
Pale Gu	Yebyu
Kwah Hwet Kone	Yebyu
Hut To Lat	Yebyu
Hin Dr Daung	Yebyu
Tha Pwe Zin	Yebyu
Lay Ywar	Yebyu

- စီးပွားရေးအခြေအနေ
  - ခြံလုပ်ငန်းနှင့်ကျွန်း၊ လခစားလုပ်ငန်းဖြင့်အသက်မွေးသူအများစုဖြစ်သည်
  - တစ်နှစ်လျှင်အိမ်ထောင်စုတစ်စု၏ပျမ်းမျှဝင်ငွေနှင့်ထွက်ငွေမှာအမေရိကန်ဒေါ်လာအားဖြင့်(၁၄၅၀-၆၀၀၀)အကြားဖြစ်သည်
  - အားလုံးနီးပါးငွေမစုဆောင်းနိုင်ကြပါ
- လူမျိုးနှင့်ကိုးကွယ်သည့်ဘာသာ
  - အားလုံးနီးပါးထားဝယ်စကားပြောသောထားဝယ်-မြန်မာဖြစ်ပြီး ထေရဝါဒဗုဒ္ဓဘာသာ ကိုးကွယ်ကြသည်

- ဖြစ်နိုင်ခြေရှိသောသက်ရောက်မှု
  1) ပစ္စည်းကိရိယာများသယ်ဆောင်ခြင်း၊မြေပြင်ရှင်းလင်းခြင်း၊ဖြို ခြင်းနှင့် မြေညှိခြင်းကြောင့်အနိုက်အတန့်ဖုန်မှုန့်ထခြင်း
  2) ယာဉ်ယန္တရားများသွားလာခြင်း၊ပစ္စည်းကိရိယာများသယ်ယူပို့ ဆောင်ခြင်းကြောင့် ဆူညံသံနှင့်တုန်ခါမှုများဖြစ်ပေါ်ခြင်း

  စီမံကိန်းနေရာသည်ရွာနှင့်ဝေးသည့်အပြင် အချိန်ကာလတိုတောင်းသည့်အတွက် ဆူညံသံနှင့်တုန်ခါမှု၏အကျိုးသက်ရောက်မှုသည်အလွန်နည်းပါမည်။
  3) ယာဉ်ယန္တရားများသွားလာခြင်းကြောင့်အများပြည်သူအသုံးပြုသည့် လမ်းပေါ်ဝင်ရောက်ကြပ်သွားနှင့်လမ်းအသုံးပြုသူဒေသခံများအတွက် အန္တရာယ်ဖြစ်ပေါ်နိုင်ခြင်းအချိန်ကာလတိုတောင်းလွန်းသည့်အတွက် အကျိုးသက်ရောက်မှုအလွန်နည်းပါမည်။

- လျော့ကျစေသည့်နည်းလမ်းများ
  - ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နေရာနှင့်သွားရာလမ်းကြောင်းတွင်ရေဖျန်းခြင်း
  - ဆောက်လုပ်ရေးဆိုဒ်သို့ ပစ္စည်းများသယ်ယူပို့ဆောင်သည့်အခါ ကင်းဗတ်စ (သို့)အခြားသင့်တော်သောအဖုံးအကာဖြင့်ဖုံးအုပ်ပြီးမှသယ်ဆောင်ခြင်း
  - လမ်းမပေါ်မြေကြီးစသည်တို့ကျကျန်ခဲ့မှုလျော့နည်းစေရန်ယာဉ်ဆေးကြောသန့်စင်သည့်နေရာပြုလုပ်ပေးခြင်း
  - တစ်နာရီလျှင် ကီလိုမီတာ(၄၀)ထက်မပိုသောနှုန်းဖြင့်ယာဉ်များ၏အရှိန်ကိုကန့်သတ်ခြင်း
  - လမ်းမျက်နှာပြင်ပျက်စီးမှုကာကွယ်ရန် အလေးချိန်ပိုတင်သောထရပ်ကားများကို တင်းကြပ်စွာ စစ်ဆေးကြပ်မတ်ခြင်း
  - အာဏာပိုင်မှခွင့်ပြုထားသည့်အမှိုက်စွန့်ပစ်ကန်ထရိုက်ရထားသူအားအမှိုက်ကိုစနစ်တကျစွန့်ပစ်စေခြင်း

- ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ
- ပစ္စည်းကိရိယာများသယ်ဆောင်ခြင်း [illegible] ဖြစ်ပေါ်ခြင်း
- ယာဉ်လှုပ်ရှားမှုများ [illegible] ပစ္စည်းကိရိယာများသယ်ယူပို့ဆောင်ခြင်းကြောင့် [illegible]
- စီမံကိန်းနေရာသည် [illegible] အချိန်ကာလတိုတောင်းသည့်အတွက် [illegible] သက်ရောက်မှုနည်းပါသည်
- လျော့ကျစေသည့်နည်းလမ်းများ
  - ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နေရာနှင့်သွားရာလမ်းကြောင်းတွင်ရေဖျန်းခြင်း
  - ဆောက်လုပ်ရေးဆိုဒ်သို့ ပစ္စည်းများသယ်ယူပို့ဆောင်သည့်အခါ ကင်းဗတ်စ (သို့)အခြားသင့်တော်သောအဖုံးအကာဖြင့်ဖုံးအုပ်ပြီးမှသယ်ဆောင်ခြင်း
  - [illegible]
  - ပစ္စည်းကိရိယာများ [illegible]

- ဖြစ်နိုင်ခြေရှိသောသက်ရောက်မှု

  3) အဓိကလမ်းမပေါ်တွင်ပစ္စည်းကိရိယာများသယ်ဆောင်ခြင်းကြောင့်ယာဉ်သွားလာမှု ပိုမိုများပြားလာခြင်း။

  အချိန်ကာလတိုတောင်းသည့်အတွက် အကျိုးသက်ရောက်မှုနည်းပါသည်။
- လျော့ကျစေသည့်နည်းလမ်း
  - ဆောက်လုပ်ရေးအစီအစဉ်အားသက်ဆိုင်ရာအာဏာပိုင်နှင့် ဒေသခံပြည်သူများအား အသိပေးခြင်း
  - ယာဉ်များ၏အရှိန်နှုန်းကိုတစ်နာရီလျှင် ကီလိုမီတာ(၄၀)ထက်မပိုစေရန်ကန့်သတ်ခြင်း
  - ဆောက်လုပ်ရေးနှင့်အားထင်ရှားစွာလမ်းညွှန်ပြသသောသတိပေးဆိုင်းဘုတ်များကို လွယ်ကူစွာသတိပြုမြင်တွေ့နိုင်စေရန် အလုံအလောက်ပေးထားခြင်း

- ဖြစ်နိုင်ခြေရှိသောသက်ရောက်မှုများ

  4) အလုပ်သမား (၅၀)ဦးမှနေ့စဉ်စွန့်ပစ်ရေ ကုဗမီတာ (၇.၅)ခန့်ရှိမည်

  5) အလုပ်သမား (၅၀)ဦးမှနေ့စဉ်စွန့်ပစ်ပစ္စည်း(၄၀)ကီလိုဂရမ် ခန့်ရှိမည်။
- လျော့ကျစေသောနည်းလမ်းများ
  - ယာယီရေချိုးနှင့်ထုတ်မြောင်းနှင့်အနယ်ထိုင်ကန်များကိုဆောက်လုပ်ရေးလုပ်ငန်းခွင်ထဲတွင်တည်ဆောက်ပေးထားခြင်း
  - ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်းလုံလောက်သောအမှိုက်ပုံးများပေးထားခြင်း
  - ရေနှင့်ဝေးသောနေရာတွင်သာပစ္စည်းကိရိယာများသိုလှောင်သိမ်းဆည်းထားရမည်

- ဖြစ်နိုင်ခြေရှိသောသက်ရောက်မှုများ: လူမှုစီးပွား

  ကောင်းကျိုး
  - အလုပ်အကိုင်အခွင့်အလမ်းမြင့်တက်လာခြင်း.
  - ဝင်ရောက်လာသည့်လုပ်သားများ၏သုံးစွဲမှုကြောင့်ဒေသခံများ၏ငွေတိုးတက်လာခြင်း

  ဆိုးကျိုး
  - ဒေသခံများနှင့် လုပ်သားများ၏ပြဿနာဖြစ်ပွားနိုင်ခြင်း။ နိုင်ငံခြားဝန်ထမ်းအနည်းငယ်သာရှိမည်ဖြစ်လို့ ဖြစ်နိုင်ခြေ အလွန်နည်းပါသည်။
  - ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့်ကားအသွားအလာများပြီးလေထု ညစ်ညမ်းမှုရှိခြင်း။

  အချိန်ကာလတိုတောင်းသည့်အတွက် အကျိုးသက်ရောက်မှုနည်းပါသည်။

- လျော့ကျစေသည့်နည်းလမ်းများ
  - ဒေသခံများအလုပ်အကိုင် ဦးစားပေးခန့်ထားပေးခြင်းဖြင့်ပြင်ပမှဝင်ရောက်လာသည့်လုပ်သားများနှင့်ဒေသခံများအကြားဖြစ်နိုင်သည့်ပြဿနာကို လျော့ချပေးခြင်း
  - အရည်အချင်းအလိုက်အလုပ်အကိုင်ခန့်အပ်ရာတွင်မှုတသောလုပ်အားခပေးရန်လိုပြီးအလုပ်ခန့်သည့်လုပ်ငန်းစဉ်တွင်လည်း ပွင့်လင်းမြင်သာမှုနှင့်အတူညီတမျှရှိရမည်
  - လေထုအရည်အသွေးထိန်းသိမ်းနှင့်ယာဉ်သွားလာမှုတို့၏အကျိုးသက်ရောက်မှုကို အနီးအနားတွင်ရှိသောဒေသခံပြည်သူများ ခံစားရသက်သာစေရန်လျော့ချသည့် နည်းလမ်းများကို လုပ်ငန်းဆောင်ရွက်ရာတွင်တင်းကြပ်စွာလိုက်နာ ဆောင်ရွက်ဖို့ ကြပ်မတ်ရမည်
  - ဆောက်လုပ်ဆဲကာလအတွင်း ဆိုးကျိုးများရှိသည့်အခါဒေသခံပြည်သူများ၏ တိုင်ကြားမှုကိုလက်ခံစုဆောင်းပြီး ချက်ချင်းတုံ့ပြန်ဖြေရှင်းပေးရန်လိုပါသည်

[illegible]

- ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ
  1) လေထုညစ်ညမ်းခြင်း မီးစက် (၁၅)လုံးမှသဘာဝဓါတ်ငွေ့လောင်ကျွမ်းပြီး CO2, SOx, Nox နှင့်အမှုန်အမွှားအနည်းငယ်ပါသောမီးခိုးထွက်မည်။ မြန်မာနိုင်ငံ၏သတ်မှတ်ထားသောစံချိန်စံညွှန်းအတိုင်းမီးခိုးထိန်းချုပ်သည့်စနစ်ရှိမည်။ ထို့ကြောင့်အဓိကထွက်သည့်မီးခိုးသည် အလွန်နည်းပါးပါမည်။

ဆောင်ရွက်မှု	မြန်မာ့စံချိန်စံညွှန်း (for Reciprocating Engine)
SO_x	-
NO_x	200 mg/Nm³
Particulate အမှုန်အမွှား	-

TEAM GROUP

[illegible]

- ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ
  2) ဆူညံသံ 80 dB(A) @ 7 m. (CUMMINS QSK60) ထွက်သောမီးစက်အမျိုးအစားတစ်မျိုးဖြစ်သည်။ [illegible]
  3) စွန့်ပစ်ပစ္စည်းအတွက်အခါအခါ အဓိကမှ ရေဆိုးနှင့် အစားအစာစွန့်ပစ်ပစ္စည်း [illegible] ဖြစ်သည့်အတွက် အကျိုးသက်ရောက်မှု အလွန်နည်းပါမည်။
- လျော့ကျစေသည့်နည်းလမ်း
  - [illegible] စွန့်ပစ်ရေဆိုးများကို သတ်မှတ်သော နေရာတွင်သိုလှောင်သိမ်းဆည်းထားမည်
  - [illegible] စွန့်ပစ်ပစ္စည်း [illegible]

TEAM GROUP

[illegible]

- ဖြစ်နိုင်ခြေရှိသော ထိခိုက်မှု
  4) လက်ရှိ ITD လမ်းကြောင်းအပေါ် LNG ဓါတ်ငွေ့ရည်သယ်ဆောင်ခြင်း
  ထိုကဲ့သို့ သယ်ဆောင်မှုကြောင့် အန္တရာယ်ကောင်းနိုင်တဲ့ [illegible] သည့်အစီအမံများသင့်လျော်စွာလိုက်နာမည်ဖြစ်သည့်အတွက် အန္တရာယ်ဖြစ်နိုင်ခြေ အလွန်နည်းပါမည်
- လျော့ကျစေသည့်နည်းလမ်းများ
  - [illegible] (၃၀) [illegible] လူနေကျေးရွာများအတွင်းကန့်သတ်ခြင်း
  - [illegible] သတိပြုမြင်တွေ့နိုင်စေရန် အလင်းအလောင်းပေးထားခြင်း
  - [illegible] ကောင်းမွန်စွာ နေထိုင်နိုင်စေရန် [illegible]
  - ဒေသခံပြည်သူများနှင့်ပုံမှန်တွေ့ဆုံဆွေးနွေးမှုပြုမည်

TEAM GROUP

[illegible]

- ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ
  5) လူမှုစီးပွား
  ကောင်းကျိုး
  - ပြင်ပနေရာမှရောက်လာသည့်လုပ်သားများ၏သုံးစွဲမှုကြောင့် ဒေသခံပြည်သူများ ဝင်ငွေတိုးလာခြင်း
  ဆိုးကျိုး
  - လုပ်ငန်းလည်ပတ်မှုများကြောင့် လေထုညစ်ညမ်းမှုရှိခြင်း၊ အချိန်ကာလတိုတောင်းသည့်အတွက် အကျိုးသက်ရောက်မှုနည်းပါမည်။
  - [illegible] လျော့ချသည့်နည်းလမ်းများ [illegible] အကျိုးသက်ရောက်မှုနည်းပါမည်။ [illegible] (၂)နှစ်အတွင်းသာရှိမည်။

TEAM GROUP

[illegible]

- လျော့ကျစေသောနည်းလမ်းများ
  - အသက်မွေးဝမ်းကျောင်းနှင့်လူမှုဖွံ့ဖြိုးရေးလုပ်ငန်းများအတွက် ရန်ပုံငွေထူထောင်ပေးခြင်း
  - ဒေသခံနှင့်ဒေသအာဏာပိုင်တို့နှင့်နီးကပ်စွာအလုပ်လုပ်ကိုင်မည့်လူမှုအကျိုးပြု စီမံကိန်းများ (CSR) Programs ထူထောင်ပေးခြင်း
  - အနီးရှိဒေသခံပြည်သူများအတွက် ထိခိုက်နိုင်သောအကျိုးဆက်ကို လျော့ချရာတွင် ဓါတ်ငွေ့ရည်သယ်ဆောင်ခြင်းနှင့်စွန့်ပစ်ပစ္စည်း စီမံခြင်းတို့သည်တင်းကြပ် သောစည်းမျဉ်းများလိုက်နာရမည်
  - စီမံကိန်းဆောင်ရွက်ရာတွင် ဒေသခံပြည်သူများနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း

TEAM GROUP

ဆက်သွယ်ရန်

1. Mr. Sumaet Ausvagunthorn
   LNG Plus International Company Limited
   2034/77, Italthai Tower, 17th floor, New Petchburi Rd., Bangkapi, Huaykwang, Bangkok 10310, Thailand.

2. Mr. Plian Maneeya, Project Manager
   TEAM Consulting Engineering and Management Co. Ltd.
   TEAM Building, 151 Nuanchan Rd., Bueng Kum, Bangkok 10230, Thailand
   and
   Total Business Solution Co., LTD. (TBS)
   No. 54, Room No.704, Waizayantar Tower, Waizayantar Road, Thingangyun Township, Myanmar

TEAM GROUP

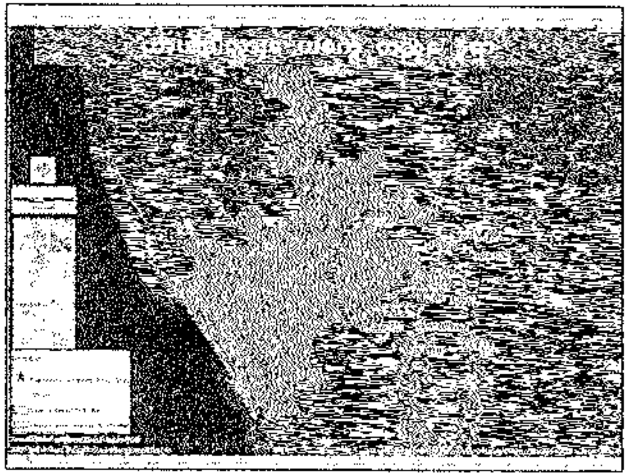
APPENDIX 9C-3

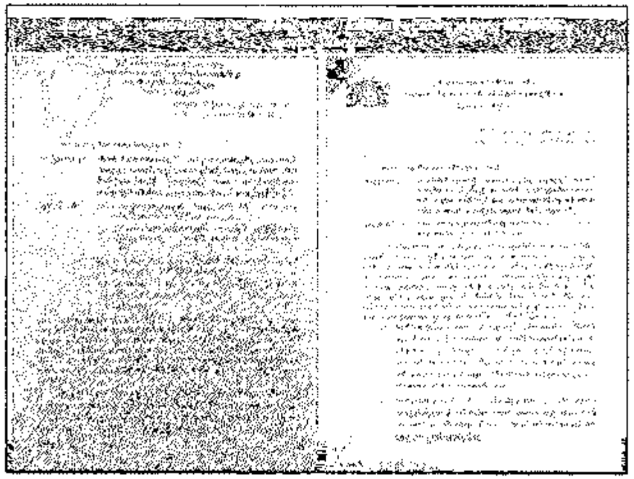
PRESENTATION FOR

3rd PUBLIC CONSULTATION MEETING

[illegible]

- ESIA [illegible]
- [illegible]
- [illegible] ESIA [illegible]
- [illegible] ESIA [illegible]
- [illegible] (MONREC) ESIA [illegible]

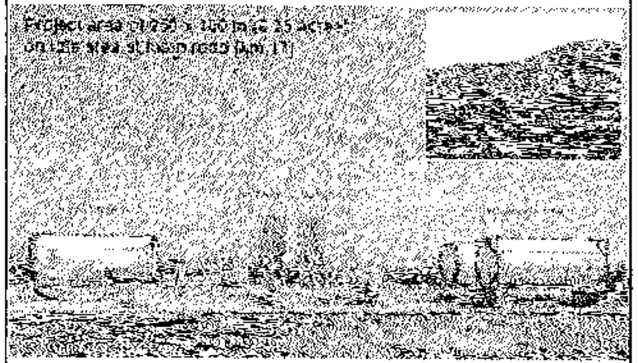




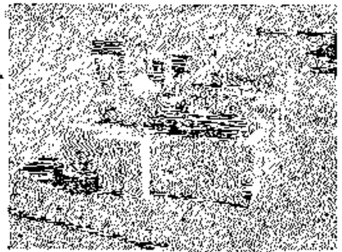
[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible] liquefied natural gas (LNG) [illegible]
- LNG [illegible]

Project area [illegible] 25 acres
on [illegible] road [illegible]



- CUMMINS QSK60 or GE JGS 320
  - Lean-burn Technology [illegible] Nox [illegible]
  - [illegible]
  - [illegible]
  - [illegible]



- [illegible]

Modular design [illegible]

[illegible]

- [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible] (NEC)
  - [illegible]

[illegible]

- [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
  - [illegible]

[illegible]

[illegible]	
[illegible]	• [illegible] • [illegible]
[illegible]	• [illegible] • [illegible]
[illegible]	• [illegible] • [illegible]

[illegible]

[illegible]	
[illegible]	• [illegible] • [illegible] • [illegible]
[illegible]	• [illegible]
[illegible]	• [illegible]

[illegible]

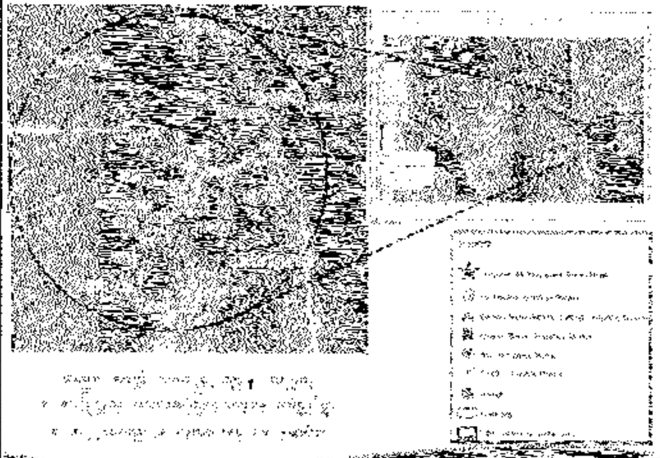
[illegible]	
[illegible]	• [illegible] • [illegible] • [illegible]
[illegible]	• [illegible] • [illegible]

[illegible]

[illegible]

[illegible]

[illegible]



ကျေးဇူးတင်ပါသည်။

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

စာအမှတ်၊ ထဝ-၁/DSEZ-D/၂၀၁၈ (၁၄၁)
ရက် စွဲ ၊ ၂၀၁၈ ခုနှစ် ၊ ဧပြီ လ ၉ ရက်

သို့

ဥက္ကဋ္ဌ
ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
နေပြည်တော်

အကြောင်းအရာ။ **EIA/SIA အစီရင်ခံစာများနှင့် ပတ်သက်၍ (Public Consultation) လူထုကြားနာပွဲမှတ်တမ်း ပေးပို့တင်ပြခြင်း**

အထက်အကြောင်းအရာပါကိစ္စနှင့် ပတ်သက်၍ (၂၈. ၃. ၂၀၁၈)ရက်နေ့နှင့် (၂၉. ၃. ၂၀၁၈) ရက်နေ့များတွင် ထားဝယ်အထူးစီးပွားရေးဇုန်၊ ITD အစည်းအဝေးခန်းမ၌ ကျင်းပပြုလုပ်ခဲ့သည့် ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်း အကောင်အထည်ဖော်ရာတွင် ကနဦးစီမံကိန်းလုပ်ငန်းများ၏ EIA / SIA အစီရင်ခံစာများနှင့် ပတ်သက်၍ (Public Consultation)လူထုကြားနာပွဲမှတ်တမ်းအား သိရှိနိုင်ပါရန်နှင့် လိုအပ်သည်များလမ်းညွှန်မှုပြုနိုင်ပါရန် ပူးတွဲပါအတိုင်း တင်ပြအပ်ပါသည်။

တွဲဖက်အတွင်းရေးမှူး(၁)

မိတ္တူကို-

- ဒုတိယဥက္ကဋ္ဌ (၁)၊ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
- ဒုတိယဥက္ကဋ္ဌ (၂)၊ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
- အတွင်းရေးမှူး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
- ရုံးလက်ခံ/မျှောစာတွဲ

(၂၈-၃-၂၀၁၈) ရက်နေ့ နံနက် (၀၈၀၀) နာရီအချိန်တွင် ITD အစည်းအဝေးခန်းမ၌ ကျင်းပပြုလုပ် သည့် ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်း အကောင်အထည်ဖော်ရာတွင် ကနဦးစီမံကိန်းများ၏ EIA၊ ESIA အစီရင်ခံစာများနှင့်ပတ်သက်၍ (Public Consultation) လူထုကြားနာပွဲမှတ်တမ်း

အခမ်းအနားတက်ရောက်သူများ

၁။ အခမ်းအနားသို့ တက်ရောက်သူများမှာ အောက်ပါအတိုင်းဖြစ်ပါသည် -

(က)	ဦးဟိုပင်	လူမှုရေးနှင့်စည်ပင်သာယာရေး ဝန်ကြီး	တနင်္သာရီတိုင်းဒေသကြီးအစိုးရအဖွဲ့
(ခ)	ဦးဖြိုးဝင်းထွန်း	ဒုတိယဥက္ကဋ္ဌ-၁	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
(ဂ)	ဦးစောလှကာ	ကရင်တိုင်းရင်းသားလူမျိုးများ ရေးရာဝန်ကြီး	တနင်္သာရီတိုင်းဒေသကြီးအစိုးရအဖွဲ့
(ဃ)	ဦးကြည်စိုး	ဒုတိယဥက္ကဋ္ဌ	တနင်္သာရီတိုင်းဒေသကြီးလွှတ်တော်
(င)	ဒေါက်တာမြင့်ဆန်း	ဒုတိယဥက္ကဋ္ဌ-၂	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
(စ)	ဦးလှမော်ဦး	ညွှန်ကြားရေးမှူးချုပ်	စားသုံးသူရေးရာဦးစီးဌာန
(ဆ)	ဦးလှထွန်းဦး	ဒုတိယညွှန်ကြားရေးမှူးချုပ်	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ဇ)	ဦးသောင်းမြင့်ထွန်း	အင်ဂျင်နီယာချုပ်	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ဈ)	ဦးစောဘီးလယ်		KNU အဖွဲ့
(ည)	ဦးဆန်းဦး	ညွှန်ကြားရေးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(ဋ)	ဦးမြတ်စိုးဝင်း	တိုင်းတာဝန်ခံ	မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်အဖွဲ့
(ဌ)	ဦးထွန်းထွန်းဝင်း	ညွှန်ကြားရေးမှူး	အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
(ဍ)	ဒေါက်တာထွန်းထွန်း	တိုင်းဦးစီးမှူး	ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှု ဦးစီးဌာန

(ဎ)	ဦးထွန်းထွန်းလင်း	တွဲဖက်အတွင်းရေးမှူး-၁	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
(ဏ)	ဒေါ်ခင်မိမိထွေး	တွဲဖက်အတွင်းရေးမှူး-၂	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
(တ)	ဦးဝင်းမင်းထွဋ်	ညွှန်ကြားရေးမှူး	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ထ)	ဦးနေလင်း	လ/ထညွှန်ကြားရေးမှူး	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ ရုံးအဖွဲ့
(ဒ)	ဦးထင်အောင်ကျော်	လ/ထညွှန်ကြားရေးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(ဓ)	ဒေါ်ဝေစိုးခင်	ဦးစီးအရာရှိ	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(န)	ဦးဇော်မောင်သိမ်း	ဒု-ဦးစီးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန

(ပ) OSSC ကိုယ်စားလှယ်များ

(ဖ) Italian-Thai Development Public Company Limited (ITD) ကိုယ်စားလှယ်များ

(ဗ) Myandawei Industrial Estate Company Limited (MIE) ကိုယ်စားလှယ်များ

(ဘ) Dawei Residence Company Limited (DRC) ကိုယ်စားလှယ်များ

(မ) Dawei Power Company Limited (DPC) ကိုယ်စားလှယ်များ

(ယ) Dawei Power Generating Company Limited (DPG) ကိုယ်စားလှယ်များ

(ရ) Dawei LNG Terminal Company Limited (DLTC) ကိုယ်စားလှယ်များ

(လ) United Analyst And Engineering Consultant Company Limited (UAE) ကိုယ်စားလှယ်များ

(ဝ) TEAM Consulting Engineering and Management Company Limited (TEAM) ကိုယ်စားလှယ်များ

(ဿ) TOTAL Business Solution Company Limited ကိုယ်စားလှယ်များ

(ဟ) ERM-Siam Company Limited (ERM) ကိုယ်စားလှယ်များ

(ဠ) PHISUT Technology Company Limited (PHISUT) ကိုယ်စားလှယ်များ

(အ)	ဦးတင်မောင်ဦး		အပြည်ပြည်ဆိုင်ရာဥပဒေပညာရှင်အဖွဲ့
(-)	ဦးတင်မောင်သာ		World Wildlife Funds
(-)	ဦးစိုင်းနေဝင်းမြင့်		World Wildlife Funds
(-)	ဒေါ်မာလာ		ထားဝယ်အမျိုးသမီးသမဂ္ဂ
(-)	ဒေါ်သီတာမိုး		ထားဝယ်အမျိုးသမီးသမဂ္ဂ
(-)	ဦးအောင်ဖြိုးဝင်း		ထားဝယ်ဖွံ့ဖြိုးရေးအဖွဲ့
(-)	ဒေါ်သက်အိစံ		ထားဝယ်ဖွံ့ဖြိုးရေးအဖွဲ့
(-)	ကိုခော်	သတင်းထောက်	တနင်္သာရီဂျာနယ်၊ Dawei Watch
(-)	ဦးတင့်လွင်	သတင်းထောက်	Hinthar Media

(-) အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာနမှ ဝန်ထမ်းများ

(-) ဒေသခံရပ်မိရပ်ဖများနှင့် ရွာသားများ

ရည်ရွယ်ချက်

၂။ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်း အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ ဆောင်ရွက်ရာတွင် လူမှုပတ်ဝန်းကျင်နှင့် သဘာဝပတ်ဝန်းကျင်၏ လေ့လာတွေ့ရှိဆန်းစစ်ချက်များအား ဒေသခံပြည်သူလူထုအား အသိပညာပေးဆွေးနွေးရန်နှင့် ဒေသခံများ၏သဘောထားအား သိရှိနိုင်စေရန် ဆောင်ရွက်ရခြင်းဖြစ်ပါသည်။

ဆွေးနွေးတင်ပြချက်များ

၃။ ထားဝယ် အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ ဒုတိယဥက္ကဋ္ဌ(၁)၊ တနင်္သာရီတိုင်းဒေသကြီး စီမံဘဏ္ဍာဝန်ကြီး ဦးဖြိုးဝင်းထွန်းမှ အဖွင့်အမှာစကားပြောကြားရာတွင် ယခုအခမ်းအနားကို တက်ရောက်လာကြသော တိုင်းဒေသကြီးလွှတ်တော်ဥက္ကဋ္ဌ၊ ဌာနဆိုင်ရာမှ အရာရှိကြီးများ၊ ဒေသအာဏာပိုင်အဖွဲ့အစည်းမှ ကိုယ်စားလှယ်များ၊ KNU အဖွဲ့မှ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ ဒေသခံကျေးရွာများမှ တက်ရောက်လာကြသော ရပ်မိရပ်ဖများအားလုံး မင်္ဂလာပါဟု ဦးစွာပဏာမနှုတ်ခွန်းဆက်သပါကြောင်း၊ ယနေ့ပြုလုပ်သောဆွေးနွေးပွဲမှာ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်း အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ လူမှုပတ်ဝန်းကျင်နှင့် သဘာဝပတ်ဝန်းကျင် လေ့လာတွေ့ရှိချက်များအား ဒေသခံပြည်သူလူထုအား ရှင်းလင်းတင်ပြရန် ပြည်သူ့ကြားနာပွဲပြုလုပ်ရခြင်းဖြစ်ပါကြောင်း၊ ပြည်သူတွေကို ပွင့်ပွင့်လင်းလင်းချပြမှာဖြစ်ကြောင်း၊ ယခုပွဲမှာဆိုရင်ဖြင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ပညာရှင်များ၊ အသိပညာရှင် အတတ်ပညာရှင်များမှ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်မှုနှင့်ပတ်သက်ပြီး ရှင်းလင်းတင်ပြမှာဖြစ်သဖြင့် ပြည်သူလူထုအနေဖြင့် သိရှိလိုသည့်အချက်များအား ပွင့်လင်းစွာမေးမြန်းနိုင်ကြောင်း၊ မည်သည့်လုပ်ငန်းမဆို ပြည်သူမပါက အောင်မြင်မှုမရရှိနိုင်ပါကြောင်း၊ ပြည်သူတွေနှင့် ရင်းရင်းနှီးနှီး တွေ့ဆုံဆွေးနွေးနိုင်အောင် ဤပွဲကို ပြုလုပ်ရခြင်းဖြစ်ကြောင်း၊ အထူးစီးပွားရေးဇုန် (၃) ခုရှိသည့်အနက် ရေနက်ဆိပ်ကမ်းရော အထူးစီးပွားရေးဇုန်ရော ပြုလုပ်နိုင်သည့်ဇုန်မှာ ထားဝယ်ဇုန်ပဲဖြစ်ပါကြောင်း၊ ပထမဆုံးအနေဖြင့် ထားဝယ်-ထီးခီး နှစ်လမ်းသွားကားလမ်း ဖောက်လုပ်မှာဖြစ်ကြောင်းနှင့် စီမံကိန်းလုပ်ငန်းများဆောင်ရွက်ရာတွင် ပြည်သူလူထုထိခိုက်မှုအနည်းဆုံးဖြစ်အောင် ဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ မည်သည့်အလုပ်မဆို ပြည်သူနှင့်အစိုးရ တိုင်ပင်ညှိနှိုင်းပူးပေါင်းဆောင်ရွက်မှသာ အောင်မြင်မည်ဖြစ်ကြောင်း၊ ဒီနေ့အခမ်းအနားဟာလည်း (၃) ကြိမ်မြောက် ပြည်သူလူထုနှင့် တွေ့ဆုံခြင်းဖြစ်ကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးစီမံကိန်းနှင့်ပတ်သက်၍ ရင်းရင်းနှီးနှီးအကြံပြုနိုင်ကြောင်း၊ စီမံကိန်းအကောင် အထည်ဖော်ဆောင်ရွက်နိုင်ရေး ဒေသခံပြည်သူများမှ ဝိုင်းဝန်းကူညီဆောင်ရွက်သွားရန် လိုအပ်ပါကြောင်းနှင့် ယခုလိုပြည်သူကြားနာပွဲအား ဒေသခံပြည်သူများအနေဖြင့် စိတ်ပါဝင်စားစွာ အချိန်ပေးပြီး တက်ရောက်လာကြတဲ့အတွက် အထူးပင်ကျေးဇူးတင်ရှိပါကြောင်း နှုတ်ခွန်းဆက်စကားပြောကြားခဲ့ပါသည်။

၄။ Mr Thanarati Italian-Thai Development Public Co.,ltd., မှ ယနေ့သည် အမှတ်ရစရာနေ့တစ်ရက်ဖြစ်ပါကြောင်း၊ ဒီနေ့ကိုစောင့်စားလာခဲ့တာ ကြာခဲ့ပြီဖြစ်ပါကြောင်း၊ ဒီ Project ကို အမြင်အနေနဲ့ပြောရမယ်ဆိုရင် ကမ္ဘာ့နိုင်ငံရေးမှာ နိုင်ငံတစ်နိုင်ငံသည် တစ်နိုင်ငံတည်းအနေဖြင့် ရပ်တည်ရန်

ခက်ခဲကြောင်း၊ ထို့ကြောင့် နိုင်ငံအများနှင့် ပူးပေါင်းဆောင်ရွက်ရပါကြောင်း၊ မြန်မာနှင့်ထိုင်းသည် အိမ်နီးချင်းမိတ်ဆွေနိုင်ငံများဖြစ်ပါကြောင်း၊ တစ်နိုင်ငံနှင့်တစ်နိုင်ငံ အပြန်အလှန် ဖေးမလက်တွဲမှီခိုနေရပါကြောင်း၊ ယခုစီမံကိန်းသည်လည်း မြန်မာနိုင်ငံနှင့် ထိုင်းနိုင်ငံ၏ ပေါင်းစည်းမှုအတွက် အကောင်းဆုံးပြယုဂ်ဖြစ်ပါကြောင်း၊ ယခုစီမံကိန်းအတွက် အစိုးရတာဝန်ရှိသူများရော ဒေသခံများပါ စီမံကိန်းလုပ်ငန်းများအပေါ် အမြင်ချင်းဖလှယ်နိုင်ရန် သတင်းအချက်အလက်များပေးရန် လာရောက်ခဲ့ခြင်းဖြစ်ပါကြောင်း၊ ထားဝယ်သာမက ဒေသကြီးတစ်ခုလုံးအတွက် ဖွံ့ဖြိုးတိုးတက်ရန်ဖြစ်ပါကြောင်း၊ နောင်အနာဂတ် ဖွံ့ဖြိုးတိုးတက်ရန် ရည်ရွယ်ပါကြောင်း၊ ရင်းနှီးမြှုပ်နှံမှုအား အတူတကွပူးပေါင်း၍ အောင်မြင်အောင်ဆောင်ရွက်လိုပါကြောင်း၊ ယခုအချိန်မှစ၍ တဖြည်းဖြည်းချင်းတိုးတက်အောင် ဆောင်ရွက်သွားပါက တစ်ချိန်တွင် ပြီးမြောက်အောင်မြင်သွားမည်ဖြစ်ပါကြောင်း၊ နှစ်ဦးနှစ်ဖက် မှန်ကန်သောလမ်းကြောင်းမှ အတူတကွပူးပေါင်းဆောင်ရွက်သွားရန် မျှော်လင့်ပါကြောင်း ပြောကြားခဲ့ပါသည်။

၅။ ဆက်လက်ပြီး United Analyst and Engineering Consultant company limited (UAE) မှ ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်းတည်ဆောက်မည့် ကနဦးစက်မှုဇုန်စီမံကိန်းအား ဆွေးနွေးခဲ့ရာ စီမံကိန်းကာလတွင် တည်ဆောက်ရေးကာလနှင့် လုပ်ငန်းလည်ပတ်သည့်ကာလ (၂) ပိုင်းပါဝင်ပြီး ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းဧရိယာမှာ (၅) ကီလိုမီတာအချင်း ဝက်ရှိပါကြောင်း၊ စီမံကိန်းတွင် စက်မှုလုပ်ငန်းများအတွက်နေရာချထားမှုများပါဝင်ကြောင်း၊ အခြေခံအဆောက်အဦးနှင့်ဝန်ဆောင်မှုတွင် စက်မှုဇုန်အတွင်း လမ်းဖောက်လုပ်ခြင်း၊ လျှပ်စစ်နှင့် ရေပေးဝေရေးစနစ်၊ ရေကြီး/ရေလျှံမှု ကာကွယ်ရေးစနစ်၊ ရေဆိုးသန့်စင်ခြင်းစနစ်၊ စွန့်ပစ်အမှိုက်စီမံခန့်ခွဲခြင်းစနစ်၊ အရေးပေါ်တုံ့ပြန်ရေးစနစ်၊ အမြဲစိမ်းဧရိယာနှင့် အပမ်းဖြေနေရာလုပ်ဆောင်ခြင်းများပါဝင်ကြောင်း၊ စီမံကိန်းကာလအတွင်း လိုက်နာဆောင်ရွက်သွားမည့် ကတိကဝတ်များတွင် မြန်မာနိုင်ငံအတွင်းတည်ဆဲဥပဒေ၊ နည်းဥပဒေများနှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များပါဝင်ကြောင်း၊ လူထုတွေ့ဆုံပွဲပြုလုပ်ရာတွင် ထိခိုက်မှုသက်ရောက်နိုင်ချေရှိသောကျေးရွာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်းနှင့် ပြန်လည်နေရာချထားခြင်းနှင့်ပက်သက်၍ ဆွေးနွေးခဲ့ပါကြောင်း၊ ဒေသခံရွာသားများ၏ စိုးရိမ်ပူပန်မှုများ အနှစ်ချုပ်မှာ ကျန်းမာရေး ထိခိုက်မှု၊ ပတ်ဝန်းကျင်ထိခိုက်မှု (အထူးသဖြင့် ရေထုညစ်ညမ်းမှု)၊ မြေနှင့် သီးနှံများအတွက် လျော်ကြေးသမာသမတ်ရှိမှု၊ ဒေသခံများ၏အလုပ်အကိုင်၊ ပညာပေးရေးအစီအစဉ်များ၊ အလုပ်သမားအခွင့်အရေးနှင့် သင့်တော်သောလစာဖန်တီးပေးခြင်း၊ အခြေခံအဆောက်အဦး၊ လျှပ်စစ်၊ ဆရာဝန်လုံလောက်မှု၊ ကျန်းမာရေးစောက်ရှောက်မှုမြှင့်တင်ခြင်းများ ဖြစ်ပါကြောင်း၊ လူထုစိုးရိမ်ပူပန်မှုများအား လျော့ပါးသက်သာစေရေးအတွက် တာဝန်ယူမှု/တာဝန်ခံမှုများဖြင့်

ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်းနှင့် စီမံကိန်းဆောင်ရွက်ခြင်းဖြင့် ရရှိနိုင်မည့်အကျိုး ကျေးဇူးများအားဆွေးနွေးခဲ့ပါသည်။

၆။ ဦးစောဘီးလယ်၊ KNU အဖွဲ့မှ ဇက်မှုနှုန်အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ (၁၃) ရွာ ထိခိုက်မှုရှိသည်ဟု သိရှိရပါကြောင်း၊ ကျေးရွာများအထိသွားရောက်၍ အနီးကပ်မေးမြန်းသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၇။ ထို့နောက် UAE အဖွဲ့မှ ဇက်မှုနှုန်စီမံကိန်းနှင့် ဆက်စပ်နေသည့် ကျေးရွာ (၁၄) ရွာသို့ သွားရောက်ခဲ့ပါကြောင်း၊ ကျေးရွာများသို့ ကြိုတင်ချိန်းဆိုကာ သွားရောက်ခဲ့ပါကြောင်း၊ မိမိတို့ ကျေးရွာများသို့ ရှင်းပြခဲ့သည်များကို ကျေးရွာသားအားလုံးနီးပါး သဘောပေါက်ကြပါကြောင်း၊ မိမိတို့ကွင်းဆင်းချိန်တွင် ကျေးရွာသားများမှ စီမံကိန်းကို မကန့်ကွက်ကြပါကြောင်း စသည်ဖြင့် ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၈။ ထို့နောက် ဦးဘိုဘို၊ Upper International အဖွဲ့မှ (၂) လမ်းသွားစီမံကိန်းနှင့် ပတ်သက်၍ ဦးစွာ တင်ပြစေလိုပါကြောင်း၊ အစီရင်ခံစာအား ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ အကြံပြုချက်ပေးထားသည့် အခြေအနေတွင်သာ တွေ့ရှိရပါကြောင်း၊ EIA အစီရင်ခံစာတွင် စာမျက်နှာ (၂၀၀၀) ခန့်ရှိသည်ကို တွေ့ရပါကြောင်း၊ အဆိုပါအစီရင်ခံစာများအား ဒေသခံများနားလည်အောင် မည်သည့်ပုံစံဖြင့် ချပြထားခြင်းရှိသည်ကို သိရှိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၉။ ထို့နောက် UAE အဖွဲ့မှ တနင်္သာရီတိုင်းဒေသကြီးအစိုးရအဖွဲ့သို့ အစီရင်ခံစာအနှစ်ချုပ် ပေးပို့ထားပါကြောင်း ပြန်လည်ဆွေးနွေးတင်ပြခဲ့ပါသည်။

၁၀။ ဆက်လက်၍ ဒေါက်တာဆန်းဦး၊ ညွှန်ကြားရေးမှူး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ EIA လုပ်ငန်းဆောင်ရွက်ပုံအဆင့်ဆင့်ကို ထုတ်ပြန်ပြီးဖြစ်ပါကြောင်း၊ EIA စိစစ်သုံးသပ်ရေးအဖွဲ့ကို ဖွဲ့စည်းထားပါကြောင်း၊ ထိုအဖွဲ့တွင် မိမိအနေဖြင့် အတွင်းရေးမှူးအနေဖြင့်ပါဝင်ပြီး၊ အဖွဲ့ဝင် (၃၉) ဦးဖြင့် ဖွဲ့စည်းထားပါကြောင်း၊ ၎င်းအဖွဲ့တွင်မှ အဖွဲ့ခွဲ (၄) ခုကို ထပ်မံခွဲခြားထားပါကြောင်း၊ သက်ဆိုင်ရာ ဌာနဆိုင်ရာများမှ အဖွဲ့ခွဲများတွင် ပါဝင်ပါကြောင်း၊ EIA အခြေအနေပေါ်မူတည်၍ SIA ရေးဆွဲသင့်ပါက ရေးဆွဲရန် သတ်မှတ်ပါကြောင်း၊ ယခုစီမံကိန်းနှင့်ပတ်သက်၍ ဒေသခံလူထုနှင့် ဆက်စပ်ပတ်သက်နေခြင်းများကို ဖြေကြားပေးနိုင်ပါကြောင်း၊ ဆွေးနွေးဖြေကြားရင်း သွေဖည်လွဲမှားခြင်းများ အနည်းငယ်ရှိပါက ခွင့်လွှတ်ပေးစေလိုကြောင်း၊ ဆွေးနွေးချက် သွေဖည်လွဲမှားမှုများရှိပါက ယခုတက်ရောက်ကြသော ဒေသခံများ၊ အဖွဲ့အစည်းများမှ ထောက်ပြပေး၍ရပါကြောင်း၊ EIA သုံးသပ်ဆန်းစစ်ခြင်းများပြုလုပ်ရာတွင် ယခု

တင်ပြသွားတဲ့ ဒေါ်မြူမြူရှိန်တို့အဖွဲ့တွေကိုပါ ဖိတ်ကြားပါကြောင်း၊ EIA အစီရင်ခံစာ အကောင်အထည်ဖော်မှု စောင့်ကြည့်ရမည့်အပိုင်းနှင့်ပတ်သက်၍ စောင့်ကြည့်စစ်ဆေးနေပါကြောင်း၊ (၆) လလျှင် တစ်ကြိမ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနသို့ Monitoring Report တင်ရမည်ဖြစ်ကြောင်း၊ နောက်ဆက်တွဲ လေ့လာစောင့်ကြည့်မှုများ ပြုလုပ်သွားရမည်ဖြစ်ပါကြောင်း၊ EIA, SIA အစီရင်ခံစာပါ လမ်းညွှန်အကြံပြုချက်များအား လိုက်နာမှုမရှိပါက အရေးယူ၍ရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၁။ ဦးအောင်မြိုးဝင်း၊ ထားဝယ်ဖွံ့ဖြိုးရေးအဖွဲ့က EIA Process အား ဆောင်ရွက်ရာတွင် ကျေးရွာ (၁၃) ရွာအား မတ်လ (၁၇) ရက်မှ (၂၂) ရက်နေ့ထိ (၆) ရက်တည်းဖြင့် မည်သို့မည်ပုံ ကွင်းဆင်းသွားသည်ကို သိလိုကြောင်း၊ ကျေးရွာကွင်းဆင်းမှုမှာ တစ်ရက်လျှင် နှစ်ရွာနှင့်အထက်ဖြစ်နေပါကြောင်း၊ တစ်ရွာလျှင် ရွာသားဦးရေမည်မျှ မေးမြန်းရှင်းပြခဲ့သည်ကို သိလိုပါကြောင်း၊ အချင်းဝက် (၅) ကီလိုမီတာ နယ်မြေဆိုသည်မှာ မည်သည့်နေရာများ ပါဝင်သည်ကိုသိလိုကြောင်း၊ ယခုတင်ပြချက်များတွင် ကွင်းဆင်းစစ်ဆေးချိန်တွင် အဓိကတွေ့ရှိရချက်များ မပေါ်လွင်ပဲဖြစ်နေပါကြောင်း၊ မိမိအနေဖြင့် ယခုစီမံကိန်း EIA ကိစ္စနှင့်ပတ်သက်၍ ပြည်သူလူထုကြားနာပွဲပြုလုပ်ပြီးမှ ခွဲခြမ်းစိတ်ဖြာမှု ပြုလုပ်ကာ ပြည်သူလူထုသို့ ချပြရမည်ဖြစ်ပြီး၊ နောက်မှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနသို့ တင်ပြရမည်ဟု နားလည်ထားပါကြောင်း၊ ယခုလုပ်ထုံးလုပ်နည်း ပြောင်းပြန်ဖြစ်နေသယောင် တွေ့ရှိရပါကြောင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနမှ EIA အစီရင်ခံစာအား ဆန်းစစ်မှုပြုလုပ်ချိန်တွင် တွေ့ရှိချက်များအား သိရှိလိုပါကြောင်း၊ ပြည်သူလူထုသို့ အသိပေးရမည့်အချက်များအား သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၂။ ဦးစိုးနွယ်၊ ရလိုင်ကျေးရွာက ယခုထဆွေးနွေးရာတွင် ဒေသခံများတစ်ယောက်မျှမပါဝင်ပါကြောင်း၊ အလုပ်လုပ်မှ တိုးတက်ကြီးပွားမည်ဖြစ်ကြောင်း၊ မီဒီယာများ ဆွေးနွေးခြင်းကို ကျေးဇူးတင်ရှိပါကြောင်း၊ စီမံကိန်းအား အဖွဲ့ (၃၆) ဖွဲ့မှ ကန့်ကွက်ခြင်းသည် ဘာသဘောလဲသိလိုပါကြောင်း၊ စီးပွားရေးလုပ်မှ အောင်မြင်မည်ဖြစ်ကြောင်း၊ မည်သည့်စီမံကိန်းမျှမစရသေးတဲ့ မီဒီယာများအနေဖြင့် အစိုးရတာဝန်ရှိသူများအား စီမံကိန်းအကောင်အထည်ဖော်မှုနှင့်ပတ်သက်၍ ကန့်ကွက်မှုများ သိပ်ပြီးမပြုလုပ်ရန် ပြောလိုပါကြောင်း၊ ဒေသခံပြည်သူများအား သနားငဲ့ညှာသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၃။ UAE အဖွဲ့မှ မိမိတို့အဖွဲ့ ကွင်းဆင်းမည့်ရက်အား ကျေးရွာသို့ ကြိုတင်အကြောင်းကြားပါကြောင်း၊ တစ်ရက်တည်းဖြင့် နှစ်ရွာခန့် ကွင်းဆင်းပြီးသည်များလည်း ရှိပါကြောင်း၊ အချို့ရွာများတွင် လူဦးရေနည်းပါးခြင်းနှင့် အချို့ရွာများတွင် ရွာချင်းကပ်လျက်ရှိနေပါကြောင်း၊ လူထုထိတွေ့မှုအား UAE အဖွဲ့မှ အဓိက အကြံပေးအဖြစ် ဆောင်ရွက်ပါကြောင်း၊ EIA Process ဆောင်ရွက်ပြီးမှ ဥပဒေထွက်ရှိခြင်းဖြစ်၍

ပြောင်းပြန်ဟုပြော၍မရပါကြောင်း၊ ပြည်သူလူထုသို့ အသိပညာပေးဖြန့်ဝေမှုများ ဆက်လက်လုပ်ဆောင်သွားရမှာဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၄။ ဦးတင်မောင်ဦး၊ အပြည်ပြည်ဆိုင်ရာဥပဒေပညာရှင်များအဖွဲ့မှ ယခု EIA အစီရင်ခံစာ ပြုစုချိန်မည်မျှကြာသည်ကို သိလိုကြောင်း၊ Public Consultation ပြုလုပ်ရာတွင် Scoping အဆင့်နှင့် Investigation အဆင့် နှစ်ဆင့်ရှိသည်ဟု သိရှိရကြောင်း၊ တစ်ဆင့်ပြီးပါကတစ်ကြိမ် Public Consultation ပြုလုပ်ရမည်ဟု ဥပဒေတွင်ပါရှိကြောင်း၊ ယခု ဘယ်အဆင့်များတွင် ပြုလုပ်ခဲ့သည်ကို သိရှိလိုပါကြောင်း၊ EIA ပြုလုပ်ခြင်းသည် စီမံကိန်းကြောင့် ရရှိလာမည့် လူမှုထိခိုက်မှုများ၊ သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုများကို ပြည်သူလူထုသို့ ချပြရမည်ဟု နားလည်ထားပါကြောင်း၊ ယခုစီမံကိန်းတွင် မြေယာသိမ်းဆည်းမှု နှင့် EIA အစီရင်ခံစာအား မည်သည့်အရာကို ဦးစွာပြုလုပ်သည်ကို သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၅။ ပုဂေါ်ရွန်း ဒေသခံတစ်ဦးမှ အထူးစီးပွားရေးဇုန်နှင့်ပတ်သက်ပြီး လူထုတွေ့ဆုံပွဲများသာ မကြာခဏပြုလုပ်နေကြောင်း၊ ယခုထိ စီမံကိန်းလုပ်ငန်းများ စတင်သည်ကိုမတွေ့ရသေးကြောင်း၊ ကျေးရွာ (၁၃) ရွာလုံးမှ စီမံကိန်းအား မျှော်လင့်နေပါကြောင်း၊ မဖြစ်နိုင်တာတွေ ကန့်ကွက်နေသရွေ့ စီမံကိန်းအကောင်အထည်ဖော်ဖို့ ခက်ခဲနေမည်ဖြစ်ပါကြောင်း၊ ဒေသခံပြည်သူများအနေဖြင့် လုပ်ငန်းများ လုပ်ဖြစ်မည်/မလုပ်ဖြစ်မည်၊ ဘယ်အချိန် စတင်နိုင်မည်ကို ရှင်းရှင်းလင်းလင်းသိလိုပါကြောင်း၊ အမှန်တကယ် စီမံကိန်းအကောင်အထည်ဖော်ပါက ဒေသခံရွာများအားလုံးမှ အားပေးနေမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၆။ UAE အဖွဲ့မှ မိမိတို့အဖွဲ့အနေဖြင့် ပတ်ဝန်းကျင်လေ့လာဆန်းစစ်မှုပြုလုပ်သည့်အဖွဲ့သာဖြစ်ကြောင်း၊ မြေယာကိစ္စများကို ကုမ္ပဏီနှင့် တာဝန်ရှိသူများနှင့်သာ သီးသန့်ဆွေးနွေးစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၇။ ဆက်လက်ပြီး United Analyst and Engineering Consultant company limited မှ ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်းတည်ဆောက်မည့် ကနဦးမြို့ပြစီမံကိန်းအားရှင်းလင်းခဲ့ရာ စီမံကိန်းနေရာချထားမှုတွင် ကနဦးအဆင့်အနေဖြင့် လူနေထိုင်ရန် (၅) ထပ်အဆောက်အဦး (၉) လုံး၊ (၈) ထပ်ဝန်ဆောင်မှုအဆောက်အဦး (၁) လုံးနှင့် Retail ဆောင်ရွက်နိုင်ရန် (၃) ထပ်အဆောက်အဦပါဝင်ကြောင်း၊ ဖွံ့ဖြိုးမှုအဆင့်တွင် (၅) ထပ်အဆောက်အဦ (၁၆၇) လုံး၊ ဈေးကွက်လိုအပ်ချက်အပေါ်မူတည်ပြီး (၈) ထပ်

ဝန်ဆောင်မှုအဆောက်အဦ (၂၀) လုံးနှင့် Retail (၃) ထပ်အဆောက်အဦ (၆၂) လုံးတည်ဆောက်နိုင်ရန် ရည်မှန်းထားပါကြောင်း၊စီးပွားရေးဇုန်ဧရိယာများပါဝင်ပါကြောင်း၊ အခြေခံအဆောက်အဦးနှင့် ဝန်ဆောင်မှုတွင် လမ်းဖောက်လုပ်ခြင်း၊ ရေကြီးရေလျှံမှုကာကွယ်ရေးစနစ်၊ ရေသန့်စင်စက်၊ ရေဆိုးသန့်စင်စက်၊ အမှိုက်စွန့်ပြစ်ရန်နေရာ၊ မီးသတ်ဌာန၊ ဆက်သွယ်ရေးစင်တာ၊ သယ်ယူပို့ဆောင်ရေးနှင့် အပန်းဖြေဇရိယာများပါဝင်ပါကြောင်း၊ ရေကြီးရေလျှံထိန်းချုပ်မှုစနစ်၊ ရေးပေါ်မီးဘေးတုံ့ပြန်ရေးအစီအစဉ်နှင့် မုန်တိုင်းနှင့် ရေကြီး/ရေလျှံမှုများအတွက် အရေးပေါ်ကာကွယ်ရေးအစီအစဉ်များ ပါဝင်ပါကြောင်း၊ ကနဦးမြို့ပြစီမံကိန်းအား တည်ဆောက်ရာတွင် EIA၊ SIA များအတွက် မြန်မာနိုင်ငံအတွင်း တည်ဆဲဥပဒေ၊ နည်းဥပဒေများအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ လူထုစိုးရိမ်ပူပန်မှုများအား လျော့ပါးသက်သာစေရေးအတွက် တာဝန်ယူမှု/တာဝန်ခံမှုများဖြင့် ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်းနှင့် စီမံကိန်းဆောင်ရွက်ခြင်းဖြင့် ပိုမိုကောင်းမွန်သောအခြေခံအဆောက်အဦးများ၊ ဆက်သွယ်ရန်လမ်းများ၊ လျှပ်စစ်နှင့်ရေပေးဝေရေး၊ ထောက်ပံ့ရေးအဆောက်အဦး မီးသတ်စခန်းနှင့် ဆေးရုံ၊ ပိုမိုကောင်းမွန်သော စီးပွားရေး၊ ဘဝတန်ဖိုးနှင့် လူနေမှုအဆင့်အတန်း၊ ကျွမ်းကျင်မှုအသစ်နှင့်နည်းပညာအသစ်၊ ဝန်ဆောင်မှု အလုပ်အကိုင်/လုပ်ငန်းအခွင့်အလန်းများ စသည့်အကျိုးကျေးဇူးများ ရရှိနိုင်မည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၁၈။ ဦးစိုးသိန်း၊ လဲရှောင်ကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ယခင်ကပြုလုပ်ခဲ့သော ဆွေးနွေးပွဲများအား အကြိမ်ကြိမ်အခါခါ တက်ရောက်ခဲ့ပါကြောင်း၊ ဒေသခံများအနေဖြင့် မြေယာလျော်ကြေးများ မှန်မှန်ကန်ကန်ရရှိရေး၊ အလုပ်အကိုင်ရရှိရေးကိစ္စများအတွက် စိုးရိမ်ပူပန်မှုများ ဖြစ်နေပါကြောင်း၊ ကျေးရွာတိုင်းတွင် လိုအပ်ချက်များအားလုံး ချက်ချင်းရရန်မဖြစ်နိုင်သည်ကိုတော့ နားလည်ပါကြောင်း၊ နိုင်ငံတော်စီမံကိန်းဖြစ်သည့်အတွက် အချို့ကိစ္စများတွင် ချက်ချင်းမရနိုင်သည်များကို နားလည်ပါကြောင်း၊ ကုမ္ပဏီမှ ဒေသအတွက် မှန်မှန်ကန်ကန်လုပ်ဆောင်ပေးပါက အထူးပြောစရာမလိုပါကြောင်း၊ ယခုအချိန်တွင် ဒေသခံများက ဘင်ပြသည်ထက် အခြားဒေသမှလူများက ဝေဖန်မှုများ များပြားနေသည်ကို တွေ့နေရပါကြောင်း၊ ယခင်က တိုင်းဒေသကြီးအစိုးရအဖွဲ့၊ တိုင်းအုပ်ချုပ်ရေးမှူး ဦးတင်သိန်းမှ တာဝန်ယူဆောင်ရွက်စဉ်ကာလတွင် SWB အထောက်အကူပြုလုပ်ငန်းအဖွဲ့နှင့် CSR လုပ်ငန်းဆောင်ရွက်နေသည့်အဖွဲ့များ ချိတ်ဆက်ဆောင်ရွက်ရန် ပြောခဲ့ပါကြောင်း၊ ဒေသတွင်း CSR လုပ်ငန်းအဖွဲ့များကို ပြန်လည်အသက်သွင်းပေးစေလိုကြောင်း၊ ပြင်ပလူမှုအဖွဲ့အစည်းများအနေဖြင့် မိမိတို့ဒေသခံရွာသားများ နားမလည်သည်များ၊ နစ်နာမှုများရှိသည်ကို တွေ့ရှိရပါက လမ်းညွှန်ပေးပါရန် မေတ္တာရပ်ခံပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်းသည် နိုင်ငံတော်နှင့် တိုင်းဒေသကြီးအတွက် အများကြီးအကျိုးရှိမည့် စီမံကိန်းဖြစ်ခြင်းကြောင့်

အစိုးရတာဝန်ရှိသူများနှင့် ကုမ္ပဏီတာဝန်ရှိသူများမှ စီမံကိန်းအား အမြန်ဆုံးအကောင်အထည်ဖော်ပေးစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၉။ ဦးရိုစွမ်း၊ ပုဂေါ်ခွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ အထူးစီးပွားရေးဇုန် အကောင်အထည်ဖော်မည့်ကုမ္ပဏီအနေဖြင့် တာဝန်ယူမှု၊ တာဝန်ခံမှုရှိရန် လိုအပ်ပါကြောင်း၊ မြေယာကိစ္စနှင့်ပတ်သက်၍ ယခင်ကဲ့သို့ကြိုက်ရောင်းကြိုက်ဝယ်ပုံစံဖြင့် ဆောင်ရွက်ရန်မှာ လက်ခံ၍မရပါကြောင်း၊ အကောင်အထည်ဖော်မည့်ကုမ္ပဏီမှာ ITD ဖြစ်စေ၊ အခြားကုမ္ပဏီဖြစ်စေ တာဝန်ယူမှု၊ တာဝန်ခံမှုရှိရန် အရေးကြီးပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၀။ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းမှ မိမိတို့ တနင်္သာရီတိုင်းဒေသကြီးတွင် Infrastructure ပိုင်း အားနည်းပါကြောင်း၊ ယခင်ကော်မတီ၊ ယခင်အစိုးရကာလအတွင်းတွင် အထူးစီးပွားရေးဇုန်လုပ်ငန်းများ လည်ပတ်မှုမရှိခဲ့ပါကြောင်း၊ မြေယာလျော်ကြေးကိစ္စနှင့်ပတ်သက်၍ ညီတူညီမျှဖြစ်စေရမည်ဖြစ်ကြောင်း၊ မိမိတို့တာဝန်ယူချိန်တွင် ပြည်သူလူထုကို ထိခိုက်နစ်နာအောင် ပြုလုပ်မည်မဟုတ်ကြောင်း၊ မိမိတို့အနေဖြင့်ဘဝါကျောက်မိုင်းကြောင့် ဒေသခံများနစ်နာမှုများအတွက် လျော်ကြေးငွေ သိန်းတစ်ထောင်ကျော်ရရှိအောင် ဆောင်ရွက်ပေးခဲ့ပါကြောင်း၊ တနင်္သာရီတိုင်းအနေဖြင့် National Grid လျှပ်စစ်မီးမရရှိသေးပါကြောင်း၊ ကန်ပေါက်ဒေသတွင် ၁၃၀၀ မီဂါဝပ် လျှပ်စစ်ဓာတ်အားရရှိနိုင်မည့် ဓာတ်အားပေးစက်ရုံ တည်ဆောက်နေပါကြောင်း၊ တနင်္သာရီကမ်းမြောင်ဒေသ Master Plan နှင့် SEZ Master Plan တို့အား ရေးဆွဲနေပါကြောင်း၊ ယခင်က စီမံကိန်းဧရိယာအတွင်း အစိုးရအနေဖြင့် ဖွံ့ဖြိုးရေးလုပ်ငန်းများ မလုပ်ဆောင်ခဲ့ကြောင်း၊ တိုင်းဒေသကြီးဘဏ္ဍာငွေဖြင့် သိန်း (၃၀၀၀) ကျော် အကုန်အကျခံကာ မောင်းမကန်ကျေးရွာမှမူးဒူးရွာသို့ လမ်းပြုပြင်ပေးထားပါကြောင်း၊ အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီဥက္ကဋ္ဌ၊ လျှပ်စစ်နှင့်စွမ်းအင်ဝန်ကြီးဌာန၊ ဒုတိယဝန်ကြီးအနေဖြင့် ပညာရှင်တစ်ဦးဖြစ်ပါကြောင်း၊ ဒေါက်တာမြင့်ဆန်းနှင့်ဒေါက်တာတင်ထူးနိုင်တို့သည်လည်း နိုင်ငံခြားသို့ သွားရောက်ပညာသင်ထားသည့် စီးပွားရေးပညာရှင်များဖြစ်ကြောင်း၊ ကနဦးစီမံကိန်းများအား ဦးစွာအကောင်အထည်ဖော်သွားမည်ဖြစ်ကြောင်း၊ (၂) လမ်းသွား စီမံကိန်းအား ထိုင်းနိုင်ငံ၊ NEDA အဖွဲ့မှ ချေးငွေ ဘတ် ၄.၅ ဘီလီယံဖြင့် လမ်းဖောက်လုပ်သွားမည်ဖြစ်ကြောင်း၊ နှစ်လမ်းသွားစီမံကိန်းအောင်မြင်သွားပါက ကျွဲကူးရေပါဆိုသလို ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်းလည်း မအောင်မြင်နိုင်စရာမရှိပါကြောင်း၊ ကျွန်တော်တို့အနေဖြင့် လုပ်ငန်းဆောင်ရွက်ရာတွင်အမှားတွေ့ရှိပါက ထောက်ပြနိုင်ကြောင်း၊ စီမံကိန်းလုပ်ငန်းများနှင့်ပတ်သက်၍ သိရှိလိုသည်များအား

ပွင့်ပွင့်လင်းလင်းမေးမြန်းနိုင်ပါကြောင်း၊ မိမိတို့လူမျိုးများအနေဖြင့် နဂိုဇီဇမညှဲ့ပါကြောင်း၊ အနှစ် (၂၀) အတွင်း စကော်ပူကိုကျော်နိုင်အောင် ကြိုးစားကြမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၁။ ဦးကျော်ဆန်း၊ မူးဒူးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ မိမိအနေဖြင့် ဒေသခံစစ်စစ်ဖြစ်ပါကြောင်း၊ မိမိတို့ မူးဒူးကျေးရွာ ပြောင်းရွှေ့ရမည့် ကျေးရွာစာရင်းထဲပါဝင်သည်ဟု သိရပါကြောင်း၊ ယခင်ကကောက်ယူထား သည့် အိမ်ခြေစာရင်းထက် ယခုအခါ အိမ်ခြေပိုမိုများပြားလာပါဖြစ်ကြောင်း၊ ကျေးရွာအတွင်း လူဦးရေ တိုးတက်လာသဖြင့် အိမ်ခြေပိုမိုများပြားခြင်းဖြစ်ကြောင်း၊ ထပ်မံတိုးတက်လာသည့် အိမ်ခြေများအတွက် မည်သို့ပြုလုပ်ပေးမည်ကို သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၂။ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းမှ နာဂစ်ကြောင့် ဧရာဝတီမှလူများ ရန်ကုန်၊ လှိုင်သာယာတွင် လာရောက် ကျူးကျော်သကဲ့သို့ ယခု ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်း ပြင်ပမှ လာရောက်ကျူးကျော်သူများ မရှိ ဟု ယုံကြည်ကြောင်း၊ နဂိုဒေသခံမိသားစုမှ တိုးပွားလာသော မိသားစုများ၏ နေအိမ်များသာ ထပ်မံတိုး ပွားလာသည်ဟု ယုံကြည်ကြောင်း၊ ဒါတွေဟာ ဖြစ်ရိုးဖြစ်စဉ်များဖြစ်၍ နောက်ဆုံးအခြေအနေအား အကောင်းဆုံးဖြေရှင်းသွားမည်ဖြစ်ကြောင်း ဒေသခံများ နစ်နာအောင်ဆောင်ရွက်မည်မဟုတ်ကြောင်း ပြန်လည်ရှင်းလင်းပြောကြားခဲ့ပါသည်။

၂၃။ ဒေါက်တာမြင့်ဆန်း၊ ဒုဥက္ကဋ္ဌ-၂၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီမှ ဝန်ကြီး ဦးဖြိုးဝင်းထွန်းဦးဆောင်သော မြေယာစီမံခန့်ခွဲမှုကော်မတီကို ဖွဲ့စည်းထားပါကြောင်း၊ နိုင်ငံခြားမှ ERM အဖွဲ့ကိုငှားရမ်း၍ မြေယာသိမ်းဆည်းရေး၊ မြေယာလျော်ကြေးပေးချေရေးကိစ္စများအတွက် ရွာသားများ အား သင်တန်းပေးဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံခန့်ခွဲမှုကော်မတီ၊ တိုင်းဒေသကြီးအစိုးရအဖွဲ့နှင့် ERM အဖွဲ့ တို့ ပူးပေါင်းဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၄။ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် တည်ဆောက်မည့် (၁၅) မဂ္ဂါဝပ် ယာယီဓါတ်အားပေးစက်ရုံ စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးအပေါ် ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM (Team Consulting Engineering and Management Co.,Ltd.(Thai) & TOTAL Business Solution Co.,Ltd.(Myanmar) မှ တင်သွင်းဖော်ပြကြားခဲ့ရာ ESIA အတွက် ပထမအကြိမ်အစည်းအဝေးကို ၂၀၁၆ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၂၇) ရက်နေ့တွင် ကျင်းပခဲ့ပါကြောင်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာကို ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလ (၃၀) ရက်နေ့တွင် အတည်ပြုချက်ရရှိခဲ့ပါကြောင်း၊ သယံဇာတ နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ESIA အစီရင်ခံစာအတည်ပြု

ချက်ကို ၂၀၁၇ ခုနှစ်၊ အောက်တိုဘာလ (၂၅) ရက်နေ့တွင် ရရှိခဲ့ပါကြောင်း၊ ယခုစီမံကိန်းသည် (၁၅) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံစီမံကိန်းသာဖြစ်သော်လည်း ပတ်ဝန်းကျင်ထိခိုက်ဆန်းစစ်ခြင်းနှင့် သက်ဆိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်း (EIA) ကိုလုပ်ဆောင်ထားပါကြောင်း၊ ယာယီဓါတ်အားပေးစက်ရုံသည် ဘားဝယ်အထူးစီးပွားရေးဇုန်၏ တည်ဆောက်ရေးလုပ်ငန်းများအား ထောက်ပံ့ပေးရန်နှင့် ဒီဇိုင်းသက်တမ်းမှာ (၂) နှစ် ကြာမြင့်မည်ဖြစ်ကာ အပူစွမ်းအင်သုံး လျှပ်စစ်ဓါတ်အားပေးစက်ရုံ စတင်လည်ပတ်ပါက ဖယ်ရှားမည်ဖြစ်ပါကြောင်း၊ အဓိကလောင်စာအဖြစ် Liquefied Natural Gas (LNG) ကိုအသုံးပြုပြီး ၄င်းသည် ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေဖြစ်သော ကျောက်ဖြစ်ရုပ်ကြွင်းလောင်စာဖြစ်ပြီး ကာဗွန်ဒိုင်အောက်ဆိုဒ် (CO2) ထွက်ရှိမှု နည်းပါးပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့်အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပြီး စီမံကိန်းအကောင်အထည်ဖော်ရာတွင် အကြိုတည်ဆောက်ရေးလုပ်ငန်း ဆောင်ရွက်ခြင်းကာလ၊ တည်ဆောက်ဆဲကာလ၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ၊ လုပ်ငန်းရပ်စဲခြင်းကာလဟူ၍ ကာလများပိုင်းခြားကာ လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအတိုင်း ဆောင်ရွက်ကာ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) များလည်း ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်းဆွေးနွေးခဲ့ပါသည်။

၂၅။ ဆက်လက်၍ ဦးလေးလွင်၊ ရလိုင်ရွာသားမှ ယခင်က ITD မှ CSR လုပ်ငန်းများဆောင်ရွက်သူ ဦးမင်းကျော်ဝေနှင့် ပြောခဲ့သည်များရှိပါကြောင်းနှင့် ထိုအချက်များအား ယခုတင်ပြမှုတွင် မတွေ့ရပါကြောင်း၊ ယခုဓာတ်အားပေးစက်ရုံကိစ္စနှင့်ပတ်သက်၍ ပုဂေါ့ခွန်း၊ ရလိုင်၊ မင်းဒပ် စသည့်ကျေးရွာများသို့ ပါလျှပ်စစ်ဓာတ်အားမျှဝေပေးစေလိုကြောင်း၊ (၁) မီဂါဝပ်စက်များ သုံးလုံးခန့် ထပ်မံတပ်ဆင်၍ ကျေးရွာများသို့ လျှပ်စစ်ဖြန့်ဖြူးပေးပါက အကုန်အကျမများဟု ထင်မြင်ကြောင်းနှင့် ကျေးရွာသားများမှ သင့်တော်သောဈေးဖြင့် ဝယ်ယူကြမည်ဖြစ်ကြောင်း၊ ဒေသအတွင်း ကိစ္စတစ်ခုလုပ်တိုင်း ဒေသခံများအတွက်ပါ ထည့်သွင်းစဉ်းစားပေးစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၆။ ကနဦးရေပေးဝေရေးလုပ်ငန်း၊ ပယင်းဖြူရေလှောင်တမံ ကနဦးပတ်ဝန်းကျင် ဆန်းစစ်ခြင်း အစီရင်ခံစာအား PHISUT (PHISUT Technology) မှ တင်သွင်းဖတ်ကြားရာ ရေအရင်းအမြစ် ရရှိနိုင်သောနေရာများမှာ ပယင်းဖြူရေလှောင်တမံ၊ ဓကန်ရွာအနောက်ဘက် ရေသိုလှောင်ကန်၊ ဒွဲတောရေလှောင်တမံ၊ အိုင်းရှည်ရေလှောင်တမံနှင့် ကလုံးထာရေလှောင်တမံနှင့် ရေကာတာများဖြစ်ပြီး ပယင်းဖြူရေလှောင်တမံကို ရွေးချယ်ထားပါကြောင်း၊ သက်ရောက်မှုရှိနိုင်သည့်အချက်များမှာ ပယင်းဖြူရေလှောင်ကန်နှင့် တမံတည်ဆောက်မည့်နေရာတွင် မြေယာသိမ်းယူခံရခြင်းကြောင့် သက်ရောက်နိုင်ခြင်း၊ ချောင်း

အနီးအနားတွင်နေထိုင်သူများ ချောင်းမှဆင်းလာသောရေအား အသုံးပြုနိုင်မှုအား သက်ရောက်နိုင်ခြင်း၊ ထားဝယ်မြစ်နှင့် ပယင်းဖြူချောင်းအကြားရှိ ရွှေပြောင်းနေထိုင်တတ်သော ရေပေါ်/ရေအောက်ငါးများ၊ သက်ရှိသတ္တဝါများ၊ အပင်များနှင့် ပတ်ဝန်းကျင်ဆက်စပ်မှုအခြေအနေကို သက်ရောက်နိုင်ခြင်းတို့ဖြစ်ပါကြောင်း၊ အိမ်များနှင့် ပတ်ဝန်းကျင်အား ကွင်းဆင်းတိုင်းတာခြင်း၊ ဒေသခံများအား အချက်အလက်များကိုပြောပြခြင်းနှင့် ဆွေးနွေးခြင်း၊ ရေစမ်းသပ်ခြင်းနှင့် အချက်အလက်ကောက်ယူခြင်းများ ဆောက်ရွက်ပြီးဖြစ်ပါကြောင်း၊ အသုံးပြုမည့်မြေများအား တိုင်းတာခြင်းနှင့် သီးပင်စားပင်များ စာရင်းကောက်ယူခြင်း၊ ဂေဟနည်းပညာဖြင့် စုံစမ်းစစ်ဆေးခြင်း၊ ရေအရည်အသွေးနှင့် ရေအခြေအနေကို စောင့်ကြည့်စစ်ဆေးခြင်း၊ အများပြည်သူပါဝင်မှုနှင့် တိုင်ပင်ဆွေးနွေးမှုတွင် ပယင်းဖြူရွာ၊ ဥသရုံရွာနှင့် ဝက်ချောင်းရွာမှ လူကြီးများနှင့်လည်းကောင်း၊ အထူးစီးပွားရေးဇုန်အထောက်အကူလုပ်ငန်းအဖွဲ့နှင့် တိုင်းဒေသကြီးအစိုးရအဖွဲ့တို့ဖြင့် ဆွေးနွေးခဲ့ပြီးဖြစ်ကြောင်း၊ ဤစီမံကိန်းသည် ဒေသခံများအား အလုပ်အကိုင်အခွင့်အလမ်းနှင့် စီးပွားရေးဖွံ့ဖြိုးမှုအခွင့်အလမ်းကို အကျိုးဖြစ်ထွန်းစေမည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၂၇။ ဦးရဲစွမ်း၊ ပုဂေါဇွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ မိမိတို့ကျေးရွာအတွင်း စီမံကိန်းကြောင့် ရေလွှမ်းမိုးခံရပြီး လျော်ကြေးမရသေးသောသူများ ရှိနေပါကြောင်း၊ ရေလွှမ်းခံရသည့်သူများကို ဦးစားပေးလျော်ကြေးပေးစေလိုကြောင်း၊ ပယင်းဖြူရေလှောင်တမံနှင့်ပတ်သက်၍ ရေဝပ်ဧရိယာလက်ရှိအတိုင်း လုံလောက်မှုရှိမည်ကို သိလိုပါကြောင်း၊ ရေဝပ်ဧရိယာပိုများလာမည်ကို စိုးရိမ်မိပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၈။ ဆက်လက်၍ ITD မှ ရေဝပ်ဧရိယာများကို လျော်ကြေးပေးရန်ရှိပါကြောင်း၊ ရေလွှမ်းမိုးမှုကို ထိန်းသိမ်းမည့်အစီအစဉ်များ ရေးဆွဲထားပါကြောင်း၊ လတ်တလောအနေဖြင့် ရေဝပ်ဧရိယာများ ပိုများလာရန် မရှိပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၉။ နှစ်လမ်းသွားစီမံကိန်းအတွက် ပတ်ဝန်းကျင်နှင့်လူမှုဘဝအပေါ် သက်ရောက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာအား TEAM အဖွဲ့မှ တင်သွင်းဖတ်ကြားရာတွင် နယ်ပယ် တိုင်းတာခြင်းအစီရင်ခံစာအား ၂၀၁၅ ခုနှစ်၊ နိုဝင်ဘာလ (၄) ရက်နေ့တွင် တင်သွင်းခဲ့ကြောင်း၊ အပြီးသတ် ESIA အစီရင်ခံစာမူကြမ်းအတွက် MONREC မှ စတုတ္ထအကြိမ်တရားဝင် သုံးသပ်ချက်ကို ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၂၀) ရက်နေ့တွင် ရရှိခဲ့ပါကြောင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ကီလိုမီတာ (၅၀) အထက်ရှည်လျားသော လမ်းပေါင်းကို အဆင့်မြှင့်တင်ခြင်း စီမံကိန်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း EIA ပြင်ဆင်ရန် လိုအပ်ပါကြောင်း၊ ထိုင်းနိုင်ငံနယ်စပ်မှ ထားဝယ်အထူးစီးပွားရေးဇုန်အထိ လက်ရှိဖောက်လုပ်ထားပြီး

ဖြစ်သည့် ကျောက်ချောမခင်းရသေးသောလမ်းကို ထိုင်းနိုင်ငံ၏ လမ်းတံတားဌာန၏ စံနှုန်းဖြစ်သည့် အဆင့် (၄) ရှိသော အဝေးပြေးလမ်း ဒီဇိုင်းစံနှုန်းနှင့်အညီ ကတ္တရာလမ်းခင်းသွားမည်ဖြစ်ပြီး စီမံကိန်း၏ အချို့သော လက်ရှိလမ်းပိုင်းများတွင် ဘူမိဆိုင်ရာလမ်းဒီဇိုင်းများကို ပြုပြင်ပြောင်းလဲသွားရမည်ဖြစ်ကြောင်း၊ လမ်းတွင် ယာဉ်အသုံးပြုခကောက်ခံရာနေရာ၊ ဝန်ဆောင်မှုစင်တာ၊ နားနေဆောင်များပါဝင်ကြောင်း၊ Toll Plaza အခြေစိုက်စခန်း၊ မေတ္တာအခြေစိုက်စခန်း၊ Elasto အခြေစိုက်စခန်း (၁) တို့တွင် လေထုအရည်အသွေးတိုင်းတာခြင်း၊ ယာဉ်သွားလာမှု စစ်တမ်းကောက်ယူခြင်း၊ ရေနေသတ္တဝါဂေဟဗေဒ စစ်တမ်းကောက်ယူခြင်း၊ လူမှုစီးပွားစစ်တမ်းကောက်ယူခြင်း၊ အမျိုးသားအဆင့်နှင့် တိုင်းဒေသကြီးအဆင့်အာဏာပိုင်များနှင့် တွေ့ဆုံခြင်း၊ ကျေးရွာများတွင် လူထုတွေ့ဆုံပွဲပြုလုပ်ခြင်းများ ဆောင်ရွက်ခဲ့ပါကြောင်း၊ ကျေးရွာ (၁၅) ရွာကို ဖြတ်သန်းရမည်ဖြစ်ကြောင်း၊ မြေယာပေးလျော်ခြင်းအစီအစဉ်ကို အပြည်ပြည်ဆိုင်ရာစံနှုန်းများနှင့်အညီ ထားဝယ်အထူးစီးပွားရေးဇုန်ကော်မတီနှင့် အခြားသောအစိုးရဌာနများနှင့် ဒေသခံများပါဝင်ကာ ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ WWF ၏ လမ်းဖောက်လုပ်ခြင်းဒီဇိုင်း လက်စွဲစာစောင်အကြံပြုချက်များအတိုင်း တောရိုင်းတိရစ္ဆာန်များ ဖြတ်သန်းသွားလာရန်နှင့် ဇီဝမျိုးကွဲများအတွက် စီစဉ်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံကိန်းအကောင်အထည်ဖော်စဉ် လိုက်နာရမည့်ကတိကဝတ်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု (EMP) အစီအစဉ်များအား လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပြီး ခြောက်လတစ်ကြိမ် အစီရင်ခံစာအား ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာန ECD သို့ တင်ပြသွားမည်ဖြစ်ကြောင်း ရှင်းလင်းတင်ပြခဲ့ပါသည်။

၃၀။ ဦးစောတီးလယ်၊ KNU အဖွဲ့မှ ယခင်ကမိမိအနေဖြင့် ပြည်ထောင်စုအဆင့်သို့ တင်ပြခဲ့သည်များရှိပါကြောင်း၊ (၂) လမ်းသွားကားလမ်းဖောက်လုပ်မည့်အစီအစဉ်မှာ ကြာမြင့်နေပြီဖြစ်ကြောင်း၊ ကားလမ်းကြောင်းတစ်လျှောက် ကျေးရွာများတွင် အိမ်ခြေများ တိုးပွားလာမှုရှိနေကြောင်း၊ မေတ္တာမြို့နှင့် ထီးခီးဒေသမှ ဒေသခံများကိုလည်း သွားရောက်ရှင်းပြစေလိုကြောင်း၊ ယခင်က ITD မှ မှတ်တာအာနမ်နှင့်ကွင်းဆင်းခဲ့ဖူးပါကြောင်း၊ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် တောရိုင်းတိရိစ္ဆာန်များ ကာကွယ်စောင့်ရှောက်ရေး အစီအစဉ်များကိုလည်း စဉ်းစားပေးစေ လိုကြောင်း၊ ITD ကုမ္ပဏီနှင့် ရပ်ရွာလူထုတို့ အမြဲတမ်းထိတွေ့မှုရှိဖို့လိုအပ်ပါကြောင်း၊ ITD၊ အစိုးရနှင့် ပြည်သူလူထု တွေ့ဆုံပွဲများ များများပြုလုပ်လျှင် ပိုမိုကောင်းမွန်လာမည်ဟု ထင်မြင်ပါကြောင်း၊ အစိုးရ၊ KNU နှင့် ဒေသခံပြည်သူတို့ ညှိနှိုင်းဆောင်ရွက်သွားခြင်းဖြင့် တစ်ဦးစီး၏ဆန္ဒများကို ပိုမိုသိရှိလာနိုင်မည်ဖြစ်ကြောင်း၊ မိမိတို့အနေဖြင့် စီမံကိန်းနှင့်ပတ်သက်၍ ညှိနှိုင်းပူးပေါင်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ တနသ်ာရီတိုင်းအနေဖြင့် သဘာဝပတ်ဝန်းကျင်ကို ထိန်းသိမ်းနိုင်သောတိုင်းဖြစ်စေလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါ သည်။

၃၁။ ဦးဖြိုး၊ ပိတောက်ကုန်းရွာ၊ တလိုင်းယာကျေးရွာအုပ်စုမှ မိမိတို့ရွာတွင် လျော်ကြေးပေးချေရန် အိမ် (၉) အိမ်ရှိသည့်အနက် အိမ် (၂) အိမ် လျော်ကြေးပေးရန် ကျန်နေသေးပါကြောင်း၊ ပယင်းဖြူရေလှောင်တမံနှင့် ဆက်စပ်အကောင်အထည်ဖော်မည့် နောက်ထပ်ရေအရင်းအမြစ်ကို သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၃၂။ Mr Thanarat Italian-Thai Development Public Co.,ltd., က ယခုလုပ်ငန်းစီမံကိန်းအတွက်သာမဟုတ်ဘဲ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင်ပါဝင်သော လုပ်ငန်းများအားလုံးအတွက် လျော်ကြေးပေးလျော်ရမည့်မူဝါဒဖြစ်ကြောင်း၊ ပြန်လည်နေရာချထားမှုနှင့် လျော်ကြေးပေးချေရေးအဆင့်များကို ဆွေးနွေးလိုကြောင်း၊ ရှေးဦးစွာ ဒေသဆိုင်ရာအာဏာပိုင်များနှင့် စီမံကိန်းသက်ရောက်မှုရှိသည့် ဒေသခံကိုယ်စားလှယ်များပါဝင်သော ပြန်လည်နေရာချထားမှုနှင့် လျော်ကြေးပေးချေရေးကော်မတီကို ဖွဲ့စည်း၍ ဥပဒေမူဝါဒများချမှတ်ခြင်း၊ Stakeholder များနှင့်တွေ့ဆုံခြင်း၊ တိုင်တန်းမှုများကို စီမံခန့်ခွဲမှု လုပ်ငန်းစဉ်ချမှတ်ရမည်ဖြစ်ကြောင်း၊ ပြင်ဆင်ခြင်းအဆင့်တွင် (၆) လခန့်ကြာမြင့်နိုင်ကြောင်း၊ အခြေခံသတင်းအချက်အလက်များစုစည်းခြင်းတွင် သန်းခေါင်စာရင်းနှင့် လူမှုစီးပွားစစ်တမ်းကောက်ယူခြင်း၊ မြေပြင်ကွင်းဆင်းခြင်း၊ တန်ဖိုးတွက်ချက်ခြင်း၊ မည်သည့်ကာလအထိသည် နောက်ဆုံးအကျုံးဝင်သည့် နေ့ရက်ဖြစ်သည်ကို သတ်မှတ်ခြင်းများပါဝင်ကြောင်း၊ ပြန်လည်နေရာချထားမှုအစီအစဉ်များ၊ အလုပ်အကိုင်နှင့်သက်မွေးဝမ်းကျောင်းနိုင်ရေးအစီအစဉ်များ ရေးဆွဲခြင်းနှင့် အကောင်အထည်ဖော်ခြင်းအဆင့်တွင် မြေယာပိုင်ဆိုင်မှုအတွက် လျော်ကြေးပေးခြင်း၊ ပြန်လည်နေရာချထားခြင်း၊ စောင့်ကြည့်ခြင်းနှင့် မှတ်တမ်းတင်ခြင်း အစီအစဉ်များပါဝင်ကြောင်း၊ တင်ပြပါအစီအစဉ်များအတိုင်း လျော်ကြေးပေးခြင်း ကိစ္စရပ်များအား ဆောင်ရွက်ပါကြောင်း ပြန်လည်ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၃၃။ ဦးတင်မောင်ဦး၊ အပြည်ပြည်ဆိုင်ရာဥပဒေပညာရှင်များကော်မရှင်အဖွဲ့မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တစ်ခုလုံးအတွက် EIA, SIA ကိစ္စနှင့်ပတ်သက်၍ မေးခွန်း (၂) ခု မေးမြန်းလိုကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တစ်ခုလုံး၏ EIA, SIA အခြေအနေနှင့် နောက်ထပ် EIA, SIA နှင့်ပတ်သက်သော Public Consultation ပွဲများ ပြုလုပ်ရန်ရှိ/မရှိ သိရှိလိုကြောင်း၊ Third Party ကုမ္ပဏီများမှ EIA, SIA များ ရေးဆွဲပေးသည်မှာ အသေးစိတ်ကျပြီး ကောင်းမွန်ပါကြောင်း၊ စီမံကိန်းကြောင့် ဒေသခံတွေကို ထိခိုက်နစ်နာမည့်အချက်များ ဖော်ပြထားခြင်းမတွေ့ရကြောင်း၊ EIA, SIA ကိစ္စနှင့်ပတ်သက်၍ မြေပြင်ကွင်းဆင်း စစ်ဆေးတွေ့ရှိချက်များအား ဖော်ပြပေးစေလိုကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တစ်ခုလုံးအတွက် EIA ကို ဘယ်သူရေးဆွဲပေးမည်ကို သိလိုပါကြောင်း၊ လူမှုစီးပွားထိခိုက်မှု ဆန်းစစ်ခြင်းမှ အဓိက

တွေ့ရှိချက်များကို တင်ပြပေးစေလိုကြောင်း၊ နောင်ကျင်းပမည့် လူထုကြားနာပွဲများတွင် အဓိကနစ်နာသူများကို ဖိတ်ကြားစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၃၄။ ဦးထင်အောင်ကျော်၊ လက်ထောက်ညွှန်ကြားရေးမှူး၊ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ EIA Procedure မှာလည်း ဘက်စုံစီမံကိန်းတွေအတွက် လိုအပ်ရင် ပြည်သူတို့အဓိကထိခိုက်နေသည့်အရာများအတွက် သီးခြားသတ်မှတ်ချက်များရှိကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စတင်မည့်အချိန်မှာ မသေချာသေးသည့်အချိန်ဖြစ်နေပြီး ခည်သူကပိုင်ရှင်ဆိုသည်ကိုလည်း မသိသေးသဖြင့် အားလုံးပေါင်းလုပ်ဖို့အခက်အခဲရှိကြောင်း၊ တစ်ခုချင်းစီအနေဖြင့် စဉ်းစားမည်ဆိုပါက တစ်ခုဆီမှာပါဝင်သည့် သက်ရောက်မှုတွေအပြင် ဆက်စပ်သက်ရောက်မှုတွေပါစဉ်းစားပြီး အစီရင်ခံစာ ပြုစုထားပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်အတွက် EIA သီးခြားဆွဲရန် မလိုအပ်ပါကြောင်း၊ စီမံကိန်းတစ်ခုချင်းတွင် လျှော့ချမှုများ ရှိနေပါကြောင်း၊ တည်ဆောက်ရေးလုပ်ငန်းများ စတင်လျှင်လည်း လူထုကြားနာပွဲများ ဆက်လက်လုပ်ဆောင်သွားမည်ဖြစ်ပါကြောင်း ပြန်လည်ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၃၅။ ဦးနေလင်း၊ လက်ထောက်ညွှန်ကြားရေးမှူးမှလည်း IEE ကိစ္စနှင့်ပတ်သက်၍ (၂) ကြိမ်၊ EIA ကိစ္စနှင့်ပတ်သက်၍ (၃) ကြိမ်၊ Public Consultation (၂) ကြိမ်၊ စုစုပေါင်း ပြည်သူလူထုနှင့်တွေ့ဆုံပွဲ (၇) ကြိမ် ကျင်းပပြုလုပ်ပြီးဖြစ်ကြောင်း၊ ဖိတ်ကြားရေးနှင့်ပတ်သက်ပြီး အားလုံးကိုဖိတ်ကြားထားပါကြောင်း၊ တစ်ချို့ဒေသခံများအနေဖြင့် မနက်ပိုင်းမလာရောက်နိုင်သည့်အတွက် Two Land Road စီမံကိန်းနှင့်ပတ်သက်ပြီး ရှင်းလင်းခြင်းအား နေ့လည်အချိန်သို့ ပြောင်းရွှေ့ရှင်းလင်းခဲ့ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၃၆။ မြန်မာနိုင်ငံ၊ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) ၏ ကနဦးဖွံ့ဖြိုးရေးအဆင့် ရေသန့်စက်ရုံစီမံကိန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်လေ့လာခြင်း (IEE) အား ERM(ERM-Siam Co.,Ltd.) မှဆွေးနွေးရာ ရေသန့်စင်စက်ရုံကို ထားဝယ်အထူးစီးပွားရေးဇုန်(စီမံကိန်း) ၏ ကနဦးဖွံ့ဖြိုးရေးအဆင့်အတွက် စက်ရုံသုံးရေပေးပို့နိုင်ရန် တည်ဆောက်သွားမည်ဖြစ်ပါကြောင်း၊ အဆိုပြုထားသောရေသန့်စင်စက်ရုံ (WTP) ကို အသေးစားဆည် (ပယင်းဖြူ) တွင် ထားရှိသွားမည်ဖြစ်ကြောင်း၊ စီမံကိန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်း (IEE) ကိုဆောင်ရွက်ပြီးဖြစ်ပါကြောင်း၊ ERM နှင့် SEM ကို ဆန်းစစ်လေ့လာခြင်းဆောင်ရွက်နိုင်ရန် MIE အနေဖြင့် ခန့်အပ်ထားပြီးဖြစ်ပါကြောင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ နည်းဥပဒေများ၊ ကွန်ဗင်းရှင်းများနှင့် စံချိန်စံညွှန်းများအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ စီမံကိန်းအပြီးသတ်အစီအစဉ်ကို အတည်ပြုခြင်း၊ နယ်ပယ်အတိုင်းအတာ

သတ်မှတ်ခြင်း အစီရင်ခံစာကို အတည်ပြုခဲ့ပြီးဖြစ်ကြောင်း၊ ကနဦးပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်း အပြီးသတ်အစီရင်ခံစာအတည်ပြုချက်ကို ၂၀၁၇ ခုနှစ်၊ မေလ (၂၉) ရက်နေ့တွင်လက်ခံရရှိခဲ့ပါကြောင်း၊ ဂက်ချောင်းကျေးရွာ၏ အရှေ့မြောက်ဘက် (၁.၈) ကီလိုမီတာနှင့် ခမောင်းချောင်းကျေးရွာ၏အရှေ့ဘက် (၃.၅) ကီလိုမီတာတွင် စီမံကိန်းနေရာတည်ရှိပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အစီအစဉ်များ၊ လူထုကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးအစီအစဉ်များ ချမှတ်အကောင်အထည် ဖော်ဆောင်ရွက်မည့် အစီအစဉ်များအား ဆွေးနွေးခဲ့ပါသည်။

၃၇။ တနင်္သာရီတိုင်းဒေသကြီးလွှတ်တော် ဒုဥက္ကဋ္ဌ ဦးကြည်စိုးမှ တက်ရောက်လာသော ဒေသခံပြည်သူ များ၊ KNU အဖွဲ့အစည်းမှ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ ထားဝယ်အထူးစီးပွားရေးဇုန် ဖြစ်မြောက်ရေးအတွက် ဆောင်ရွက်ပေးသည့်ဝန်ထမ်းများအား ကျေးဇူးတင်ကြောင်း၊ ရှင်းလင်းပြောကြားပေးသောအဖွဲ့များကို လည်း အထူးကျေးဇူးတင်ပါကြောင်း၊ ဒေသခံများအနေဖြင့် စီမံကိန်းအောင်မြင်ရန်အတွက် ပံ့ပိုးကူညီပေး ရန်လိုအပ်ပါကြောင်း၊ လျော်ကြေးရယူထားပြီးဖြစ်သော်လည်း ၎င်းမြေများအား လုပ်ငန်းများမစတင်မီ အချိန်တွင် အလကားမထားပဲ အရင်းအမြစ်ပြုလုပ်၍ စိုက်ပျိုးအသုံးချနိုင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ ပြီး အစည်းအဝေးအား ညနေ (၁၅၀၀) နာရီတွင် ခေတ္တရပ်နားခဲ့ပါသည်။

၃၈။ အစည်းအဝေးဒုတိယနေ့အား (၂၉-၃-၂၀၁၈) ရက်နေ့ နံနက် (၀၈၀၀) နာရီတွင် ပြန်လည်စတင်ခဲ့ ပါသည်။

၃၉။ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ ဒုတိယဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ အဖွင့် အမှာစကားပြောကြားရာတွင် ယခုအစည်းအဝေးသည် ပြည်သူ့ကြားနာပွဲ၊ ဒေသခံပြည်သူများနှင့်တွေ့ဆုံပွဲ ဖြစ်ပြီး ယခုအကြိမ်သည် တတိယအကြိမ်ဖြစ်ပါကြောင်း၊ အထူးစီးပွားရေးဇုန် (၃) ခုရှိပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် စီမံကိန်း (၉) ခုရှိပါကြောင်း၊ အဆိုပါ (၉) ခုအနက်မှ (၄) ခု အကြောင်း တင်ပြမည်ဖြစ်ပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်သည် ၂၀၀၈ ခုနှစ်မှ စတင်ခဲ့သော်လည်း အကြောင်းကြောင်းကြောင့် နှောင့်နှေးခဲ့ရခြင်းဖြစ်ပါကြောင်း၊ ၂၀၁၆ ခုနှစ် စီမံခန့်ခွဲမှုကော်မတီ အသစ် တာဝန်ထမ်းဆောင်ပြီးနောက်ပိုင်း ITD နှင့် ချုပ်ဆိုထားသော စာချုပ်များကို ပြန်လည်သုံးသပ်ခဲ့ပါ ကြောင်း၊ စီမံကိန်း (၃) ခုကို ရွေးချယ်ပြီး ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ ၎င်းတို့မှာ (၁) နှစ်လမ်းသွား ကားလမ်းစီမံကိန်း၊ (၂) လျှပ်စစ်မီးရရှိရေးစီမံကိန်းနှင့် (၃) ဆိပ်ကမ်းစီမံကိန်းတို့ ဖြစ်ပါကြောင်း၊ နှစ်လမ်း သွားကားလမ်း ဖောက်လုပ်ရန်အတွက် ထိုင်းနိုင်ငံမှချေးငွေရယူရန် လွှတ်တော်မှ အတည်ပြုပြီးဖြစ်၍ ထိုင်းနိုင်ငံမှ ချေးငွေရရှိရန်ဆောင်ရွက်ပြီး တင်ဒါခေါ်ယူဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ လျှပ်စစ်မီးရရှိ

ရေးအတွက် LNG သဘာဝဓာတ်ငွေ့ဖြင့် ကံပေါက် 1260 MW ခန့် ထုတ်လုပ်ရရှိရန် ပြင်သစ်နိုင်ငံ Total ကုမ္ပဏီနှင့်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ တန်ချိန်များတဲ့သင်္ဘောကြီးများ ဆိုက်ကပ်နိုင်တဲ့ ဆိပ်ကမ်း ဆောက်လုပ်ရန်ဖြစ်ပါကြောင်း၊ သင်္ဘောကြီးများ ဆိုက်ကပ်နိုင်တဲ့ ဆိပ်ကမ်းအနေဖြင့် ထားဝယ်နှင့် ကျောက်ဖြူမှာ တည်ဆောက်နိုင်ပြီး သီလဝါတွင် ရေနက်ဆိပ်ကမ်း တည်ဆောက်၍မရပါကြောင်း၊ ရေနက်ဆိပ်ကမ်းအသစ်ဆောက်လုပ်ရန် ဂျပန်နိုင်ငံ၊ JAICA မှ Master Plan ရေးဆွဲနေပြီဖြစ်ကြောင်း၊ လမ်း၊ မီး၊ ရေနက်ဆိပ်ကမ်း ပြည့်စုံမှ ရင်းနှီးမြှုပ်နှံမှုများကို ဖိတ်ခေါ်နိုင်မည်ဖြစ်ကြောင်း၊ မြေပြင်မှာ အကောင်အထည်မဖော်ပြနိုင်သေးသော်လည်း အထက် အဆင့်ဆင့်တွင် စာရွက်စာတမ်းများဖြင့် Process များအား ဆောင်ရွက်ထားပြီးဖြစ်ပါကြောင်း၊ ယခင်နေ့က ဒေသခံများပြောကြားချက်အရ ခုနှစ်မိုက်နိုင်းများ ဖြစ်ပေါ်စေရန် မျှော်လင့်နေရသည်မှာ မောနေပြီဖြစ်ကြောင်း၊ ဒေသခံများ၏ စိုးရိမ်စိတ်များအား နားလည်ပါကြောင်း၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် ထိခိုက်မှုများသက်သာရန် ITD မှ Third Party ငှားရမ်း၍ ပညာရှင်များဖြင့် EIA, SIA များ ဆောင်ရွက်ပြီး မြန်မာနိုင်ငံဘက် ECD မှ ပညာရှင်များက အစီရင်ခံစာများကို စိစစ်ရကြောင်း၊ သဘာဝပတ်ဝန်းကျင်ဥပဒေများ ၂၀၁၂ နှင့် ၂၀၁၄ တွင်မှ ထွက်ပေါ်ခဲ့၍ ဖုန်၏ EIA, SIA Process များ ပြုလုပ်ချိန်သည် ဥပဒေမထွက်ပေါ်ခင်အချိန်က ပြုလုပ်ခဲ့ရခြင်း ဖြစ်သောကြောင့် အားနည်းချက်များ ရှိနိုင်ပါကြောင်း၊ ဒေသခံလူထုနှင့်တွေ့ဆုံ၍ ၎င်းတို့၏ ဆန္ဒများ၊ စိုးရိမ်စိတ်များအား ပွင့်လင်းမြင်သာစွာ ဆွေးနွေးစေလိုကြောင်း၊ ပြည်သူလူထုထိခိုက်မှု အနည်းဆုံး ဖြစ်အောင် ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ အစီခံစာအားလုံးအား Website တင်ပေးသွားမည် ဖြစ်ကြောင်း၊ ၂၀၁၈ ခုနှစ် ဧပြီလတွင် အင်္ဂလိပ်-မြန်မာလို ဖတ်လို့ရအောင် တင်ပြသွားမည်ဖြစ်ကြောင်း၊ အကျိုးပြုမည့် အကြံပြုချက်ကို လက်ခံပါကြောင်း၊ အားလုံးနှင့် ပူးပေါင်းဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ မေးမြန်းလိုသည့်အချက်များရှိပါက မေးမြန်းနိုင်ရန် ဖုန်းနံပါတ်များ၊ E-mail များ ကြော်ငြာထားပါကြောင်း၊ ပွင့်ပွင့်လင်းလင်း ရင်းရင်းနှီးနှီး ဝိုင်းဝန်းအဖြေရှာပေးပါလို့ အဖွင့်အမှာစကား ပြောကြားခဲ့ပါသည်။

၄၀။ ဆိပ်ကမ်းငယ် တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ် သက်ရောက်မှု ဆန်းစစ်ခြင်းအား အစီရင်ခံစာအား TEAM (Team Consulting Engineering and Management Co.,Ltd.(Thai) & TOTAL Business Solution Co.,Ltd.(Myanmar) မှ တင်သွင်းဖော်ပြထားခဲ့ရာ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ (၂၅) ဟက်တာ (၆၁.၇၈ ဧက) ထက်ကျယ်ဝန်းသော ဆိပ်ကမ်းစီမံကိန်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ပြင်ဆင်ရန်လိုအပ်ပြီး ဆောက်လုပ်ရေးမစတင်ခင် အတည်ပြု

ချက်ရရှိရန်လိုအပ်ခြင်းကြောင့် ပျမ်းမျှဧက (၁၀၀) ကျယ်ဝန်းသော ဆိပ်ကမ်းငယ်စီမံကိန်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ပြင်ဆင်ရမည်ဖြစ်ပါကြောင်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလတွင် ရရှိခဲ့ပြီး ESIA အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၇ ခုနှစ်၊ နိုဝင်ဘာလတွင် ရရှိခဲ့ပါကြောင်း၊ စီမံကိန်းအချက်အလက်များအနေဖြင့် ကမ်းလွန်အဆောက်အဦးများတွင် ပန်ဒင်အင်းမြစ်ဝ ဘယ်ဘက်အခြမ်းမှ (၀.၄) ကီလိုမီတာ ရှိသောလှိုင်းကာတာတစ်ခု၊ အရှည် (၃) ကီလိုမီတာ၊ အကျယ် (၁၅၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသော ချဉ်းကပ်တူးမြောင်းတစ်ခုနှင့် အချင်း (၃၆၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသောTurning Circle တစ်ခုပါဝင်ကြောင်း၊ ကုန်းတွင်းအဆောက်အဦးများအတွက် Stockyard (၂) ခု (စုစုပေါင်း ဧက ၂၀) နှင့် နောက်တိုးအဆောက်အဦးများအတွက် ဧက (၈၀) ဖြစ်ပါကြောင်း၊ အဓိကလုပ်ဆောင်မှုများမှာ သောင်တူးခြင်း၊ သောင်တူး၍ရရှိသော သောင်များကို စွန့်ပစ်ခြင်း၊ လှိုင်းကာတာတည်ဆောက်ခြင်း၊ စီမံကိန်းချဉ်းကပ်လမ်းဖောက်လုပ်ခြင်း၊ ချဉ်းကပ်လမ်းဖောက်လုပ်ခြင်းကြောင့် ပြောင်းရွှေ့ပေးရမည့် ငပိတက်ရွာမှ အိမ် (၁၂) လုံးအား လျော်ကြေးပေးခြင်း၊ ပြန်လည်နေရာချထား ပေးခြင်းများ ပြုလုပ်ခြင်းများ ဆောင်ရွက်သွားရမည်ဖြစ်ကြောင်း၊ ထိခိုက်ခံရသော အိမ်ထောင်စုများသည် ငပိတက်ရွာရှိ အဆိုပြုထားသောနေရာသို့ပြောင်းရွှေ့ရန် သဘောတူညီထားပြီးဖြစ်ပါကြောင်း၊ ဆောက်လုပ်ပြီးစီးရန် အချိန် (၁၂) လ လိုအပ်ပါကြောင်း၊ သက်ဆိုင်ရာဥပဒေနှင့် စည်းမျဉ်းများ တည်ဆောက်ဆဲကာလနှင့် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) များအတိုင်း ဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ ကန်ထရိုက်တာနှင့် ကန်ထရိုက်တာခွဲတို့ အားလုံးသည် သက်ဆိုင်ရာဥပဒေ၊ နည်းဥပဒေနှင့် လုပ်ထုံးလုပ်နည်းအားလုံးကို လိုက်နာရန် တာဝန်ယူရမည်ဖြစ်ပါကြောင်း၊ သောင်တူးဖော်ခြင်းမှ စုပုံလာသော အနည်အနှစ်များကြောင့် ရေနေသတ္တဝါများ ထိခိုက်မှုလျော့နည်းစေရေး ဆောင်ရွက်ရန်နှင့် ဆိပ်ကမ်းအနီးတွင်နေထိုင်သော ဒေသတွင်း ငါးဖမ်းသမားများအား ဆောက်လုပ်ရေးလုပ်ဆောင်မှု အချိန်ဇယားနှင့် သောင်တူးဖော်ခြင်းလုပ်ငန်း ဧရိယာတို့၏ သတင်းအချက်အလက်များကို ဖြန့်ဝေပေးရန် လိုအပ်ပါကြောင်း၊ ဒေသခံပြည်သူများ၏ အကူအညီလိုအပ်ချက်ကို ထောက်ပံ့ပေးနိုင်ရန် CSR အစီအစဉ်ကို ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း၊ ပိတ်သိမ်းမှုအစီအစဉ် မစတင်ခင် (၁) လနှင့် ပိတ်သိမ်းမှုပြီးစီးသည့်အချိန်တွင် ကမ်းလွန်အဆောက်အဦးများအနီးရှိ ကမ်းရိုးတန်းရေအရည်အသွေးနှင့် အဏ္ဏဝါဂေဟစနစ်တို့ကို စောင့်ကြည့်ရန် လိုအပ်ပါကြောင်း၊ စီမံကိန်းမတည်ဆောက်မီနှင့် တည်ဆောက်ဆဲကာလအတွင်း Grievance Redress Mechanism ကို ပြင်ဆင်ရန် လိုအပ်ပါကြောင်း၊ ဒေသခံပြည်သူများနှင့် စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်းတို့၏

အကြံပြုချက်နှင့် လိုလားချက်များအား အလေးထားပေါင်းစပ်ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးမှုအစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ (၄) လ တစ်ကြိမ် တင်ပြရမည်ဖြစ်ပါကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၄၁။ ဦးတင်ရွှေ၊ ကျန်းမာရေးမှူး၊ ငဝိတက်ငယ်ရွာမှ ဗျစ်နီချောင်းရှိ တံငါလှေများနှင့်ပတ်သက်၍ မည်သို့ဆောင်ရွက်ပေးမည်ကို သိလိုပါကြောင်း၊ EIA စစ်တမ်းကောက်ယူမှုနှင့် ရွာသို့လာရောက်ရှင်းပြခြင်းမရှိသေးပါကြောင်း၊ ယခင်က အိမ်ခြေ (၁၂) လုံးသာရှိခဲ့သော်လည်း ယခုအိမ်ခြေများ ပိုမိုများပြားလာကြောင်း၊ အရှည် (၁) မိုင်ခွဲ၊ အမြင့် (၁၂) ပေရှိ အသံကာတံတိုင်း တည်ဆောက်မည်ဟု သိရှိရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၂။ နောက်လတွင် အဆိုပါဗျစ်နီချောင်းတံတားအား ဖျက်သိမ်းပေးမည်ဖြစ်ကြောင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းများမစတင်ခင် လူထုတွေ့ဆုံပွဲ လုပ်သွားမည်ဖြစ်ကြောင်း Team အဖွဲ့မှ ပြန်လည်ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၃။ ဦးစိုးနိုင်၊ ထိန်ကြီးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ထိန်ကြီးကျေးရွာအုပ်စု၊ ဗျစ်နီရွာတွင် အိမ်ခြေ (၅၀) ရှိပြီး လူဦးရေ (၂၀၀) ခန့်ရှိပါကြောင်း၊ ဘာသာရေးအဆောက်အဦး၊ ယာယီစာသင်ကျောင်းနှင့် ဘုန်းကြီးကျောင်းအတွက် မြေနေရာများ စီစဉ်ပေးပါရန် ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၄။ အဆိုပါတင်ပြချက်အား ထားဝယ်အထူးစီးပွားရေးဇုန်ထဲတွင်ပါဝင်ပါက စီမံခန့်ခွဲမှုကော်မတီမှ ဆောင်ရွက်ပေးသွားမည်ဖြစ်ပြီး ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပဖြစ်ပါက တနင်္သာရီတိုင်းအစိုးရအဖွဲ့မှ ဆောင်ရွက်ပေးနိုင်ရန် တင်ပြပေးမည်ဖြစ်ကြောင်း ဒုတိယဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၅။ သဘာဝဓာတ်ငွေ့အရည် (LNG) ဓာတ်အားပေးစက်ရုံလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM အဖွဲ့မှ တင်သွင်းဖတ်ကြားရာတွင် လောင်စာဆီနှင့် သဘာဝဓာတ်ငွေ့လုပ်ငန်းအားလုံးသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ပြင်ဆင်ရန်လိုအပ်ပြီး ဆောက်လုပ်ရေးမစတင်ခင် အတည်ပြုချက်ရရှိရန်လိုအပ်ပါကြောင်း၊ ESIA အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၇ ခုနှစ် နိုဝင်ဘာလတွင် ရရှိခဲ့ပြီးဖြစ်ကြောင်း၊ စီမံကိန်းအချက်အလက်များအနေဖြင့် တင်ပြပါ ကမ်းလွန်အဆောက်အဦများ၊ ကုန်းတွင်းဆောက်လုပ်ခြင်းလုပ်ငန်းများ၊ ချည်းကပ်လမ်းကြောင်းများ၊ ဆိပ်ကမ်းများ၊ ကုန်းတွင်း

အဆောက်အဦများ၊ သောင်တူးဖော်ခြင်းလုပ်ငန်းများ၊ တူးဖော်ရရှိသောသောင်များကို စွန့်ပစ်ခြင်း လုပ်ငန်းများပါဝင်ကြောင်း၊ ဆောက်လုပ်ရေးအတွက် အချိန်ဇယားအား (၁၅) လ ခန့်မှန်းရေးဆွဲထားပါကြောင်း၊ သင်္ဘောဖြင့်တင်ဆောင်လာသော LNG များကို အပူချိန် -၁၉၇ ဒီဂရီစင်တီဂရိတ်တွင် ထိန်းသိမ်းထားသော သိုလှောင်ကန်များတွင် အရည်ပုံစံဖြင့် သိုလှောင်ထားမည်ဖြစ်ကြောင်း၊ ပတ်ဝန်းကျင် လေထုအငွေ့ထုတ်စက်ဖြင့် အရည်မှ အငွေ့ပုံစံသို့ပြောင်းလဲသွားမည်ဖြစ်ကြောင်း၊ LNG ဓာတ်ငွေ့ကို (၄၂၀) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံသို့ ပေးပို့သွားမည်ဖြစ်ကြောင်း၊ ဤ LNG စီမံကိန်းနှင့်ပတ်သက်၍ သက်ဆိုင်ရာဥပဒေနှင့် စည်းမျဉ်းများအတိုင်း လိုက်နာသွားပြီး ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာအစီအစဉ်များ ချမှတ်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံကိန်းအကောင်အထည်ဖော်မှုကာလတွင် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအား လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စောင့်ကြည့်လေ့လာခြင်း အစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ (၆) လလျှင်တစ်ကြိမ် တင်ပြသွားမည်ဖြစ်ကြောင်း ရှင်းလင်းတင်ပြခဲ့ပါသည်။

၄၆။ ဦးရွှေစိုး၊ ငပိတက်ငယ်ရွာ၊ ရေလုပ်သားသမဂ္ဂဥက္ကဋ္ဌမှ ဆိပ်ကမ်းငယ်စီမံကိန်းအတွက် မည်သူတွေက တာဝန်ယူမှု၊ တာဝန်ခံမှု ဆောင်ရွက်မည်ကို သိလိုကြောင်း၊ စီမံကိန်းနှင့်ပတ်သက်ပြီး ပွင့်လင်းမြင်သာစွာချပြရန် တောင်းဆိုပါကြောင်း၊ စီမံကိန်းကာလအတွင်း အလုပ်သမားရေးရာကိစ္စရပ်များအား မည်သူကတာဝန်ယူဖြေရှင်းပေးမည်ကို သိလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၇။ အဆိုပါတင်ပြချက်အား ဒု-ဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ ပင်လယ်ကူးသင်္ဘောများ အဝင်အထွက်ရှိ၍ ငါးဖမ်းလှေများအတွက် အခက်အခဲရှိနိုင်ကြောင်း၊ ဖြစ်ပေါ်လာမည့်အခက်အခဲများကို စီမံကိန်းအကောင်အထည်ဖော်သူမှ ဖြေရှင်းဆောင်ရွက်ပေးရမည်ဖြစ်ကြောင်း ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၈။ အပူစွမ်းအင်သုံး လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM အဖွဲ့မှ တင်သွင်းဖတ်ကြားရာတွင် အပြီးသတ် ESIA အစီရင်ခံစာမူကြမ်းကို ၂၀၁၆ ခုနှစ်၊ ဩဂုတ်လတွင် တင်သွင်းခဲ့ပြီး ESIA အစီရင်ခံစာ အတည်ပြုချက်ကို ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၁၅) ရက်နေ့တွင် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ရရှိခဲ့ပါကြောင်း၊ စီမံကိန်းအချက်အလက် LNG Tank ၏ ပတ်ဝန်းကျင်အပူကြောင့် ထွက်ရှိလာသော ဓါတ်ငွေ့ကို အပူစွမ်းအင်အဖြစ်အသုံးပြုကာ လျှပ်စစ်ဓါတ်အားထုတ်လုပ်မည်ဖြစ်ပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ လူမှုရေးဆိုင်ရာ ထိခိုက်မှုစီမံခန့်ခွဲခြင်းနှင့် သက်ဆိုင်သောဥပဒေနှင့် စည်းမျဉ်းများအတိုင်း လိုက်နာဆောင်ရွက်သွားရမည်ဖြစ်ပြီး တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ဖုန်မှုန့်၊ ဆူည

သံ၊ ဇွန်ပြစ် ရေဆိုး/ကမ်းရိုးတန်းရေ/အဏ္ဏဝါ ဂေဟဗေဒ၊ လူမှု-စီးပွားတို့တွင် သက်ရောက်မှုများကို လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် စောင့်ကြည့်လေ့လာခြင်းများပြုလုပ်မည့် အစီအစဉ်များကိုလည်းကောင်း၊ လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) လေ့လာအရည်အသွေး၊ ဇွန်ပြစ်ရေဆိုး/ကမ်းရိုးတန်းရေ/အဏ္ဏဝါဂေဟဗေဒ၊ လူမှု-စီးပွားကဏ္ဍတို့တွင် ထိခိုက်နိုင်မှုများကို လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် စောင့်ကြည့်လေ့လာခြင်းများပြုလုပ်မည့် အစီအစဉ်များကိုလည်းကောင်း၊ စီမံကိန်း အကောင်အထည်ဖော်မှုကာလတွင် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအား တင်ပြပါ Slides များမှ ဖော်ပြချက်များအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၄၉။ ဘားဝယ်အထူးစီးပွားရေးဇုန်တွင် တည်ဆောက်မည့် ကနဦးကာလ ဓါတ်အားပေးစက်ရုံ စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ်သက်ရောက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM အဖွဲ့မှ ဘင်သွင်းဖော်ကြားရာတွင် MONREC မှ နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအစီရင်ခံစာအား အတည်ပြုပြီးဖြစ်ကြောင်း၊ အပြီးသတ်ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အစီရင်ခံစာအား MONREC မှ ၂၀၁၇ ခုနှစ်၊ အောက်တိုဘာလ (၂၅) ရက်တွင် အတည်ပြုခဲ့ကြောင်း၊ ဓါတ်အားပေးစက်ရုံသည် (၅၀) မဂ္ဂါဝပ်ထက် ကျော်လွန်ပြီး (၃၇.၁၉) ဟက်တာ ကျယ်ဝန်းသော ရွှံ့နွံ ဧရိယာတွင် တည်ရှိကြောင်း၊ တည်ဆောက်ရေးကာလသည် (၆) နှစ် ကြာမြင့်ပြီး အများဆုံး အလုပ်သမား အရေအတွက် (၆၀၀) ယောက် ရှိနိုင်ပါကြောင်း၊ အနီးဆုံး လူမှုအသိုင်းအဝိုင်းသည် ပေါ်တက်ရွာဖြစ်ပြီး စီမံကိန်းနေရာမှ ပျမ်းမျှ (၂.၂၃) ကီလိုမီတာ ကွာဝေးပါကြောင်း၊ LNG Terminal မှ သဘာဝ ဓါတ်ငွေ့ကိုအသုံးပြုကာ (၄၂၀) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံ ပါဝင်ကြောင်း၊ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအခြေခံ၊ EIA ဖြစ်စဉ်နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်းနှင့် ကာကွယ်ခြင်း၊ လူမှုရေးဆိုင်ရာ ထိခိုက်မှု စီမံခန့်ခွဲခြင်းနှင့်သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ၊ စီမံကိန်း အကောင်အထည်ဖော်မှုအတွက် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအား လိုက်နာဆောင်ရွက်သွားရမည်ဖြစ်ကြောင်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) တွင် အပိုင်း (၃) ပိုင်းပါဝင်ပါကြောင်း၊ အကြိုတည်ဆောက်ရေး လုပ်ငန်းဆောင်ရွက်ခြင်းကာလနှင့် တည်ဆောက်ဆဲကာလများတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင် ဆောင်ရွက်ရမည့် CEMP၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလတွင် စီမံကိန်းပိုင်ရှင်မှ ပြီးမြောက်အောင်ဆောင်ရွက်ရမည့် OEMP၊ လုပ်ငန်းရပ်စဲခြင်းကာလတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင် ဆောင်ရွက်ရမည့် DEMP တို့ဖြစ်ကြောင်း၊ ခန့်မှန်းထားသော ထိခိုက်မှုနှင့် လျော့ချရေး နည်းလမ်းများနှင့်

ကိုက်ညီသော အစီအစဉ်ခွဲ (၆) ခုကို ဖော်ပြထားပါကြောင်း၊ ၄င်းတို့မှာ လေထုအရည်အသွေးစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ ဆူညံသံစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ ရေဆိုးစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ လမ်းပန်းဆက်သွယ်ရေး စီမံခန့်ခွဲခြင်းအစီအစဉ်၊ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး (OHS) စီမံခန့်ခွဲမှုနှင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ် တို့ဖြစ်ပါကြောင်း ရှင်းလင်းကြားခဲ့ပါသည်။

၅၀။ ဦးကျော်ဆန်း၊ မူးခူးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ဒေသခံအလုပ်အကိုင်ရရှိရေး စဉ်းစားပေးသည့်အတွက် ကျေးဇူးတင်ကြောင်း၊ ဒေသတွင်းကျေးရွာများ မီးလင်းရေးအတွက် စဉ်းစားပေးစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၁။ ဘားဝယ်အထူးစီးပွားရေးဇုန်းအတွက် ထုတ်လုပ်သော လျှပ်စစ်မီးအား အခြားသို့ရောင်းချခြင်း မပြုရဟု စာချုပ်တွင်ပါရှိသည့်အတွက် ဇုန်ပြင်ပအတွက် လျှပ်စစ်မီးရရှိရေးသည် တနင်္သာရီတိုင်းအစိုးရထံ တင်ပြရမည်ဖြစ်ပါ ကြောင်း ဒု-ဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၅၂။ ဦးစိုးနိုင်၊ ရလိုင်ကျေးရွာမှ ယခု Third Party မှ တင်ပြချက်များအား ယခုမျိုးဆက်ကျေးရွာသားများမှ နောင်မျိုးဆက်များသို့ အသိပေးစေလိုကြောင်း၊ လုပ်ငန်းများဆောင်ရွက်ရာတွင် ယခုတင်သွင်းသော စာတမ်းများအတိုင်း လိုက်နာဆောင်ရွက်မှုရှိ/မရှိ တိုက်ဆိုင်စစ်ဆေးရန် အထောက်အထားများဖြစ်ကြောင်း၊ ဒေသခံရွာများမှ ဇုန်အတွင်းပါဝင်သည့်အတွက် မြစ်မ်းရောင်ချေးငွေ၊ လယ်စိုက်ဘဏ်ချေးငွေ စသည်တို့မရဘဲ နစ်နာနေပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ ပါသည်။

၅၃။ ဦးစုငယ်၊ ထိန်ကြီးရွာမှ နဘူးလယ်ဒေသသည် ဇုန်အတွင်းဖြစ်နေပါသဖြင့် ၂၀၁၄ ခုနှစ်မှစ၍ ချေးငွေများမရရှိပါကြောင်း၊ ယခုအခါ ညောင်ပင်ဆိပ်ရွာသို့ လျှပ်စစ်မီးရောက်နေပြီဖြစ်သော်လည်း မိမိတို့ကျေးရွာသို့ (၃) နှစ်ကြာမှ လျှပ်စစ်မီးရရှိမည်ဟုကြားသိရကြောင်း၊ ပျက်စီးနေသော တံတားများနှင့် အန္တရာယ်ရှိသောတံတားများအား ပြုပြင်ပေးစေလိုပါကြောင်း ဆွေးနွေးတင်ပြခဲ့ပါသည်။

၅၄။ ဦးစိုးသိန်း၊ လဲရောင်ကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ဒေသတွင်းအလုပ်အကိုင်အခွင့်အလမ်းရရှိရေးကို ဦးတည်စဉ်းစားပေးစေလိုကြောင်းနှင့် အသက်မွေးဝမ်းကြောင်း သင်တန်းများ၊ ကျွမ်းကျင်လုပ်သားသင်တန်းများ ဖွင့်လှစ်ပေးစေလိုကြောင်း၊ မြေယာလျော်ကြေးငွေများ ယခင်ကကွက်တိကွက်ကျား ပေးလျော်ခဲ့ပါကြောင်း၊ ဒေသခံများမှ စီမံကိန်းအတွက် အကောင်းမြင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၅။ ဦးထွန်းလွင်၊ ပုဂေါ်ခွန်းရွာမှ ယခုစီမံကိန်းသည် ဦးတည်ချက်နှင့် ရည်မှန်းချက်ကောင်းပါကြောင်း၊ (၅) ထပ်တိုက်အောင်တွင် ခြံပိုင်ရှင် (၁၄) ဦးခန့်ရှိပါကြောင်း၊ ၎င်းတို့အတွက် နစ်နာမှုမရှိအောင် ဆောင်ရွက်ပေးစေလိုပါ ကြောင်း၊ ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၆။ ဦးရွှေစိုး၊ ငပိတက်ငယ်ရွာ၊ ရေလုပ်သားသမဂ္ဂဥက္ကဋ္ဌမှ အလုပ်အကိုင်အခွင့်အလမ်းနှင့်ပတ်သက်၍ ဒေသခံများအား ဦးစားပေးဆောင်ရွက်ပေးစေလိုကြောင်း၊ ဒေသခံအများစုမှာ ပညာရေးတွင်အားနည်းသော်လည်း ယခုနောက်ပိုင်းတွင် ပညာတတ်လူငယ်များ ထွက်ပေါ်လာပြီဖြစ်၍ ၎င်းတို့၏ ပညာအရည်အချင်းအလိုက် အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးစေလိုကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်အပေါ် ဒေသခံများ၏အမြင်အား သိရှိနိုင်ရန် ပြည်သူနှင့် အစိုးရ အမြဲမပြတ်တွေ့ဆုံဖို့လိုအပ်ကြောင်း၊ ယခုအချိန်တွင် ဒေသခံများအနေဖြင့် အကောင်းမြင်မှုများပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၇။ ဦးအောင်မိုး၊ ခမောင်းချောင်းကျေးရွာမှ ယနေ့ဆွေးနွေးပွဲအား သဘောတူကျေနပ်မိပါကြောင်း၊ ခမောင်းချောင်းကျေးရွာမှ (၄) ဦး မြေယာလျော်ကြေးမရသေးသည်ကို စာဖြင့်တင်ပြထားကြောင်း၊ မည်သည့်နေ့ အကြောင်းပြန်မလဲ သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၈။ အထက်ပါတင်ပြချက်များကို TEAM အဖွဲ့မှ သတိပေးဆိုင်းဘုတ်များ စိုက်ထူပေးမည်ဖြစ်ကြောင်း၊ ဒေသခံများအား လေ့ကျင့်သင်ကြားပေးပြီး ကျွမ်းကျင်မှုအလိုက် အလုပ်ခန့်ထားပေးမည်ဖြစ်ကြောင်း ပြန်လည်ရှင်းလင်းဖြေကြားသွားပါသည်။

၅၉။ Mr. Thanarat မှ မြေယာပေးလျော်ရေးကိစ္စနှင့် နေရာပြန်လည်ချထားရေးကိစ္စအား နိုင်ငံတကာစံနှုန်းအတိုင်း ဆောင်ရွက်ပေးမှာဖြစ်ကြောင်း၊ ပိုင်ဆိုင်မှုနှင့်ပတ်သက်၍ အိမ်၊ မြေ၊ စိုက်ပျိုးရေးခရီယာများကို စာရင်းကောက်ယူသွားမည်ဖြစ်ကြောင်း၊ စာရင်းလာရောက်ပေးပို့ရမည့် နောက်ဆုံးရက်ကိုလည်း ထုတ်ပြန်ကြေညာ၍ ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ ပြန်လည်နေရာချထားရေးနှင့်အတူ အသက်မွေးဝမ်းကျောင်း ပညာရပ်များပါ တပြိုင်တည်းသင်ကြားပေးမည်ဖြစ်ကြောင်း၊ ဒေသခံများ၏ စိတ်ဝင်စားသည့်ပညာရပ်များကို Training Center များ ဖွင့်လှစ်သင်ကြားပေးမည်ဖြစ်ကြောင်း၊ လျော်ကြေးပေးပြီးလျှင်လည်း အဆင်ပြေမှု ရှိ/မရှိ စောင့်ကြည့်သွားမည်ဖြစ်ကြောင်း ပြန်လည်ရှင်းလင်းဖြေကြားသွားပါသည်။

၆၀။ ဒေါက်တာမြင့်ဆန်း၊ ဒုဥက္ကဋ္ဌ-၂၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီမှ နိဂုံးချုပ်စကားပြောကြားရာတွင် ထားဝယ်အထူးစီးပွားရေးဇုန်အနေဖြင့် သီလဝါအထူးစီးပွားရေးဇုန်ထက် ဧရိယာ (၁၀) ဆခန့် ပိုမိုကြီးမားပါကြောင်း၊ ကနဦးစီမံကိန်း၏ မြေယာကိစ္စများနှင့်ပတ်သက်၍ ITD ကုမ္ပဏီဖြင့်

သော သက်ဆိုင်ပြီး အခြားမြေယာကိစ္စများသည် နောင်လာမည့် Developer နှင့်သာ သက်ဆိုင်ပါကြောင်း၊ ဒေသခံများ နစ်နာမှုမရှိအောင် ဆောင်ရွက်ပေးမည်ဖြစ်ပါကြောင်း၊ EIA, SIA အစီရင်ခံစာပါ အချက်များအား အကောင်အထည်ဖော်မှုနှင့်ပတ်သက်၍ ကျေးရွာသားဒေသခံများမှ စောင့်ကြည့်သွားရမည်ဖြစ်ပြီး နစ်နာမှုများအား စီမံခန့်ခွဲမှုကော်မတီသို့ တင်ပြသွားစေလိုကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန် ပြင်ပ ကျေးရွာများ စီးပွားရေးမှာ တိုင်းအစိုးရအဖွဲ့နှင့်သာ သက်ဆိုင်ပါကြောင်း၊ ယခုစီမံကိန်းသည် ဒေသခံများ လူနေမှုမြင့်မားရေးနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်ရေးအတွက်ဖြစ်ပါကြောင်း၊ လမ်းဖောက်လုပ်ရေးအတွက် ပေါင်ဒါခေါ်လုပ်ဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ ဒေသခံများအနေဖြင့် ကာယလုပ်သား၊ ဉာဏလုပ်သားများအဖြစ် ပါဝင်ခွင့်ရှိကြောင်း၊ လမ်းဘေးများ ဖျက်စီးနေခြင်းအား ပြုပြင်ပေးရန် တောင်းဆိုသွားမည်ဖြစ်ကြောင်း၊ ကနဦးစီမံကိန်းကို ITD မှ ဆောင်ရွက်မည်ဖြစ်ပြီး ပင်မစီမံကိန်းအား မေလခန့်တွင် စတင်နိုင်မည်ဖြစ်ကြောင်း၊ စီမံကိန်းနှင့်ပတ်သက်၍ (၃/၄) လတစ်ကြိမ် ရှင်းပြရန် တာဝန်ရှိပါကြောင်း နိဂုံးချုပ်ပြောကြားခဲ့ပါသည်။

မှတ်တမ်းတင်သူ

(ရဲဝင်းကျော်၊ ဌာနခွဲမှူး)

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

စာအမှတ်၊ ၁၀၀ - ၁ / DSEZ – D / ၂၀၁၈

ရက်စွဲ ၊ ၂၀၁၈ ခုနှစ်၊ ဧပြီလ ရက်

ဖြန့်ဝေခြင်း -

အစည်းအဝေးတက်ရောက်သူများအားလုံး

မိတ္တူကို

- မျှောစာတွဲ / လက်ခံစာတွဲ