DAWEI POWER GENERATING COMPANY LIMITED

FINAL REPORT
Environmental and Social Impact Assessmental (ESIA)

for

ESIA for Dawei SEZ Initial Phase Development of Boil-Off Gas Power Plant Project
In Dawei District, The Republic of the Union of Myanmar

Prepared by

TEAM Consulting Engineering and Management Public Company Limited

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ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော)၃(၂)/၁၆(ဃ)(၅၈၄ /၂၀၁၈)

ရက်စွဲ ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၁၃ ရက်

သို့

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ **တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အပူစွမ်းအင်သုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း**

ရည်ညွှန်းချက် ။ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁-၆-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ ဥညမ-ထဝ-၁၆ / DSEZ/ ၂၀၁၇ (၁၈၆)

၁။ ထားဝယ်လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ရေး(DPG) ကုမ္ပဏီလီမိတက်မှ တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အပူစွမ်းအင်သုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment-EIA) အစီရင်ခံစာကို ရည်ညွှန်းပါစာဖြင့် ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ အစီရင်ခံစာ စိစစ်သုံးသပ်ရေးအဖွဲ့၏ သဘောထားအကြံပြုချက်များနှင့်အညီပြန်လည်ပြုစုပေးပို့လာသည့် အပြီးသတ် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ (Final Revised EIA Report) အား သဘောထားမှတ်ချက်ပြန်ကြားပေးပါရန် တင်ပြလာပါသည်။

၂။ အဆိုပါတင်ပြလာမှုနှင့်ပတ်သက်၍ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနအနေဖြင့် စိစစ်ရာ၌ တင်ပြလာသည့် အစီရင်ခံစာသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၃ပါအချက်များနှင့် ကိုက်ညီမှုရှိကြောင်း တွေ့ရှိရသဖြင့် အတည်ပြုပါကြောင်းနှင့် ကုမ္ပဏီအနေဖြင့် စီမံကိန်းများ အကောင်အထည်ဖော်ဆောင်ရွက်ရာတွင် အောက်ဖော်ပြပါအချက်များကို အလေးထားလိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း သဘော ထားမှတ်ချက်ပြန်ကြားအပ်ပါသည်-

(က) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်နိုင်မှုများကို လျော့ချမည့်နည်းလမ်းများ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များ၊ ၎င်းနှင့်ဆက်စပ်သည့်အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် နည်းလမ်းများ အပါအဝင်ဆောင်ရွက်ရမည့် ကိစ္စရပ်များအားလုံးကို အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ဖော်ပြထားသည့်အတိုင်း လိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ခ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များအတွက် လုံလောက်သည့်ရန်ပုံငွေထားရှိ သုံးစွဲရန်နှင့် ၎င်းအစီအစဉ်များကို အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်းများ ဖွဲ့စည်းဆောင်ရွက်ရန်၊

(ဂ) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄)၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)အရလိုက်နာဆောင်ရွက်ရမည့်အချက်များအားလုံးကို လိုက်နာဆောင်ရွက်ရန်၊

(ဃ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်းကတိကဝတ် အားလုံးနှင့်စည်းကမ်းချက်များကို အပြည့်အဝအကောင်အထည်ဖော်ရမည့်အပြင် ယင်းတို့၏ ကိုယ်စားစီမံကိန်းကို ဆောင်ရွက်ပေးသူ ကန်ထရိုက်တာနှင့် လက်ခွဲ ဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာများ အားလုံးက စီမံကိန်းအတွက် လုပ်ငန်း များဆောင်ရွက်ရာတွင် သက်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စည်းကမ်းချက်များအားလုံးကို အပြည့်အဝ လိုက်နာဆောင်ရွက်ရန်၊

(င) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ၏ စီမံကိန်းအဆိုပြုသူမှ လိုက်နာ ဆောင်ရွက်မည့် 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 ပါဥပဒေများ၊ ကတိကဝတ်များကို လိုက်နာဆောင်ရွက်ရန်၊

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

(ဆ) Fugitive Dust နှင့်ပတ်သက်၍ World Bank Ambient Air Quality Standard ပါ ၂၃၀ $\mu g/m^3$ ကျော်လွန်မှုမရှိစေရေး လိုက်နာဆောင်ရွက်ရန်၊

(ဇ) Gas Emission နှင့်ပတ်သက်၍ IFC 2008 EHS Guideline for thermal power plant ပါပြဋ္ဌာန်းချက်များအတိုင်း လိုက်နာဆောင်ရွက်ရန်၊

(ဈ) Noise Emission နှင့်ပတ်သက်၍ 3 m အမြင့်ရှိသည့် Metal Steel Fence များ ထားရှိရန်နှင့် IFC 2007 General EHS Guideline ပါပြဋ္ဌာန်းချက်များအတိုင်း လိုက်နာဆောင်ရွက်ရန်၊

(ည) Hazardous Waste များ စွန့်ပစ်ရန်အတွက် လိုင်စင်ရ Hazardous Waste Contractor ကို ငှားရမ်းဆောင်ရွက်ရန်၊

(ဍ) Liquid Waste များစွန့်ပစ်ရာတွင် ကတိကဝတ်ဇယားတွင် ဖော်ပြထားသည့်အတိုင်း အမျိုးအစားခွဲခြား၍ သိုလှောင်ပြီး ထိုင်းနိုင်ငံသို့ ပြန်လည်သန့်စင်ခြင်းဆောင်ရွက်ရန်နှင့် Liquid Waste များတွင်ပါဝင်သော Hazardous Disposal များကိုစက်ရုံဝင်းအတွင်းနှင့် အပြင်တို့တွင် စွန့်ပစ်ခြင်းများကို တားမြစ်ရန်၊

(ဎ) မြေနေရာပြုပြင်ခြင်းနှင့် စီမံကိန်းတည်ဆောက်ခြင်းလုပ်ငန်းမှ လေအရည်အသွေးထိခိုက်နိုင်မှုများနှင့် ဖုန်မှုန့်ထွက်ရှိမှုကို လျော့ချနိုင်ရေးအတွက် ရေဖြန်းခြင်းနှင့်မော်တော်ယာဉ်များ၏ ကန့်သတ်၍ တစ်နာရီလျှင် ၄၀ ကီလိုမီတာထက် မပိုစေရေးစီစဉ်ဆောင်ရွက်ရန်၊

(ဏ) စီမံကိန်းပိုင်ရှင်သည် မိမိ၏ စီမံကိန်းဧရိယာအတွင်း ရှေးဟောင်းဝတ္ထုပစ္စည်းတွေ့ရှိက အနီးဆုံးရပ်ကွက် သို့မဟုတ် ကျေးရွာအုပ်ချုပ်ရေးမှူးထံ အကြောင်းကြားရန်၊

(ဗ) လူမှုရေးဆိုင်ရာပူးပေါင်းတာဝန်ယူမှုအစီအစဉ်(Corporate Social Responsibility-CSR) ကို ရေးဆွဲ၍ အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ဏ) ဒေသခံပြည်သူများ (stakeholders) နှင့်စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်းတို့၏ အကြံပြုချက်နှင့် လိုလားချက်များအား အလေးထားပေါင်းစပ်ဆောင်ရွက်ရန်၊

(တ) စီမံကိန်းအဆိုပြုသူသည် အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို အများပြည်သူသိရှိနိုင်စေရေး ထုတ်ဖော်ကြေငြာရန်၊

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

(ဒ) အငြင်းပွားမှုများ၊ မကျေနပ်မှုများ ဖြေရှင်းရေးအတွက် Grievance Mechanism ကိုတည်ထောင်၍ အဆိုပါ Grievance Mechanism ဆိုင်ရာ အချက်အလက်များ၊ တာဝန်ယူဖြေရှင်းမည့် ပုဂ္ဂိုလ်၏ အမည်နှင့် ဖုန်းနံပါတ်၊ ဆက်သွယ်ပေးပို့ရမည့်လိပ်စာစသည်တို့ကို စီမံကိန်းတည်ရှိရာ နေရာနှင့် နီးစပ်သည့် မြို့နှင့် ကျေးရွာများရှိအုပ်ချုပ်ရေးမှူးရုံးများ၊ မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးရုံးများသို့ ဖြန့်ဝေဆောင်ရွက်သွားရန်၊

(ဓ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ဖော်ပြထားသော စီမံကိန်းပိုင်ရှင်နှင့် ကျွမ်းကျင်ပညာရှင်တတိယအဖွဲ့အစည်းမှ ကတိပြုဝန်ခံချက် လက်မှတ်ရေးထိုးရန် လိုအပ်သည့် ကွက်လပ်များ နေရာများကို ကတိဝန်ခံချက်လက်မှတ်ရေးထိုး၍ ၎င်းလက်မှတ်များပါဝင်သော အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအပြည့်အစုံကို တနင်္သာရီတိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနနှင့် နေပြည်တော်၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ဦးစီးရုံးချုပ်သို့ ပေးပို့ရန်၊

(န) စီမံကိန်းအဆိုပြုသူသည် Monitoring Report ကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီး ဌာနသို့ (၆)လ လျှင် တစ်ကြိမ်တင်ပြရန်၊

၁၅/၂/၂၀၁၈

ပြည်ထောင်စုဝန်ကြီး(ကိုယ်စား)
(ဝင်းဇော်၊ ဒုတိယအမြဲတမ်းအတွင်းဝန်)

မိတ္တူကို
ညွှန်ကြားရေးမှူးချုပ်
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

D:\2018\February\to HtarWaie (EIA).docx4

The Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

No: (Forest) 3 (2)/16(D) (584/2018)

Date: 15th February, 2018

To

Dawei Special Economic Zone Committee

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

Reference: Letter No. U Nya Ma-Hta Wa-16/ DSEZ/ 2017 (186), dated on 1-6- 2017 by DSEZ Management Committee

1. There was resubmitting the Final Revised Environmental Impact Assessment Report of resubmission with complete response of review team members comments of DPG Co., Ltd for Boil-off Power Plant Project, which plan to implement at DSEZ Initial Phase, together with reference letter of by DSEZ Management Committee, for Boil-off Power Plant which plan to implement at DSEZ.
2. 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) Fugitive Dust emission should not be exceed 230 $\mu g/m^3$ of World Bank Ambient Air Quality Standard.

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

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

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

(k) 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.

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

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

(n) Corporate Social Responsibility need to implement.

(o) Need to connect continuously with stakeholders. Need to emphasis their comments and suggestion.

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

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

(r) 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

စာအမှတ် - DPG ၀၁/၂၀၁၈

၂၀၁၈ခုနှစ် ဧပြီလ ၃၀ရက်

သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ရုံးအမှတ် (၁၉)
နေပြည်တော်၊ မြန်မာ

ရည်ညွှန်းချက်။ ဦးလှမောင်သိန်း
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

အကြောင်းအရာ။ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) တွင် အကောင်အထည်ဖော်တည်ဆောက်မည့် အပူစွမ်းအင်သုံး 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 တင်သွင်း ခဲ့ပါသည်။.

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 ဝန်ကြီးဌာနမှ ၂၀၁၆ခုနှစ် ဇန်နဝါရီလ ၂၇ရက်တွင်အသိအမှတ်ပြုခဲ့ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန(ECD) မှ အသိအမှတ်ပြုသက်သေလက်မှတ် စာအမှတ် EIA - ၂/၂ (၁၃၀/၂၀၁၇) ကို ၂၀၁၇ခုနှစ် ဇန်နဝါရီလ ၃၀ရက်တွင် ရရှိခဲ့ပါသည်။

ဂ။ ယခုစီမံကိန်းသည် Dawei Power Generating Company Limited မှ အကောင်အထည်ဖော်သော အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ စီမံကိန်းဖြစ်ပြီး (က) EIA တွင် ပါဝင်ရမည့် ကတိကဝတ်များနှင့် တာဝန်ဝတ္တရားများ (ခ) အစီအစဉ်အားလုံးနှင့် အမျိုးမျိုးသော အစိတ်အပိုင်းများအတွက် အကာနှ့်အသတ်မဲ့ခြင်း၊ ထိခိုက်မှုရှောင်ရှားခြင်း၊ လျော့ချခြင်းနှင့် ပြန်လည်ကုစားမှုနည်းလမ်းများပါဝင်ကြောင်းကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာနမှ 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 ပြစ်ဒဏ်ပေးလျော်ခြင်းတို့ကို 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 စည်ကမ်း သတ်မှတ်ချက်များနှင့် မကိုက်ညီပါက မြန်မာနိုင်ငံအစိုးရ၏ အခြားသော သတ်မှတ်ချက်အတိုင်း ကုစားရမည် ဖြစ်ပါသည်။

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

မှ Dawei Power Generating Company Limited

အမည် Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

DPG
Dawei Power Generating Company Limited

Reference No. DPG 01/ 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 Boil-Off 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 (130/2017), 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 Boil-off 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

အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ စီမံကိန်း

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

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ	
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) (အပိုဒ် - ၇၊ ၁၄၊ ၁၅၊ ၂၄၊ ၂၅ နှင့် ၂၉) နှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်း ရေး နည်းဥပဒေ (၂၀၁၄) (အပိုဒ် - ၆၈ (က) နှင့် (ခ)) တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၂ - ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့် စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) (အပိုဒ် - ၁၀၂ (က) (ခ)၊ ၁၀၃၊ ၁၀၅၊ ၁၀၆၊ ၁၀၇၊ ၁၀၈၊ ၁၀၉၊ ၁၁၀၊ ၁၁၃၊ ၁၁၅ နှင့် ၁၁၇)၊ 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) - အပိုဒ် ၃ နှင့် ၇ • အလုပ်ရုံအက်ဥပဒေ (၁၉၅၁) - အပိုဒ် ၅ နှင့် ၇ • လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂) - အပိုဒ် ၁၁၊ ၁၅၊ ၁၈ (က) (ခ)၊ ၄၈ (က)၊ ၇၅ • အလုပ်သမားအဖွဲ့အစည်းဥပဒေ (၂၀၁၁) - အပိုဒ် ၁၇၊ ၁၈၊ ၁၉၊ ၂၀၊ ၂၁၊ ၂၂ • အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေး ဥပဒေ (၂၀၁၂) - အပိုဒ် ၃၈၊ ၃၉၊ ၄၀၊ ၅၁ • အခကြေးငွေ ပေးချေရေး ဥပဒေ (၂၀၁၆) - အပိုဒ် ၃၊ ၄၊ ၅၊ ၇၊ ၁၃၊ ၁၄ • အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ (၂၀၁၃) - အပိုဒ် ၅၊ ၁၄ နှင့် ၃၀ (က) (ခ) • ခွင့်နှင့်အလုပ်ပိတ်ရက်များ အက်ဥပဒေ (၁၉၅၁) • အလုပ်သမားလျော်ကြေးအက်ဥပဒေ (၁၉၂၃) - အပိုဒ် ၁၃ • အနည်းဆုံးအခကြေးငွေ ဥပဒေ (၂၀၁၃) - အပိုဒ် ၁၂၊ ၁၃ နှင့် ၁၈ • မြန်မာ့အာမခံလုပ်ငန်း ဥပဒေ (၁၉၉၃) - အပိုဒ် ၁၅၊ ၁၆ • ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈) - အပိုဒ် ၁၃၊ ၂၂ • ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂ • ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	- အပိုဒ် ၁၂၊ ၁၅ နှင့် ၂၀ (စ) • တိုင်းရင်းသားလူမျိုးများ အကျိုးစီးပွား ကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၅ • ကူးစက်ရောဂါများ ကာကွယ်နှိမ်နင်းရေးဥပဒေ (၁၉၉၅) - အပိုဒ် ၅၊ ၈၊ ၉ • ဆေးလိပ်နှင့် ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှု ထိန်းချုပ်ရေးဥပဒေ (၂၀၀၆) - အပိုဒ် ၉ (က) (ခ) (ဂ) (ဃ) • လျှပ်စစ်ဥပဒေ (၂၀၁၄) - အပိုဒ် ၁၀ (ခ)၊ ၁၈၊ ၂၁၊ ၂၂၊ ၂၆၊ ၂၇၊ ၄၀၊ ၆၈ • မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆) - အပိုဒ် ၅၀ (က) (ဃ)၊ ၅၁ (ခ) (ဂ) (ဃ)၊ ၆၅ (ဆ) (ဈ) (ည) (ဋ) (ဌ) (ဍ) (ဏ) (တ) (ထ)၊ ၇၃ • ရေနံအက်ဥပဒေ (၁၉၃၄) - အပိုဒ် ၃ • ရေနံနည်းဥပဒေ (၁၉၃၇) - အခန်း ၃ နှင့် ၄ • မော်တော်ကား ဥပဒေ (၂၀၁၅) • မော်တော်ကား နည်းဥပဒေ (၁၉၈၇) • ပို့ကုန်သွင်းကုန် ဥပဒေ (၂၀၁၂) - အပိုဒ် ၇ • မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃) - အပိုဒ် ၃၄၊ ၃၇ နှင့် • မြန်မာနိုင်ငံ မီးသတ်တပ်ဖွဲ့ဥပဒေ (၂၀၁၅) - အပိုဒ် ၂၅ (က)၊ (ခ) တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၃ (ခေါင်းစဉ် ခ) - ပတ်ဝန်းကျင်ကာကွယ်ရေး ထိခိုက်မှု 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 သဘာဝသယံဇာတများ ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၄) • နိုင်ငံခြားငါးဖမ်းရေယာဉ်များ ငါးလုပ်ငန်းလုပ်ကိုင်ခွင့် ဥပဒေ (၁၉၈၉) • ရေချိုငါးလုပ်ငန်းဥပဒေ (၁၉၉၁) - အပိုဒ် ၄၀ • အဏ္ဏဝါ ဥပဒေ (၁၉၈၉) • မြန်မာ့ပင်လယ်ငါးလုပ်ငန်းဥပဒေ (၁၉၉၀) - အပိုဒ် ၃၉ • ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများ ထိန်းသိမ်းရေး ဥပဒေ (၂၀၀၆) - အပိုဒ် ၈ (က)၊ ၂၄ (ခ) နှင့် • ပင်လယ်နယ်နိမိတ်နှင့် ရေကြောင်းဇုန် ဥပဒေ (၁၉၇၇) တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၄ - စီမံကိန်းနေရာ အတွက်သီးသန့် ဥပဒေ	စီမံကိန်း အကောင်အထည်ဖော်သူသည် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ စီမံကိန်း အတွက် အဓိက ဥပဒေ (၂)ခု ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • မြန်မာနိုင်ငံ အထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၄) - အပိုဒ် ၁၁ (စ) (တ)၊ ၂၇၊ ၃၅၊ ၇၅၊ ၇၆၊ ၇၇၊ ၇၈၊ ၈၀ (က) (ခ) (ဂ) (ဃ) (င) • 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)၊

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	၁၉၇၂ • သဘာဝပတ်ဝန်းကျင်နှင့် သဘာဝအရင်းအမြစ်များ ထိန်းသိမ်းရေး အာဆီယံ (ASEAN) သဘောတူညီမှု ၊ ကွာလာလမ်ပူ၊ ၁၉၈၅ • ကာတာဂျီနာ (Catagena) ဇီဝလုံခြုံမှု သဘောတူညီမှုစာချုပ် ကာတာဂျီနာ၊ ၂၀၀၀ ခုနှစ် • ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ကျိုတိုသဘောတူညီမှု ၊ ကျိုတို၊ ၁၉၉၇ ခုနှစ် • အပြည်ပြည်ဆိုင်ရာ အဏ္ဏဝါအဖွဲ့အစည်း သဘောတူညီချက်၊ ၁၉၄၈ခုနှစ် နှင့် • ကုလသမဂ္ဂ၏ ပင်လယ်ဆိုင်ရာ ဥပဒေ သဘောတူညီချက်၊ ၁၉၈၂ ခုနှစ် တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၄.၁ - အမျိုးသားဆိုင်ရာ နှင့် ကဏ္ဍအဆင့်အလိုက် အစီအစဉ်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန (ECD) မှ ထုတ်ပြန်ထားသော ပတ်ဝန်းကျင် ထိန်းသိမ်းစောင့်ရှောက်ရေး ကော်မတီ (ENCC) ကို လိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၄.၂ - စီမံကိန်းနေရာ၏ အစီအစဉ်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် မြန်မာနိုင်ငံ၏၏ ဒေသအုပ်ချုပ်ရေး ဖွဲ့စည်းပုံ နှင့် ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှု ကော်မတီ တို့ကိုလိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
ဇယား ၃.၄-၁ - ထားဝယ်အထူးစီးပွားရေးဇုန်မှ သက်ဆိုင်ရာ တာဝန်ရှိ ဦးစီးဌာနများ၏ တာဝန်နှင့် ဝတ္တရားများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန • လူထုအခြေချခြင်းနှင့် အိုးအိမ် ဦးစီးဌာန • လူဝင်မှုကြီးကြပ်ရေးနှင့် အမျိုးသားမှတ်ပုံတင် ဦးစီးဌာန • မြန်မာ့ဆိပ်ကမ်း အာဏာပိုင် • မြန်မာနိုင်ငံ ရဲတပ်ဖွဲ့ • အလုပ်သမား ဦးစီးဌာန • ကုန်သွယ်ရေး ညွှန်ကြားမှု ဦးစီးဌာန • ဖွံ့ဖြိုးတိုးတက်မှုရေးရာ ဦးစီးဌာန • လမ်းပန်းဆက်သွယ်ရေး ဦးစီးဌာန • ရင်းနှီးမြုပ်နှံခြင်းနှင့် ကုမ္ပဏီအုပ်ချုပ်ရေး ဦးစီးဌာန • အကောက်ခွန် ဦးစီးဌာန • ဥပဒေ၊ တရားရုံးနှင့် တရားမျှတမှု ဦးစီးဌာန • မြို့တော်စည်ပင် ဦးစီးဌာန • တနင်္သာရီတိုင်းဒေသကြီး၏ ကိုယ်စားပြုအဖွဲ့အစည်းတို့ဖြစ်ပါသည်။
အပိုင်း ၃.၅.၁ - IFC ၏ စံနှုန်းနှင့် လမ်းညွှန်ချက်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ • ပတ်ဝန်းကျင်နှင့် လူမှုရေးရေရှည်တည်တံ့မှုဆိုင်ရာ လုပ်ဆောင်မှု စံနှုန်းများ၊ ၂၀၁၂ခုနှစ် ဇန်နဝါရီလ ၁ရက် • ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လမ်းညွှန်ချက်များ၊ ၂၀၀၇ခုနှစ် ဧပြီလ ၃၀ရက် • အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံများအတွက် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လမ်းညွှန်ချက်များ (၂၀၀၈ခုနှစ် ဒီဇင်ဘာလ ၁၉ရက်) တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၆-၁ သက်ဆိုင်ရာ အပြည်ပြည်ဆိုင်ရာ ပတ်ဝန်းကျင် လမ်းညွှန်ချက်များနှင့် စံနှုန်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို စီမံခန့်ခွဲပြီး ထိခိုက်မှုများကို ထိန်းချုပ်သွားမည် ဖြစ်ပါသည်။ • ပတ်ဝန်းကျင်လေထု အရည်အသွေး • ပတ်ဝန်းကျင်ဆူညံသံ အဆင့်များ

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	• တုန်ခါမှု • ကမ်းရိုးတန်းရေအရည်အသွေး • အနယ်အနစ်အရည်အသွေး • မြေအောက်ရေ အရည်အသွေး • အပူစွမ်းအင်စီးဆင်းခြင်း တို့ဖြစ်ပါသည်။
အခန်း (၄) - စီမံကိန်းဖော်ပြချက်နှင့် အခြားသော ရွေးချယ်နည်းလမ်းများ	
အပိုင်း ၄.၁.၁ - စီမံကိန်း ဖော်ပြချက်	• အပူစွမ်းအင်သုံးဓါတ်အားပေးစက်ရုံကို ထားဝယ်အထူးစီးပွားရေးဇုန်၏ စက်မှုဇုန်နေရာတွင် LNG Terminal နှင့် နီးကပ်သော ၃၄ ဧက ကျယ်ဝန်းသော မြေပေါ်တွင် တည်ဆောက်သွားမည် ဖြစ်ပါသည်။ • ထားဝယ်အထူးစီးပွားရေးဇုန်တွင်တည်ရှိသော အပူစွမ်းအင်သုံး ဓါတ်အားပေး စက်ရုံသည် LNG Terminal လည်ပတ်ရန် အပိုလျှပ်စစ် ထောက်ပံ့ပေးရန် ဖြစ်ပါသည်။ အပူစွမ်းအင်သုံးဓါတ်အားပေး စက်ရုံသည် LNG Terminal တည်ဆောက်ခြင်းမှ အပိုအကျိုးအမြတ်အဖြစ် လျှပ်စစ်ဓါတ်အားထုတ်လုပ် အသုံးပြုနိုင်ခြင်း ဖြစ်ပါသည်။
အခန်း (၆) - ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းနှင့် လျှော့ချရေးနည်းလမ်းများ	
အပိုင်း ၆.၂ - အကြိုတည်ဆောက်ရေးကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျှော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဂေဟစနစ်များ၊ ကျေးရွာသူ/သားများ၏ အသက်မွေးဝမ်းကြောင်း၊ ဖုန်မှုန့်၊ ဆူညံသံနှင့် ဓါတ်ငွေ့ ထွက်ရှိမှုများအတွက် ထိခိုက်မှု လျှော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>ဂေဟစနစ်များ</u> အာဏာပိုင်အဖွဲ့အစည်းများဖြစ်သော သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC)၊ သစ်တောဦးစီးဌာန၊ ဒေသခံများနှင့် ဆွေးနွေးတိုင်ပင်ကာ ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပတွင် ဒီရေတော ပြန်လည် ထူထောင်ရေး အစီအစဉ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် စီမံကိန်းရှင်းလင်းမှု မပြုလုပ်ခင်တွင် ပန်းမန်နှင့် သတ္တဝါမျိုးစိတ်များကို စစ်တမ်း ကောက်ခံပြီး မျိုးသုဉ်းအန္တရာယ်ကျရောက်နေသော မျိုးစိတ်များပါဝင်ခဲ့ပါက ၄င်းတို့ ကို ထိန်းသိမ်းဇရိယာသို့ ပို့ဆောင်သွားရမည် ဖြစ်ပါသည်။ စီမံကိန်းနေရာ ပတ်လည် တွင် စိမ်းလန်းသောကြားခံဇုန်ကို အကောင်အထည်ဖော် ဆောင်ရွက် သွားမည် ဖြစ်ပါ သည်။ သစ်ပင်ခုတ်ခြင်းကို တတ်နိုင်သမျှနည်းအောင် ဆောင်ရွက် သွားမည် ဖြစ်ပြီး စီမံကိန်းမန်နေဂျာ၏ ခွင့်ပြုချက်မပါပဲ ခုတ်ထွင်ရှင်းလင်းခြင်း မပြု လုပ်ရပါ။ <u>ကျေးရွာသူ/သားများ၏ အသက်မွေးဝမ်းကြောင်း</u> စီမံကိန်းအကောင်အထည်ဖော်သူသည် ထိခိုက်ခံစားရသော ဒေသခံ ကျေးရွာသူ/သားများနှင့် ရေလုပ်သားများ၊ သက်ဆိုင်ရာ အာဏာပိုင်များဖြစ်သော သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) နှင့် တနင်္သာရီတိုင်းဒေသကြီး ငါးလုပ်ငန်းဦးစီးဌာနတို့အား တွေ့ဆုံဆွေးနွေးကာ ဖွံ့ဖြိုးရေး အသေးစိတ်အစီအစဉ်များကိုပြင်ဆင်ရမည်ဖြစ်ပါသည်။ စီမံကိန်း အကောင်အထည်ဖော်သူသည် ဒေသခံများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များနှင့် ပူပေါင်းကာ ထိခိုက်ခံစားရသူများအတွက် အသက်မွေးဝမ်းကြောင်း ပြန်လည် ထူထောင်ရေး အစီအစဉ် (LRP) ကို အကောင်အထည်ဖော်သွားမည် ဖြစ်ပါသည်။ <u>ဖုန်မှုန့်</u> မြေပြင်သိပ်သည်းမှုလုပ်ငန်းသည် ဖုန်မှုန့်ထွက်ပေါ်မှု အများဆုံးဖြစ်ပါသည်။ မကြာခဏ ရေဖြန်းခြင်းသည် ဖုန်မှုန့်များသိပ်သည်းစေရန် အများဆုံးအသုံးပြုပြီး ဖုန်မှုန့်ထွက်ပေါ်မှု၏ ၇၅% လျှော့ချနိုင်ပါသည်။

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ဆူညံသံနှင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှု ရွှေ့လျားကိရိယာများမှ ထွက်ပေါ်သော ဆူညံသံသည် ထိန်းချုပ်ရန် ခက်ခဲပါသည်။ ဆူညံသံများသော ပတ်ဝန်းကျင်နေရာတွင်လုပ်ကိုင်နေသည့် အလုပ်သမားများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရပါမည်။ အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံအတွက် စီမံကိန်းနေရာရှင်းလင်းခြင်းနှင့် မြေဖို့ခြင်းလုပ်ငန်းများမှ ထွက်ပေါ်သော ဆူညံသံကြောင့် ဝပိတက်ရွာတွင် ထိခိုက်မှုလျော့နည်းစေရန် ယာယီအသံကာ တံတိုင်းများကို တပ်ဆင်ပေးရပါမည်။ ဘေးအန္တရာယ် စီမံခန့်ခွဲမှု EPC ကန်ထရိုက်တာသည် လိုအပ်ချက်များနှင့် တာဝန်များအားလုံးကို တာဝန်ယူရပါမည်။ EPC စာချုပ်တွင် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုသည် EPC ကန်ထရိုက်တာ၏ တာဝန်ဖြစ်ကြောင်း ရှင်းလင်းစွာ ဖော်ပြရပါမည်။ ပတ်ဝန်းကျင်အတွက်လိုအပ်ချက်များကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) ၏ ခွင့်ပြုချက်ဖြင့် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) သို့မဟုတ် စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် ညှိနှိုင်းပြောင်းလဲရပါမည်။ CSR လုပ်ဆောင်မှုများကို တည်ဆောက်ဆဲကာလ တွင်တတ်နိုင်သမျှ အမြန်ဆုံး စတင်ရပါမည်။ စီမံကိန်းကြောင့် သက်ရောက်မှုရှိသော ကျေးရွာများကို စီမံကိန်းစီမံခန့်ခွဲမှုအဖွဲ့မှ မကြာခဏ သွားရောက်ကြည့်ရှုရပါမည်။
အပိုင်း ၆.၃ - တည်ဆောက်ဆဲကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဓါတ်ငွေ့ထုတ်လွှတ်မှုများ၊ ဆူညံသံ၊ ရေဆိုး၊ လမ်းပန်းဆက်သွယ်ရေးနှင့် ဒေသခံများအတွက် လျော့ချရေနည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ ဓါတ်ငွေ့ထုတ်လွှတ်မှုများ EPC ကန်ထရိုက်တာသည် ဓါတ်ငွေ့ထုတ်လွှတ်မှုအရင်းအမြစ်အတွက် အကောင်းမွန်ဆုံး လုပ်ဆောင်မှုများကို လုပ်ကိုင်ရန်လိုအပ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းအတွက်အသုံးပြုသော ကိရိယာများအား ထုတ်လုပ်သူမှညွှန်ကြားထားသော သင့်တော်သည့်လုပ်ငန်းခွင်အခြေအနေတွင် အသုံးပြုခြင်းနှင့် ထိန်းသိမ်းခြင်းကို ပြုလုပ်ပေးရပါမည်။ ဆူညံသံ ထိခိုက်ခံစားရသောနေရာတွင် ပတ်ဝန်းကျင်ဆူညံသံအဆင့်သည် Leq- ၂၄နာရီတွင် ၇၀ dB(A) (USEPA စံနှုန်း) ထက်မပိုစေရန် စီမံပြုလုပ်ရပါမည်။ ပတ်ဝန်းကျင်ဆူညံသံအဆင့်သည် Leq တစ်နာရီတွင် ၃ dB(A) (IFC စံနှုန်း) ထက်မကျော်လွန်စေရပါ။ ဆောက်လုပ်ရေးစွန့်ပစ်ပစ္စည်း အမှိုက်အမျိုးအစားခွဲခြင်း၊ အမှိုက်သိမ်းဆည်းခြင်းနှင့် သိုလှောင်ခြင်း၊ အမှိုက်ပြန်လည်အသုံးပြုခြင်းနှင့် ပြန်လည်အသုံးချခြင်း၊ အမှိုက်စွန့်ပစ်ခြင်းနှင့် နေရာတွင်မှတ်သားသိမ်းဆည်းခြင်း စသည်တို့ကိုလုပ်ဆောင်ခြင်းအားဖြင့် အမှိုက်ထွက်ရှိမှုကို လျော့နည်းစေမည် ဖြစ်ပါသည်။ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းအမျိုးအစားများကို လိုင်စင်ရရှိထားသော ကန်ထရိုက်တာ မှသာ ကိုင်တွယ်သိမ်းဆည်းရမည် ဖြစ်ပါသည်။ ဇွင်းဝန်ဆောင်မှု

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	မရှိခဲ့ပါက ကန်ထရိုက်တာသည် သင့်တော်သော အစီအစဉ်များဖြစ်သည့် အမှိုက်မီးရှို့ခြင်း၊ စိတ်ချရသောအပြီးသတ်သိုလှောင်ခြင်း သို့မဟုတ် အခြားသင့်တော်သော စွန့်ပစ်နည်းလမ်းများကို အသုံးပြုရပါမည်။ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု စနစ်တွင် အမှိုက်အမျိုးအစားသတ်မှတ်ခြင်း၊ အမျိုးအစားခွဲခြင်း၊ စုဆောင်းခြင်း၊ သိုလှောင်ခြင်း၊ လွှဲပြောင်းခြင်းနှင့် စွန့်ပစ်ခြင်းဟူ၍ ခွဲခြားကာ လုပ်ဆောင်သွားပါမည်။ အမှိုက်စွန့်ပစ်မှုစနစ်သည် အစိုးရသို့မဟုတ် အပြည်ပြည် ဆိုင်ရာ စံနှုန်းများနှင့်အညီ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ <u>ရေဆိုးစီမံခန့်ခွဲမှု</u> လူသုံးမိလ္လာနှင့် ဆေးကြောရေများကို သင့်တော်သော သန့်စင်မှုပြုလုပ်ပြီး ပြန်လည်အသုံးပြုခြင်းအားဖြင့် ပင်လယ်ထဲသို့စွန့်ပြစ်သော ထုထည်ကို လျော့နည်းစေပါမည်။ ဆေးကြောရေများမှ မျောနေသော အစိုင်အခဲများကိုဖယ်ရှားပြီး လိုအပ်ပါက ဓါတ်ပြယ်ခြင်းများပြုလုပ်မည် ဖြစ်ပါသည်။ ထို့နောက် ထွက်ရှိလာသော ရေကို အပြင်သို့ စွန့်ထုတ်ခြင်းမပြုလုပ်ပဲ စီမံကိန်းအတွင်းဖုန်မှုန့်ထွက်ရှိမှုကို လျော့နည်း အောင် ရေဖြန်းခြင်းများပြုလုပ်ရာတွင် အသုံးပြုသွားမည် ဖြစ်ပါသည်။ မိုးရေရရှိမှုကို လျော့နည်းအောင်လုပ်ဆောင်၍မရသော်လည်း စီမံကိန်းပြင်ပသို့ စီးဆင်းအောင် ပြုလုပ်ရန် လိုအပ်ပါသည်။ <u>လမ်းပန်းဆက်သွယ်ရေး</u> ဆောက်လုပ်ရေးလမ်းပန်းဆက်သွယ်မှု စီမံခန့်ခွဲခြင်း အစီအစဉ်ကို ဖွံ့ဖြိုးတိုးတက်စေရန် အမျိုးသားအဆင့်၊ တိုင်းဒေသကြီးအဆင့်နှင့် မြို့နယ်အဆင့် စသောသက်ဆိုင်ရာ အာဏာပိုင်များနှင့် ဆွေးနွေးညှိနှိုင်းရပါမည်။ ဆောက်လုပ်ရေး လုပ်ငန်းအတွက် အသုံးပြုသော ကုန်တင်ကားများ၏ ယာဉ်သွားလာမှုသည် ဆောက်လုပ်ရေးလုပ်ငန်းသုံးယာဉ်များစီမံခန့်ခွဲမှု အစီအစဉ်ခွဲကို လိုက်နာရန် စီမံခန့်ခွဲရမည်။ လုပ်ငန်းခွင်သုံး ကိရိယာကြီးများသယ်ဆောင်ရန်အတွက် ယာဉ်ကြီးများအသုံးပြုလျှင် ယာဉ်ထိန်းရဲကား အကူအညီဖြင့် လမ်းရှင်းလင်းကာ သယ်ဆောင်ရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်းလမ်းတစ်လျောက်လုံးတွင် သတိပေးဆိုင်းဘုတ်များကို တပ်ဆင်ထားပေးရပါမည်။ ဆောက်လုပ်ရေး လုပ်ငန်းများကြောင့် ယာဉ်သွားလာမှုများပြောင်းလဲလာခြင်းအတွက် ဒေသခံများအား သတိပေးကာ ယာဉ်အန္တရာယ်အခြေအနေ သတိပေးသင်္ကေတများထားရှိပေးခြင်းနှင့် ယာဉ်အန္တရာယ် ကင်းဝေးစေရန် အခြားသင့်တော်သော နည်းလမ်းများကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အနီး ဆောက်လုပ်ရေးလုပ်ငန်းများလုပ်ဆောင်နေစဉ်တွင် လူကူးမျဉ်းကြားနှင့် ယာဉ်လမ်းကြောပတ်အဝိုင်းများ ပြောင်းလဲခြင်းကို ဒေသခံများနှင့် ဒေသခံ စာသင်ကျောင်းများအား သတိပေးရပါမည်။ <u>ဒေသခံစီးပွားရေး</u> ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နှင့် နီးကပ်သော ကျေးရွာများ ဥပမာ - ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူး ကျေးရွာများမှ ကျေးရွာသူ/သားများကို ဦးစားပေး အလုပ်ခန့်အပ်သွားမည် ဖြစ်ပါသည်။ အတွေ့အကြုံနှင့် အရည်အချင်းပေါ်မူတည်၍ လစာနှုန်းထားသတ်မှတ်သွားမည်ဖြစ်ပြီး အလုပ်ခန့်ထားမှု အစီအစဉ်သည် မျှတပြီး ပွင့်လင်းမြင်သာမှု ရှိရမည် ဖြစ်ပါသည်။ ဝန်ထမ်းခန့်အပ်ခြင်းသည် အလုပ်သမား ဥပဒေ၊ လူမှုဖူလုံရေး ဥပဒေနှင့် အခကြေးငွေပေးချေရေး ဥပဒေတို့အပြင် အခြားသော သက်ဆိုင်ရာ ဥပဒေများ၊ စည်းမျဉ်းများနှင့် ကိုက်ညီရန် လိုအပ်ပါသည်။ စီမံကိန်းအကောင်အထည်ဖော်သူသည် စီမံကိန်းနှင့် ပတ်သတ်သည့် သတင်း

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	အချက်အလက်များ၊ ထိခိုက်သက်ရောက်မှုနှင့် လျော့ချရေးနည်းလမ်းများ၊ ဒေသခံများသိလိုသည့်များနှင့် တိုင်းကြားလိုသည်များကို ထောက်ပံ့ဖြေရှင်းပေးခြင်းအားဖြင့် ဒေသခံများနှင့် ဆက်ဆံရေးကောင်းမွန်စေရန် လုပ်ဆောင်ရပါမည်။ အသက်မွေးဝမ်းကြောင်းမှု စီမံကိန်းအကြိုတည်ဆောက်ရေးကာလတွင် ဖော်ပြထားသော အကောင်အထည်ဖော်ပေးမည့် အသက်မွေးဝမ်းကြောင်း အသိပညာများကို ဆက်လက်လုပ်ကိုင်ခြင်းအားဖြင့် ကောင်းမွန်သော အသက်မွေးဝမ်းကြောင်းဖြစ်ပေါ်စေပါမည်။ ဒေသခံများ၏ စိတ်ဝင်စားမှုများ၊ ပြဿနာများ၊ ငါးဖမ်းနေရာအသစ်နှင့် လှေဆိပ်/သင်္ဘောဆိပ်အသစ်များနှင့် ပတ်သတ်၍ ဒေသခံများ (ငပိတက်ရွာရှိ အိမ်ထောင်စုအားလုံး) ၏ ပြဿနာ သတင်းအချက်အလက်များအား စစ်တမ်း ကောက်ယူရပါမည်။ ရိုးရာနှင့် ယဉ်ကျေးမှုများ စီမံကိန်းအားလုံးရှိလူတိုင်းသည် ဒေသခံများ၏ ရိုးရာ၊ ယဉ်ကျေးမှုများနှင့် ထုံးစံများအား လိုက်နာရန်လိုအပ်ပါသည်။ ဒေသခံများနှင့် ဆက်ဆံရာတွင် လေ့လာမှတ်သားရမည့် အကြောင်းအရာများဖြစ်သော သတ်မှတ်ထားသော အချိန်ပြင်ပတွင် စီမံကိန်းအခြေချစခန်းမှ အပြင်ထွက်ခြင်း စသည်တို့ကို သေချာစွာ ဖော်ပြထား ရပါမည်။ စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဒေသခံများ နှင့် ကောင်းမွန်သော ဆက်ဆံရေးရှိပြီး ဒေသခံများ၏ ရိုးရာ ယဉ်ကျေးမှုပွဲတော်များကို တက်ကြွစွာ ပါဝင်ထောက်ပံ့ပေးရပါမည်။ ကျန်းမာရေး အန္တရာယ်များ အလုပ်သမားအားလုံးသည် အဓိကကျန်းမာရေးဆေးစစ်ချက်ဖြစ်သော ကူးစက်ရောဂါ ဆန်းစစ်ခြင်းကို ဝန်ထမ်းမဖြစ်ခင် စစ်ဆေးခံရပါမည်။ ထို့အပြင် ကျန်းမာရေးစစ်ဆေးမှုကို တစ်နှစ်လျှင်တစ်ကြိမ် ပြုလုပ်ပေးရပါမည်။ အဓိကကူးစက်ရောဂါများ၏ လက္ခဏာများ တွေ့ရှိခဲ့ပါက မြို့နယ်ကျန်းမာရေးဆရာဝန်ထံသို့ ချက်ချင်းပို့ဆောင်ကာ ကျန်းမာရေးစောင့်ရှောက်မှု ခံယူရပါမည်။ အလုပ်သမားများအား ကျန်းမာရေးနှင့် သန့်ရှင်းမှု၊ ကူးစက်ရောဂါများအကြောင်း ဗဟုသုတ တိုးပွားစေရန် သင်ကြားမှုများ ပြုလုပ်ပေးပါမည်။ ဘေးကင်းလုံခြုံမှုအန္တရာယ်များ အလုပ်သမားများအားလုံးသည် အလုပ်ခန့်အပ်ခြင်းမပြုလုပ်ခင် ဒေသခံအာဏာပိုင်များထံမှ ပြစ်မှုကင်းရှင်းကြောင်း ထောက်ခံစာ ရယူရန်လိုအပ်ပါသည်။ EPC ကန်ထရိုက်တာသည် စီမံကိန်းနေရာ လုံခြုံရေးနှင့် မူးယစ်ဆေးဝါးသုံးစွဲမှု ပိတ်ပင်ခြင်း အပါအဝင် အခြားသော သင့်တော်သော နည်းလမ်းများကို အကောင် အထည်ဖော်ဆောင်ရွက်သွားရမည် ဖြစ်ပါသည်။ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း ဆိပ်ကမ်းငယ်နှင့် အဆောက်အဦးများအတွက် ဆိုက်ကလုံးနှင့် ဆူနာမီဘေးအန္တရာယ်မှ ကာကွယ်ရန် နည်းလမ်းများကို ဖော်ဆောင်ရပါမည်။ ၎င်းနည်းလမ်းများသည် ဒေသခံများနှင့် သဘောတူညီထားရှိရပါမည်။ အရေးပေါ်တုန့်ပြန်မှု အစီအစဉ်အသေးစိတ်ကို EMP အစီရင်ခံစာတွင် ဖော်ပြထားပါသည်။
အပိုင်း ၆.၄ - လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့် ကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊	စီမံကိန်းအကောင်အထည်ဖော်သူသည်ဓါတ်ငွေ့ထုတ်လုပ်မှုများ/ ဖန်လုံအိမ်ဓါတ်ငွေ့၊ ရေဆိုး၊ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း၊ လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး၊ ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	လုံခြုံမှုများ အတွက် ထိခိုက်မှု လျော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်း/ ဖန်လုံအိမ်ဓါတ်ငွေ့ စီမံကိန်းအကောင်အထည်ဖော်သူသည် နိုက်ထရိုဂျင်အောက်ဆိုဒ် (NOx) လျော့နည်းစေသော နည်းပညာ အသုံးပြုခြင်းအားဖြင့် နိုက်ထရိုဂျင်အောက်ဆိုဒ် (NOx) ထုတ်လွှတ်မှုကို လျော့နည်းစေပါသည်။ ဓါတ်ငွေ့ထုတ်လွှတ်မှုစံနှုန်းနှင့် ကိုက်ညီစေရန် NO_2 လောင်ကျွမ်းမှု လျော့နည်းစေသောနည်းစနစ်ကို အသုံးပြုခြင်းအားဖြင့် NO_2 ထွက်ပေါ်မှုကို လျော့နည်းစေပါသည်။ SCR နည်းပညာအသုံးပြုခြင်းအားဖြင့် NO2 မီးခိုးထွက်ရှိမှုကို လျော့နည်းစေရန် အခြားနည်းပညာအသုံးပြုရန် မလိုအပ်ပါ။ ရေဆိုး ရေဆိုးထုတ်လုပ်မှုနည်းအောင် လုပ်ဆောင်ရပါမည်။ နည်းပညာကို အသုံးပြုပြီး ရေဆိုးများ၏ ထုထည်ကို လျော့နည်းအောင်လုပ်ဆောင်ရန် မဖြစ်နိုင်ပါ။ EPC ကန်ထရိုက်တာသည် ရေဆိုးသန့်စင်မှုကိရိယာအသေးစိတ်ဒီဇိုင်းကို ပြင်ဆင်ထားရန် လိုအပ်ပါသည်။ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း စွန့်ပစ်အရည်များကို အမျိုးအစားခွဲကာ သိုလှောင်ထားပြီး ထိုင်းနိုင်ငံသို့ပို့ဆောင်ကာ ပြန်လည်သန့်စင်မှုများ ပြုလုပ်သွားမည် ဖြစ်ပါသည်။ ဓါတ်အားပေးစက်ရုံဧရိယာအတွင်း သို့မဟုတ် အပြင်တွင် စွန့်ပစ်အရည်များ စုပုံခြင်းကို ပြင်းထန်စွာတားဆီးရပါမည်။ စီမံကိန်းဧရိယာတွင် နိုင်မာသော အဖုံးပါဝင်သည့် အမှိုက်ပုံးများကို အလုံအလောက်ထားရှိရမည် ဖြစ်ပါသည်။ လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး IFC မှ ၂၀၀၇ခုနှစ် ဧပြီလ ၃၀ ရက်တွင် ထုတ်ပြန်ထားသော ယေဘုယျ EHS လမ်းညွှန်ချက်များမှ လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး နှင့် IFC မှ ၂၀၀၈ခုနှစ် ဒီဇင်ဘာလ ၁၉ရက်တွင် ထုတ်ပြန်ထားသော အပူစွမ်းအင်သုံးဓါတ်အားပေးစက်ရုံများအတွက် EHS လမ်းညွှန်ချက်များမှ အပိုင်း ၁.၂ - လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကဏ္ဍကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်နှင့် လုံခြုံရေး အပူစွမ်းအင်သုံးဓါတ်အားပေးစက်ရုံလုပ်ငန်းလည်ပတ်မှုကြောင့် ဖြစ်ပေါ်လာနိုင်သော ဘေးအန္တရာယ် သို့မဟုတ် ထိခိုက်မှုများမှာ အောက်ဖော်ပြအတိုင်း ဖြစ်ပါသည်။ (၁) အဆောက်အအုံနှင့် ကိရိယာဒီဇိုင်းနှင့် ဘေးကင်းလုံးခြုံရေး (၂) အန္တရာယ်ရှိသော ပစ္စည်းများစီမံခန့်ခွဲခြင်းနှင့် ဘေးကင်းလုံးခြုံရေး (၃) ဂေဟဗေဒစနစ်အပေါ် ဝန်ဆောင်မှုများ (၄) ရောဂါများ ဒေသတွင် ကူးစက်ခြင်း (၅) အရေးပေါ်ပြင်ဆင်ခြင်းနှင့် တုန့်ပြန်မှု တို့ဖြစ်ပါသည်။ ဒေသခံလုံခြုံရေးအတွက် စီမံကိန်းအကောင်အထည်ဖော်သူမှပြင်ဆင်သော လုံခြုံရေးစီစဉ်မှုများမှ ဒေသခံများအတွက် ဘေးအန္တရာယ်အပေါ်အထူးပြုထားသော လုပ်ဆောင်မှု ၄ခုကိုလုပ်ဆောင်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၆.၅ - လုပ်ငန်းရပ်စဲခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဖုန်မှုန့်ထွက်ရှိမှု၊ ဆူညံသံ၊ စွန့်ပစ်ပစ္စည်း

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
ကာလ - ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံခန့်ခွဲခြင်း၊ မြေယာပြန်လည်ပြုပြင်ခြင်းနှင့် ဘေးအန္တရာယ် ဆန်းစစ်ခြင်းတို့အတွက် ထိခိုက်မှု လျော့ချခြင်း နည်းလမ်းများကို လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။ __ဖုန်မှုန့်__ စီမံကိန်း ဖျက်သိမ်းခြင်းကဏ္ဍများအတွက် သယ်ယူပို့ဆောင်ရေး ပြုလုပ်ခြင်းဖြင့် ဖုန်မှုန် ထွက်ပေါ်မှုဖြစ်ပေါ်စေပါသည်။ ဖုန်မှုန့်များသိပ်သည်းစေရန် ရေဖြန်းခြင်းဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကို လျော့နည်းစေပါသည်။ __ဆူညံသံ__ ရွှေ့လျားကိရိယာများမှထွက်ရှိသော ဆူညံသံများသည် ထိန်းချုပ်ရခက်ပါသည်။ ကာကွယ်နည်းလမ်းအနေဖြင့် ၎င်းဆူညံသံများထွက်ပေါ်သောလုပ်ငန်းခွင်တွင် လုပ်ကိုင်နေသည့် အလုပ်သမားများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရပါမည်။ ထို့အပြင် အနီးဆုံးကျေးရွာဖြစ်သော ငပိတက်ကျေးရွာသို့ ဆူညံသံထိခိုက်မှုများ လျော့နည်းစေရန် ဓါတ်အားပေး စက်ရုံဖျက်သိမ်းမှုနေရာတွင် 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 ဒီရေတောပြန်လည်ထူထောင်ရေးလုပ်ငန်းများ၊ စိုက်ပျိုးမြေများအကောင်အထည်ဖော်ပေးခြင်း၊ ဆိပ်ကမ်းနေရာအဖြစ်အသုံးပြုခြင်းနှင့် ဒေသခံအာဏာပိုင်များထံမှ အသုံးပြုရန် ခွင့်ပြုချက်ယူရပါမည်။ __ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း__ စီမံကိန်းရပ်စဲခြင်းနေရာများတွင် ဖုန်မှုန့်ထွက်ရှိမှုကို လျော့နည်းစေရန် လုပ်ဆောင်သွားရပါမည်။ ဖုန်မှုန့်ထွက်ရှိမှု လျော့နည်းစေရန် ရေဖြန်းခြင်းသည် ဧရိယာယူနစ်တစ်ခုအတွက် ရေဖြန်းရန် အသုံးပြုရမည့် ရေထုထည် သတ်မှတ်ထားသည့်အတိုင်း အသုံးပြုရမည် ဖြစ်ပါသည်။ ဤသို့လုပ်ဆောင်ခြင်းဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅%ကို လျော့ချပေးနိုင်ပါသည်။
အခန်း (၈) - ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များ	
အပိုင်း ၈.၅ - ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အားလုံး အကောင်အထည်ဖော်ဆောင်ရေး	အကြိုတည်ဆောက်ရေးကာလနှင့် တည်ဆောက်ဆဲကာလ ၁၅လအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ လုပ်ဆောင်မှုများကို စောင့်ကြည့်လေ့လာအကဲဖြတ်ရန်အတွက် ရံပုံငွေ အမေရိကန်ဒေါ်လာ ၁၄၇,၅၀၀ ကို အသုံးပြုသွားမည်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
အတွက် ရံပုံငွေ	ဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် စောင့်ကြည့်လေ့လာခြင်းနှင့် အကဲဖြတ်ခြင်းရံပုံငွေကို ကာလအပိုင်းအခြားအလိုက်ခွဲခြားထားပါသည် (စုစုပေါင်း ၇၅နှစ် - လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်း ၅၀နှစ်နှင့် နောက်တိုး ၂၅နှစ်)။ စုစုပေါင်း ကုန်ကျငွေ အမေရိကန်ဒေါ်လာ ၆၅၇,၂၅၀ (အရေးပေါ်အသုံးပြုရန် ၁၀%ပါဝင်ပြီး) ဖြစ်ပါသည်။ ထို့အပြင် စောင့်ကြည့်လေ့လာရေးစရိတ်သည် စီမံကိန်းအခြေအနေနှင့် သင့်တော်မှု အပေါ် ညှိနှိုင်းသွားမည် ဖြစ်ပါသည်။
အပိုင်း ၈.၆.၁ - စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ခွဲ (အကြိုတည်ဆောက်ရေး ကာလနှင့် တည်ဆောက်ဆဲကာလများ)	စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် ကန်ထရိုက်တာခွဲသည် အောက်ဖော်ပြပါ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြည့်လေ့လာခြင်းအစီအစဉ်ခွဲများကို အကောင်ထည်ဖော် ဆောင်ရွက်ရပါမည်။ (၁) ယေဘူယျ ဆောက်လုပ်ရေး (၂) ဒီရေတော စီမံခန့်ခွဲမှု (၃) လေထုအရည်အသွေး စီမံခန့်ခွဲမှု (၄) ဆူညံသံ (၅) ရေဆိုး စီမံခန့်ခွဲမှု (၆) စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု (၇) အန္တရာယ်ရှိသာ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု (၈) လမ်းပန်းဆက်သွယ်ရေး စီမံခန့်ခွဲမှု (၉) လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး စီမံခန့်ခွဲမှု (၁၀) သဘာဝသယံဇာတ အသုံးပြုမှု စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ် (၁၁) လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု (၁၂) အရေးပေါ် စီမံခန့်ခွဲမှု အစီအစဉ် (ရေကြီးခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံး) တို့ဖြစ်ပါသည်။
အပိုင်း ၈.၆.၂ - လျှော့ချရေးနည်းလမ်းများ အကောင်အထည်ဖော်မှု အစီအစဉ် (အကြိုတည်ဆောက်ရေး ကာလ/တည်ဆောက်ဆဲ ကာလများ)	ကန်ထရိုက်တာသည် ပိုင်ရှင်၏ တည်ဆောက်ဆဲကာလ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (CEMP) ကို သေချာစွာပြင်ဆင်အဆင့်မြှင့်တင်ပြီး ကန်ထရိုက်တာ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ကို စီမံကိန်းပိုင်ရှင်၏ စီမံကိန်းမန်နေဂျာမှ အတည်ပြုပေးရပါမည်။ ကန်ထရိုက်တာသည် ကန်ထရိုက်တာ၏ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို ဆောက်လုပ်ရေးအကြံပေးများနှင့် ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှု ကော်မတီ၏ စီမံကိန်းမန်နေဂျာ၏ စောင့်ကြည့်လေ့လာမှုများနှင့် အကောင်အထည်ဖော်ရပါမည်။
အပိုင်း ၈.၆.၃ - စောင့်ကြည့် လေ့လာခြင်း၊ အကဲဖြတ်ခြင်းနှင့် အစီရင်ခံခြင်း (အကြို တည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလ)	ကန်ထရိုက်တာသည် စောင့်ကြည့်လေ့လာခြင်း အစီရင်ခံစာတစ်ခုကို စီမံကိန်းအတွင်း အသုံးပြု၍ အခြားအစီရင်ခံစာတစ်ခုကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) နှင့် အခြားသက်ဆိုင်ရာ အာဏာပိုင်များအား တစ်နှစ်လျှင် နှစ်ကြိမ်ပြုစု တင်ပြရပါမည်။
အပိုင်း ၈.၆.၆ - အများပြည်သူ တိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော် ကြေငြာခြင်း (အကြို တည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလ)	CEMP သည် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော်ကြော်ငြာခြင်းတွင် သုံးပွင့်ဆိုင် ကော်မတီကို အဓိကအဖြစ် တင်ပြရပါမည်။
အပိုင်း ၈.၆.၇ - အငြင်းပွားမှု တိုင်းကြားဖြေရှင်းရေး (အကြို တည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလ)	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အကြိုတည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလများအတွက် အငြင်းပွားမှုတိုင်ကြားဖြေရှင်းရေးအစီအစဉ်ကို ပြင်ဆင်ရပါမည်။
အပိုင်း ၈.၇.၁ - စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ခွဲ (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါ စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ခွဲတို့ကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ (၁) ဒီရေတော စီမံခန့်ခွဲမှု (၂) လေထုအရည်အသွေးနှင့် ဖန်လုံအိမ်ဓါတ်ငွေ့ စီမံခန့်ခွဲမှု (၃) ဆူညံသံ (၄) ရေဆိုးစီမံခန့်ခွဲမှု (၅) စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု (၆) အန္တရာယ်ရှိသောစွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု (၇) လမ်းပန်းဆက်သွယ်ရေး စီမံခန့်ခွဲမှု (၈)

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေး စီမံခန့်ခွဲ (၉) လူမှုပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု နှင့် CSR အစီအစဉ် (၁၀) လုပ်ငန်းလည်ပတ်ခြင်းဝန်ထမ်း စီမံခန့်ခွဲမှု နှင့် (၁၁) အရေးပေါ်အခြေအနေစီမံခန့်ခွဲမှုအစီအစဉ် (ရေကြီးခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံး) တို့ဖြစ်ပါသည်။
အပိုင်း ၈.၇.၃ - စောင့်ကြည့်လေ့လာခြင်း၊ အကဲဖြတ်ခြင်းနှင့် အစီရင်ခံခြင်း (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	ကန်ထရိုက်တာသည် စောင့်ကြည့်လေ့လာခြင်း အစီရင်ခံစာတစ်ခုကို စီမံကိန်းတွင် အသုံးပြု၍ အခြားအစီရင်ခံစာတစ်ခုကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) နှင့် အခြားသက်ဆိုင်ရာ အာဏာပိုင်များအား တစ်နှစ်လျှင် နှစ်ကြိမ်ပြုစု တင်ပြရပါမည်။
အပိုင်း ၈.၇.၆ - အများပြည်သူ တိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော် ကြေငြာခြင်း (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	တည်ဆောက်ဆဲကာလတွင် တည်ထောင်ထားသော သုံးပွင့်ဆိုင် ကော်မတီသည် ဆက်လက်ထိန်းသိမ်းမှုများ ပြုလုပ်သွားရမည် ဖြစ်ပါသည်။ သို့သော် ၄င်းတို့သည် ဒေသထောက်ပံ့ရေးအစီအစဉ်များ အကောင်အထည်ဖော်ရာတွင် အကြံဉာဏ်များ ထောက်ပံ့ပေးရပါမည်။ သုံးပွင့်ဆိုင်ကော်မတီ၏ အစိတ်အပိုင်းနှင့် လုပ်ငန်းတာဝန်များကို သတ်မှတ်ထားပြီးဖြစ်ပါသည်။
အပိုင်း ၈.၇.၇ - အငြင်းပွားမှု တိုင်းကြားဖြေရှင်းရေး (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	စီမံကိန်းအကောင်အထည်ဖော်သူသည် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလများအတွက် အငြင်းပွားမှုတိုင်ကြားဖြေရှင်းရေးအစီအစဉ်ကို ပြင်ဆင်ရပါမည်။
အပိုင်း ၈.၉	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဆိုးရွားသော ရာသီဥတုအတွက် အရေးပေါ်အခြေအနေအစီအစဉ်နှင့် ဘေးအန္တရာယ်များကို ကာကွယ်ခြင်းနှင့် ထိခိုက်မှုလျော့နည်းစေသော နည်းလမ်းများကို ပြင်ဆင်ဆောင်ရွက်ထားရန် လိုအပ်ပါသည်။
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 - အနာဂတ်ဆွေးနွေးမှု များအတွက် အကြံပေး ချက်များ	သုံးပွင့်ဆိုင်ကော်မတီသည် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းအတွက် နေရာစီစဉ်ရမည် ဖြစ်ပါသည်။

မှ Dawei Power Generating Company Limited

အမည် Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

BOIL-OFF 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	The Project Proponent will follow National Environmental Policy (1994), the Environmental Conservation Law (2012) (section 7, 14 15, 24, 25, and 29), and Environmental Conservation Rules (2014) (section 68(a) and 68(b)).
Section 3.2.2 : Regulations Related to Environmental Impact Assessment and Management	The Project Proponent will comply to the Environmental Impact Assessment Procedure (2015) (section 102(a), 102(b), 103, 105, 106, 107, 108, 109, 110, 113, 115, and 117) 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) (section 3 and 7), • Factories Act (1951) (section 5 and 7), • Social Security Law (2012) section 11,15, 18 (a), 18 (b), 48 (a), and 75), • Labour Organization Law (2011) (section 17, 18, 19, 20, 21, and 22), • Settlement of Labour Dispute Law (2012) (section 38, 39, 40, and 51), • Payment of Wages Law (2016) section 3, 4, 5, 7, 13, and 14), • Employees and Expertise (Skill) Law (2013) (section 5,14,30(a), and 30 (b)), • Leave and Holidays Act (1951), • Workmen Compensation Act (1923) (section 13), • Minimum Wage Law (2013) (section 12,13, and 18), • Myanmar Insurance Law (1993) (section 15 and 16), • Protection and Preservation of Cultural Heritage Regions Law (1988) (section 13 and 22), • Protection and Preservation of Antique Objective Law (2015) (section 12), • Protection and Preservation of Ancient Monument Law (2015) (section 12,15, and 20 (f)), • The Protection of National Races Law (2015) (section 5) , • Prevention and Control of Communicable Law (1995) (section 3(a), 4, 9, and 11), • The Control of Smoking and Consumption of Tobacco Product Law (2006) (section 9(a), 9(b), 9(c), and 9(d))

Commitment Source	Commitment
	• Electricity Law (2015) (section 10(b), 18, 21, 22, 26, 27,40,and and 68), • Myanmar Investment Law (2016) (section 50 (a) (d); 51 (b) (c) (d); section 65 (g) (i) (j) (k) (l) (m) (o) (p) (q), and section 73) , • Petroleum Act (1934) (section 3), • Petroleum Rules (1937), Chapter 3 and 4, • Motor Vehicle Law (2015), • Motor Vehicle Rule (1987) • Import and Export Law (2012) (section 7), • Myanmar Engineering (section 34 and 37) and, • Myanmar Fire Force Law (2015) (section 25(a) and 25(b)).
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) (section 7, 14 15, 24, 25, and 29), • Environmental Conservation Rules (2014) (section 68(a) and 68(b)). • The Forestry Law (1992) section 12, • The Protection of Wildlife and Conservation of Natural Areas Law (1994), • The Fishing Rights of Foreign Fishing Vessels Law (1989), • The Freshwater Fisheries Law (1991), section 40, • The Aquaculture Law (1989), • Myanmar Marine Fisheries Law (1996), section 39, • Conservation of River, Creeks, and Water Resources Law (2006), (section 8 (a) and 24(b))and, • Territorial Sea and Maritime Zone Law (1977).
Section 3.2.4 : Law Specific to the Project Site	The Project Proponent will follow 2 key laws related to Boil-Off Gas Power Plant Project, including: • Myanmar Special Economic Zones Law (2014) (section 11(f), section 11 (p), 27 ,35, 75, 76, 77, 78, 80 (a), 80 (b), 80 (c), 80 (d), and 80(e)), • 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 • Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997 • Convention on the International Maritime Organization, 1948 • United Nations Convention on the Law of the Sea, 1982
Section 3.4.1 : Arrangement at the National and Sector Level	The Project Proponent shall comply the Environmental Conservation Committee (ENCC) by MONREC through ECD.

Commitment Source	Commitment
Section 3.4.2 : Arrangements at the Project Area	The 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	The Project Proponent will comply: • Department of General Administration • Department of Human Settlement and Housing • Department of Immigration and National Registration • Myanmar Port Authority • Myanmar Police Force • Department of Labour • Directorate of Trade • Department of Development Affairs • Department of Road Transportation • Department of Investment and Company Administration • Department of Custom • Department of Law, Court and Justice • Department of Municipality • Representative from Tanintharyi Division
Section 3.5.1 : IFC's Standards and Guidelines	The Project Proponent will follow: • Performance Standards on Environmental and Social Sustainability, January 1, 2012. • Environmental, Health, and Safety-General Guidelines, April 30, 2007. • Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008).
Table 3.6-1 : Relevant International Environmental Guidelines and Standards	The Project Proponent will manage and control impacts as followings: • Ambient Air Quality • Ambient Noise Levels • Vibration • Coastal Water Quality • Sediment Quality • Groundwater Quality • Thermal Heat Flux
Chapter 4 Project Description and Alternatives	
Section 4.1.1 : Project Description	• The proposed Boil-Off Gas Power Plant will be constructed on a 34 acre and plot, adjacent to the LNG Terminal, in the designated industrial estate area in DSEZ. • The Project will install a boil-off gas power plant in DSEZ to additionally supply electricity for LNG terminal consumption. Technically, this power plant will be utilized to generate electricity supply through boil-off gas, which is the supplementary benefit from LNG terminal.

Commitment Source	Commitment
Chapter 6 Impact and Risk Assessment and Mitigation Measures	
Section 6.2 : Pre-Construction Phase - Impact Identification, Assessment and Mitigation	The Project Proponent will comply the impact mitigation measures on ecosystems, livelihood of villagers, fugitive dust, noise and gaseous emissions. Ecosystems In consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers, design and implement a mangrove reforestation program in areas outside DSEZ. 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. Livelihood of Villagers The Project Proponent will need to prepare a detailed plan for the development of this alternative area in consultation with the affected local villagers and fishermen, and concerned authorities including MONREC, the Fisheries Department at Taninthayi Region. In addition, the Project Proponent should design and implement a livelihood restoration program (LRP) for the affected people in consultation with them and the concerned authorities. Fugitive Dust Fugitive dust will be generated most during the compaction. Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust. Noise and Gaseous Emissions 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 boil-off power plant to reduce noise impact to Nga Pitat Village. Risk Management Require the EPC contractor to comply with the requirements and obligations. The EPC contract must clearly prescribes environmental management responsibility of the EPC contractor. Change in the environmental requirements may be initiated by MONREC or the Project Proponent with approval of MONREC. CSR activities should be initiated as soon as possible in the construction phase. The Project management team should visit as often as possible the villages located within the area of influence of the Project.

Commitment Source	Commitment
Section 6.3 : Construction Phase - Impact Identification, Assessment and Mitigation	The Project Proponent will comply the mitigation measures on gaseous emissions, noise, wastewater, road traffic and local communities. <u>Gaseous Emissions</u> The EPC contractor will be required to adopt best practices to minimize gaseous emissions at sources. Using and Maintenance all construction equipment in proper working conditions according to the manufacturer's specifications. <u>Noise</u> 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). <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. <u>Hazardous Wastes</u> 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. <u>Waste Water Management</u> Domestic sewage and wash water will be appropriately treated and reused on site as much as possible to minimize the volume to be discharged into the sea. Wash waters will be treated to remove suspended solids and neutralize, if necessary. The treated effluent will be reused on site as much as possible to minimize the volume to be discharged into the sea. Storm water cannot be reduced and will need to be drained outside the construction site. <u>Road Traffic</u> Consultation with the concerned authorities at the national, regional, and township levels on develop and implement a Construction Traffic Management Plan. Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan. Heavy trailer trucks transporting heavy and large plant equipment will have to be directed by a traffic police car. Post warning signs along the right of way where the access road construction takes place. 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

Commitment Source	Commitment
	traffic movement. Notify the local community and local schools, about changes to pedestrian and cycle access during construction near construction works. <u>Local Economy</u> Priority should be given to local employment, especially the villages close to the construction site; e.g. Nga Pitat, Nyaung Bin Seik and Mudu. 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. <u>Livelihood</u> Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase. Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village). <u>Cultures and Traditions</u> 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. <u>Health Risks</u> 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. <u>Security Risks</u> 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.

Commitment Source	Commitment
	Risk Assessment Mitigation measures for the two identified risks correspond with cyclone and tsunami to the small port and facilities. The measures will be implemented through contractual arrangements and stakeholder engagement. The detail of emergency plan are described in EMP Report.
Section 6.4 : Operation Phase - Impact Identification Assessment and Mitigation	The Project Proponent will comply the mitigation measures on gas emission/greenhouse gas, wastewater, waste management, occupational safety and health, community health, safety and security. Gas Emission/Greenhouse Gas The Project adopts the low NOx burner technology to minimize NOx emission. The reduction of NO_2 at source using 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. Wastewater The figures represent the possible minimum volume. It is not technically feasible to reduce the volume of these wastewaters at sources. The EPC contractor will prepare detailed design of wastewater treatment facilities based on the design concept. Waste Management 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 prohibited. Provide adequate number of bins or containers with tight covers, collection of liquid waste. Occupational Health and Safety OHS 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. Community Health, Safety and Security Five areas will be investigated to identify and evaluate risks or impacts relevant to the operation of the boil-off gas power plant are the followings: (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 For community security, Performance Standard 4 emphasizes risks to the communities posed by the security arrangements made by the project proponent.

Commitment Source	Commitment
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 land reclamation. Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust. 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 demolition and land reclamation of small port to reduce noise impact to Nga Pitat Village. Waste Management 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. Land Reclamation Developer should design with discuss with concerned authority and local villagers to management on the open land after demolition complete. Typical utilization on the open land such as mangrove reforestation, develop agriculture land, transfer port and area to local authorities to confirm use. 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 8.5 : Overall Budget for Implementation of The EMP	During the pre-construction and construction phases, a budget of about 147,500 USD will be allocated for monitoring and evaluation of the Project's environmental and social performance over the construction period of 15 months. During operation phase, budget for monitoring and evaluation will be allocated for period separation (75 years, 50 years operation plus 25 years extensions). Total cost during operation phase approx. 657,250 USD (include 10% contingency). In addition, the monitoring cost will be adjusted depended on situation and suitability of the project.

Commitment Source	Commitment
Section 8.6.1: Management and Monitoring Sub-Plans (Pre-construction/construction phases)	The Project Proponent and the sub-contractor will implement follow to the Management and Monitoring Sub-Plans which may include: (1) general construction, (2) mangrove management (3) air quality management, (4)noise, (5) wastewater management, (6) waste management, (7)hazardous waste management, (8) traffic management, (9) OHS management, (10) natural used monitoring plan, (11) social environmental management, and (12) emergency management plan (flood, tsunami, and cyclone).
Section 8.6.2: Arrangements for the Implementation of Mitigation Measures (Pre-construction/construction phases)	The Contractor will elaborate and update the Owner-CEMP (Construction Phase Environmental Management Plan) 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 DSEZ MC's Project Manager through the Construction Supervision Consultant.
Section 8.6.3: Monitoring, Evaluating and Reporting (Pre-construction/construction phases)	The Contractor will submit, twice a year, the monitoring reports - one for internal use and another for reporting to MONREC and other concerned authorities.
Section 8.6.6: Public Consultation and Disclosure (Pre-construction/construction phases)	The CEMP proposes a tripartite committee as the main mechanism for public consultation and disclosure.
Section 8.6.7 Grievance Redress (Pre-construction/construction phases)	The Project Proponent will prepare grievance redress mechanism to using during pre-construction/construction phases.
Section 8.7.1: Management and Monitoring Sub-Plans (Operation Phase)	The Project Proponent will implement follow to the Management and Monitoring Sub-Plans include: (1) mangrove management (2) air quality and greenhouse gas management, (3) noise, (4) wastewater management, (5) waste management, (6) hazardous waste management, (7) traffic management, (8) OSH management (9) social environmental management and CSR Program, (10) operation staff management and (11) emergency management plan (flood, tsunami, and cyclone).
Section 8.7.3: Monitoring, Evaluating and Reporting (Operation Phase)	The Project Proponent will submit, twice a year, the monitoring reports - one for internal use and another for reporting to MONREC and other concerned authorities.
Section 8.7.6: Public Consultation and Disclosure (Operation Phase)	The tripartite committee established during the construction phase should be maintained. However, its role would be more on providing advice in the implementation of the community support plan. The components and responsibilities of the tripartite committee are defined.

Commitment Source	Commitment
Section 8.7.7 Grievance Redress (Operation Phase)	The Project Proponent will prepare grievance redress mechanism to using during operation phases.
Section 8.9	The Project Proponent will prepare and operate following accordance with the emergency plan for bad weather and calamities to protect and minimize impact in case of bad weather will appear
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.

P.U.

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။ ကူးစက်ရောဂါများကာကွယ်နှိမ်နင်းရေးဥပဒေ(၁၉၉၅)

၁၀။ ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှုထိန်းချုပ်ရေးဥပဒေ(၂၀၁၆)

၁၁။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ(၂၀၁၅)

၁၂။ မော်တော်ယာဉ်ဥပဒေ(၂၀၁၅)နှင့်မော်တော်ယဉ်နည်းဥပဒေများ(၁၉၈၇)

၁၃။ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ(၁၉၉၃)

၁၄။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ(၂၀၁၁)

၁၅။ အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ(၂၀၁၂)

၁၆။ အလုပ်အကိုင်နှင့်ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတတ်ရေးဥပဒေ(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

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 မပြုရ။

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

(ဂ) နည်းဥပဒေ၆၉၊နည်းဥပဒေခွဲ(ခ)အရ ဂေဟစနစ်နှင့်ယင်းစနစ်ကြောင့် ဖြစ်ပေါ်ပြောင်းလဲနေသော သဘာဝပတ်ဝန်းကျင်ကို ထိခိုက်ပျက်စီးစေနိုင်သည့် ပြုလုပ်မှုကို ဆောင်ရွက်ခြင်းမပြုရ။

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးနည်းလုပ်နည်း (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) မိမိကိုယ်တိုင်ကြောင့်ဖြစ်စေ၊ မိမိကိုယ်စား ဆောင်ရွက်သည့်ကန်ထရိုက်တာ၊ လက်ခွဲဆောင်ရွက်ပေးသူ 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၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွတ်ခြင်း၊ 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)

(၅) 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 စွမ်းဆောင်ရည်မြှင့်တင်ပေးပြီး 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 တည်ဆဲဥပဒေများနှင့်အညီ နစ်နာကြေးပေးပြီးမှသာ ရင်းနှီးမြှုပ်နှံမှုကို ရပ်ဆိုင်းပိတ်သိမ်းပါမည်။ (ပုဒ်မ ၆၅ (ဈ)အရ)

(ဆ) ခိုင်လုံသောအကြောင်းပြချက်ဖြင့် ရင်းနှီးမြှုပ်နှံမှု ယာယီပိတ်သိမ်းပါက ပိတ်သိမ်းထားရသည့် ကာလအတွင်း အလုပ်သမားများကို တည်ဆဲဥပဒေ၊ နည်းဥပဒေများ၊ ညွှန်ကြားချက်များ၊ လုပ်ထုံးလုပ်နည်းများနှင့်အညီ လုပ်ခ၊ လစာ ပေးပါမည်။ (ပုဒ်မ ၆၅ (ည)အရ)

(ဇ) အလုပ်ကြောင့် ထိခိုက်ဒဏ်ရာ ထိခိုက်မှု၊ ကိုယ်အင်္ဂါအစိတ်အပိုင်း ချို့ယွင်းဆုံးရှုံးမှု၊ ရောဂါရရှိမှု၊ သေဆုံးမှုတို့ ဖြစ်ပွားသော အလုပ်သမားများအတွက် သက်ဆိုင်ရာအလုပ်သမား သို့မဟုတ် အမွေဆက်ခံခွင့်ရှိသူကို တည်ဆဲဥပဒေနှင့် အညီ ရထိုက်သည့် နစ်နာကြေးနှင့် လျော်ကြေးပေးပါမည်။ (ပုဒ်မ ၆၅ (ဠ)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 ဆိုးရွှားမှုများ ဖြစ်ပေါ်စေပါက အဆိုပါ ဆိုးရွှားနစ်နာမှုအတွက် ထိရောက်သည့် လျော်ကြေးကို နစ်နာသူထံသို့ ပေးလျော်ပါမည်။ (ပုဒ်မ ၆၅ (ဏ)အရ)

(ဋ) ကော်မရှင်က စစ်ဆေးကြည့်ရှုရန် ကြိုတင်အကြောင်းကြားလာပါက မည်သည့်နေရာကိုမဆို 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။ ကူးစက်ရောဂါများကာကွယ်နှိမ်နှင်းရေးဥပဒေ(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 စီစဉ်ပေးပြီး 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) သီးသန့်မီးသတ်တပ်ဖွဲ့ဖွဲ့စည်းပါမည်။ (ပုဒ်မ ၂၅ (က) အရ)

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

၁၂။ မော်တော်ယာဉ် ဥပဒေ(၂၀၁၅) နှင့် မော်တော်ယဉ်နည်းဥပဒေများ(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 ပြန်လည် အလုပ်ခန့်ထားရန် 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) သဘာဝဘေးအန္တရာယ်အပါအဝင် မမျှော်လင့်သော ထူးခြားသည့်အခြေအနေပေါ်ပေါက်ပါက 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 အလုပ်ပိတ်ရက် များကို 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 အခြားရေနေသတ္တဝါများကို နှောက်ယှက်ခြင်း မပြုပါ။ (ပုဒ်မ ၄၀ အရ)

၂၆။ မြန်မာ့ပင်လယ်ငါး လုပ်ငန်းဥပဒေ (၁၉၉၀)

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

၂၇။ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈)

စီမံကိန်းရေိယာသည် ရှေးဟောင်းအမွေအနှစ် ဒေသအတွင်း ကျရောက်ပါက စီမံကိန်းပိုင်ရှင်သည် ပုဒ်မ ၁၃ နှင့် ၁၅ တို့ပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ လိုက်နာဆောင်ရွက် ပါမည်။

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)

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

(ဎ) 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၊ မိမိ၏ထုတ်ကုန်များ ပြည်ပသို့ တင်ပို့ပါက ခွင့်ပြုချက်ပါ စည်းကမ်းချက်များအတိုင်း လိုက်နာပါမည်။ (ပုဒ်မ ၇ အရ)

မှ Dawei Power Generating Company Limited

အမည်Poawpadet Vorabutr

ရာထူး ဒါရိုက်တာ

The Applicable Laws and Legal Commitments for Boil off Gas 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. Factories Act (1951)
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 Disputes law (2012)
17. The Development of Employment and Skill Law (2013)
18. 2013, Minimum Wages Law
19. 2016, Payment of Wages Law
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 , which are 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 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.

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 section51of 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. This law focuses as follows;

- 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 has to 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 focuses the following

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

- ***Section 17*** - The project owner has 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 proponent has to allow the demand for the re-appointment of worker who is dismissed by the employer without the conformity with the labour laws.
- ***Section 19*** - The project proponent has to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker.
- ***Section 20*** - The project proponent 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 proponent 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 proponent has to allow the labour organization to carry out the holding the meetings, going on strike and other collective activities in line with the procedure, regulation ,by-law and directive of relevant Chief Labour Organization .

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 followings;

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

18. 2013,The Minimum Wages Law

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 followings;

- 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. To pay 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 follow;

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. This law focuses as follows;

- 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 and 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. This law focuses as follows;

- 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 promises not to 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 Objective Law (2015)

Purpose; to ensure the protection of ancient monument and information about it if it was in the project area. This law focus 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 and information about it if it was in the project area. This law focus 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 following;**

- 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 the to abide by the conditions included in permit if it is needed to import the material for project and export products from the project. This law focuses as follow;**

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

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Name: Poawpadet Vorabutr

Title: Director

Environmental Mitigation Measures and Environmental Quality Monitoring Program

Environmental and Social Impact Assessment for Boil-Off Gas Power Plant Project

By:
Dawei Power Generating Company Limited

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Certified the Environmental Mitigation Measures and Environmental Monitoring Program

Environmental and Social Impact Assessment for Boil-Off Gas Power Plant Project

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
Boil-Off Gas Power Plant Project

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

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

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

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
General Construction	**Hours of work:** • Works (civil engineering and mechanical works) which may generate excessive levels of noise, vibration, dust or traffic movements should only be undertaken between 6.30 am and 6.30 pm Monday to Saturday and at no time on Sundays or Public Holidays except for special circumstances where the works should be conducted outside these days and hours. • In case of urgent situation, exceeding the hours of work, information dissemination should be conducted prior to commence construction activities. • Special circumstances include works on transport of heavy and large process equipment to the construction sites, transport of materials for site filling, and transport of large construction equipment to the construction sites (on land and by shipment logistics). • Collection, loading and haulage of spoil from construction worksites by truck/ship would be undertaken between 6.30 am Mondays and 6.30 pm Saturdays. If this is taken place out of the hours of work and it is really or emergent to be done at that time, a request/information should be done prior to the action of collection, loading and haulage. • Notify local communities of duration and timing of works to be conducted outside of usual working hours. **Construction worksites:** • To be designed and constructed for the minimization, management and mitigation of construction impacts; • The main construction site will include foundation work, dredging work, placement of sand/rock material in the dredged area for small port construction, other infrastructures and routinely utilities/facilities, such as canteen with adequate space and facilities for eating and washing, decent worker accommodation, adequate number of hygienic toilets and baths, adequate clean piped water supply, drainage, wastewater disposal facilities, solid waste disposal facilities, material storage, equipment sheds, vehicle washing areas and project management offices. • Small port structure: construct the main structural components including wharf, berth, quay, pier, jetty, dock, mole, breakwater and dock basin. • Civil engineering and mechanical materials, for Small Port, should be transported by shipment and lorry trucks appropriately in accordance with national regulations and acts.	• Site inspections will be conducted as outlined in this CEMP. • Estimate cost: Include on pre-construction and construction cost	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
General Construction (Cont'd)	• Dredging work for navigation channel/turning circle/berthing area/seawall and breakwater and filling the reclamation area with sand/rock material and suitable fill material: shall be done during the hours of work (between 6.30 am and 6.30 pm Monday to Saturday). Also, turbidity will be measured and controlled, to ensure the least adverse impact on aquatic ecology. • To conduct spoil handling, storage and loading at all times within enclosures designed and constructed to achieve environmental objectives and performance criteria for noise and air quality as set out in the CEMP; • To have night lighting, including security lighting and avoid light spill onto adjoining premises, in excess of 8 lux measured at the common boundary; • To include fencing to worksite boundaries to ensure site security and public safety (onshore and offshore restricted area).		• Dawei Power Generating Company Limited • Construction Contractor
Mangrove	• Survey and record flora species in the proposed project site before construction (biological survey). • Select appropriate mangrove species for rehabilitation area. • Prepared and design mangrove rehabilitation program and monitoring with concerned authorities such as MONREC and Forest Department. • The mangrove rehabilitation program should also include mangrove reforestation to expand mangrove area which serves as natural sanctuaries for marine ecological resources. • Mangrove rehabilitation program should be involve local villagers participates in site selection. • Developer should be create a green buffer zone around the Project port boundaries. • In case of conservation plant species will be found, the plant will be transferred to growth in green buffer zone, mangrove reforestation or other areas. • Cutting and clearance must done only on specific area designated in the term of reference. • Prohibit workers to cut tree outside project boundary. Also, prohibit and control workers not to hunt wildlife in all area (restricted area). • Give a brief orientation for collectors/visitors (for educational and recreational purposes) about mangrove forest and other relevant topics for rehabilitation plan.	• Monitor flora and fauna species before project clearance (1 time before site clearance). • Monitor project site clearance to ensure that it is strictly carried out in accordance with proper equipment as specified in contract and ensure strictly conducted only within the project site (1 time/month during pre-construction/construction phase) • Consider and monitor on mangrove rehabilitation area due to clearance activities for proposed project site (2 times/month during pre-construction/construction phase) • Estimet Cost: Approx. 3,000 USD Lumpsump for Flora and Fauna species investigate before land clearance	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Air Quality	**Fugitive Dust Control** • 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. **Gaseous Emissions** • 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 construction phase. • 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 (repowered engines, electric drive trains). 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.	**Ambient Air Quality** • Undertake local, 1 time per three months monitoring of ambient air quality in the vicinity of construction sites and Villages situated near the project site (Nga Pitat Village) for the duration of construction works, and in response to complaints, based on the following parameters: - Total suspended particulates (TSP) - Particulates (PM 10) • Monitor and manage the incidence of dust deposition and manage construction vehicle emissions in relation to ambient air quality.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Air Quality (Cont'd)	• 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.	**Dust** • Monitor 1 time per three months or more frequently if weather conditions required, construction sites, stockpiles, vehicles and roads leaving the construction sites for evidence of dust generation or loose, unstable material with potential for dust. • Monitor regularly (weekly minimum) by inspection or other effective sampling: • The performance of dust filtration systems on construction shed ventilation systems; • Spillage or deposition of loose material on roads leaving a construction site. • Monitor performance of mitigation measures in relation to the construction air quality goals. • Estimate Cost: 800 USD/station/time	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Noise	**Design** • The Contract will require the Contractor and his sub-contractors to use construction equipment that generate low levels of noise and vibrations. The Contractor will present alternative construction equipment to demonstrate that the selected equipment adopts best available technologies to minimize noise level. • Before commencing the construction, the Contractor will conduct a noise and vibration survey covering the identified sensitive receptors to update the existing baseline data in the Final EIA Report. The noise survey will be manually conducted using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines : Noise Management (April 30, 2007). • Demonstrate through predictive modelling of the proposed construction techniques and monitoring ambient noise and vibration readings prior to construction to establish pre-disturbance levels, the likely levels of noise due to construction works throughout the construction phase. **Construction 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. • Speeds of vehicles in the construction site will not be more than 40 km/hr. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Temporary sound barriers or shielding should be installed for non-mobile equipment. • The contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period. • The construction environmental management plan needs to include an efficient complaints redress procedure and an efficient corrective action procedure to address the none compliance of noise performance.	• Undertake local, 1 time per three months monitoring of noise level in the vicinity of construction sites and Village (Nga Pitat Village) for the duration of construction works, and in response to complaints, based on the following parameters: - Lmax, - Leq 1 hr, - Leq 24 hr, - Ldn and, - L90 • Monitor and manage the incidence of noise level and manage construction vehicle noise level.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Noise (Cont'd)		• The Contractor is to implement measures to receive and respond to complaints about construction noise and vibration made at any time during the construction phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this CEMP. Key requirements for the system include: • On receipt of a complaint, implement a complaint response procedure for tracking and responding to the issue(s) and the complaint; • Identify the relevant construction activity at which the complaint is directed; • As soon as practicable, investigate and measure the level of noise from that activity; • Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken; and • Report to the Proponent on the complaint, the activity, the corrective action and the response • Estimate Cost: 700 USD/station/time	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste	**Design and Planning before Commencing the Construction** • The Contractor will consult with 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 construction site, if possible. • The Contractor will ensure that the design and the proposed construction methods will generate the least amount of wastes. • Based on the construction plan, methods, and schedule, The Contractor will prepare estimates of the quantity of each waste category to be generated in each quarter of the construction period. The estimates will be monthly updated. • The 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 Contractor will propose methods of waste transport and disposal. • The Contractor will then prepare an action plan for waste management for the first quarter of the construction period 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 construction. • The subsequent quarterly 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 construction materials; • Where possible, goods to be ordered in bulk to minimize packaging waste and packaging material returned to the supplier wherever practicable.	• 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. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer and the Contractor will jointly inspect the sites.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste (Cont'd)	**During Construction** **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;	• In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project developer 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 • Estmate cost: include on cost for pre-construction and construction	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste (Cont'd)	• 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). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • No burning of wastes will be allowed. • 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 small port site in designated green areas. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. **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. • Accessibility to the EHS Manager of the Project developer 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.		• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Wastewater	The Contractor will prepare detailed design of a wastewater management system for the Boil-off Gas 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: • Toilet wastes will be separated from grey water or salvage. • Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. • Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. • Grey water will be discharged into the retention pond. • The retention pond will be designed as an oxidation pond with a hydraulic retention time of about 7 days.	• Once a month collection of one water samples at Effluent from release point of temporary drainage system. The treatment performance of the drainage system will be assessed from the monitoring data. • Parameter of effluent sample compare with Myanmar and World Bank Group/IFC Guidelines include: - Oil and Grease = 10 mg/L - pH = 6-9 - Total Suspended Solid = 50 mg/L - BOD = 30 mg/L -Total Nitrogen = 10 mg/L • Estmate cost: 600 USD/station/time	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Hazardous Waste	• 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.	• Monitoring of the hazardous 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 hazardous waste materials in the construction sites and hazardous waste disposal areas, and reviewing the daily records. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer and the Contractor will jointly inspect the sites.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Traffic	**Truck routes and construction site access** • In consultation with the concerned authorities at the regional, and township levels, develop and implement a Construction Traffic Management Plan to address the following issues: - 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.	• Monitor number of vehicles two times per year at 2 sampling stations include 1) small port area and 2) at Nga Pitat Village. • Monitor traffic accident situation related to the project every day at project access road. • Estimate cost: -500 USD/station/time for monitoring number of vehicles throughout pre-construction and construction phase - Cost for monitoring vehicles accident situation related to the project include on cost for pre-construction and construction	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Traffic (Cont'd)	• Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan to include: - Monitoring of truck position, speed, route and performance in relation of traffic conditions and schedule requirements; - 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 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 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. • Traffic Management at the Intersection of Local Roads • Provide a traffic police or relevant officers to control traffic at the intersection during the transport period.		• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Traffic (Cont'd)	**Traffic Management at the Intersection of Local Roads** • Provide a traffic police or relevant officers to control traffic at the intersection during the transport period. **Pedestrians and Cyclists** • Maintain safe pedestrian and cycle access near construction works (particularly for elderly and children), including to community facilities, such as schools, monastery, open space and particularly: • 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.		• Dawei Power Generating Company Limited • Construction Contractor
OHS	**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 OHS policy and procedures. The OHS 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 developer 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 OHS plan and implementation procedures. • The OHS management plan and implementation procedures will cover but not limited to the following subjects: Organization and responsibilities of OHS 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 fire and life safety measures, including ventilation, smoke extraction and firefighting systems for the duration of the construction phase.	• Monitoring of OHS 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	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
OHS (Cont'd)	• The project proponent must be set buffer zone between gas engine of Boil-off power plant project and gas tank of LNG Terminal project (at least 1.5 km) to prevent hazard during gas leakage. If none of adequate distance, fire protection wall or plant perennial tree will recommended to set for protecting the impact during gas leakage situation. **During Construction** • The implementation of the OHS plan will be integrated with construction supervision. • The Contractor will implement the OHS plan and procedures as part of its construction supervision. The Contractor's site engineers and foremen will supervise the implementation of OHS procedures to comply with relevant requirements. • The Contractor's EHS Manager will monitor the OHS performance.	• The daily inspections will observe: (i) adherence of the construction workers to the OHS 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 OHS inspection notes as part of the site inspection notes.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
OHS (Cont'd)		• The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OHS Inspection Checklists". The Contractor's Construction Manager, EHS Manager, and Site Engineers will carry out the weekly inspections. The Owner's EHS Manager will jointly undertake the weekly inspections. Subcontractors will also be required to participate in the weekly inspections. The weekly inspections will include plant, substances, equipment and temporary structures used by subcontractors. • Internal audits will be carried out annually or more frequent if the OHS performance is significantly below established targets. The internal auditor or team will be engaged by the Contractor with concurrence of the Project developer • Monitoring results will be discussed in Project OHS monthly review meetings. • Estimate cost: include on cost for pre-construction and construction	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Natural Resource Use	**Pre-Construction** • Alternative fishing ground and boatyard areas will need to be identified and discuss with local villagers and fishermen and concern authorities include MONREC, Fisheries Department at Taninthayi Region, and Concerned Authorities Department. If justified, supports will need to be provided to the affected local villagers and fishermen to enable them to adjust to the alternative fishing grounds and boatyard areas • 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: € Community forest and mangroves management € Coastal aquaculture within extensive system € Fish processing € Crop cultivation techniques € Product development and marketing € Food preparation and preservation **During Construction** • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village) .	• Report community consultation's activities and on consultation. • Training and promotion household account record. • Consultation with Nga Pitat Village to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village) at least 1 times per three month. • Estiamate cost: 100,000 USD lump sump throughout pre-construction/construction phase	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment	**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 it is 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 work sites 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. **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.	• Consultation with three village include Nga Pitat, Mudu, and Nya Binsiek to colloect information include local concerns, issues, and problems during pre-construction and construction phase at least 1 time per three months • 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. • Estimate cost: include in the budget for Natural Resources Used Monitoring Plan	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment (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. • Ensure medical facilities, community centers, monastery and schools in the area have access to construction updates and community education during the construction. **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.		• Dawei Power Generating Company Limited • Construction Contractor
Emergency Plan (Flood, Tsunami, and Cyclone)	• Provide training program about emergency plan before commencing construction activities.	• Results of pre-test and post-test of construction workers. • Estimate cost: include cost for pre-construction and construction.	• Dawei Power Generating Company Limited • Construction Contractor

TABLE 2: MITIGATION MEASURES AND MORINITORING PROGRAM DURING OPERATIONAL PHASE

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Mangrove Rehabilitation	• Planting, checking and evaluating fertilities in mangrove rehabilitation area and around project site. • Plant additional mangroves. • Mangrove rehabilitation program should be involve local villagers participates in prepare seeding, and maintain the areas. Developer should provide appropriate budget for this activity. • Give a brief orientation for collectors/visitors (for educational and recreational purposes) about mangrove forest and other relevant topics for rehabilitation plan. • Maintenance program for the rehabilitation area.	• Monitor on mangrove rehabilitation area and forest area around project site. - Frequency : 2 times/year during 1st-10th years of operation phases • Cost estimate: - Approx.950,000 USD lump sump for planting and maintenance in reforestation area during 1st-10th of operation phases. - 1,000 USD / year for support local villagers (from Nga Pitat and Nyua Binseik Villages) in rehabilitation activities (during 1st-10th years during operation phase, total cost 10,000 USD)	• Dawei Power Generating Company Limited

TABLE 2 (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Air Quality and Greenhouse Gas	**Design and Commissioning** • The gas turbine facility has been modelled and designed so as to ensure stack emissions will meet prescribed technical specifications; • Low NOx burners will be used to minimize thermal NOx emissions. • The Contractor and his supplier will complete the testing and tuning program on the turbines 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 turbines using low NOx burners. 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.	**Stack Emission** • Each of the exhaust stacks will be fitted with in-stack monitoring equipment linked to the continuous emissions monitoring system (CEMS). This monitoring system will be designed to meet the regulatory requirements As specified by the draft concession agreement of the Project, in particular monitoring of NOx. **Ambient Air Quality** • Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Nga Pitat and Mudu villages) for the duration of 1st-5th year of operation works and 1 time per year throughout operation phase, and in response to complaints, based on the following parameters: - Particulates (PM 10) - Sulfur Dioxide (SO2) - Nitrogen Dioxide (NO2) - Carbon Monoxide (CO) • Estimate cost: **Stack Emission** Including in operation cost **Ambient Air Quality** 800 USD/station/time	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste	**Design and Planning before Commencing the Operation** • The Contractor will consult with 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. • The Contractor will ensure that the design and the proposed operation methods will generate the least amount of wastes. • 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 first quarter of 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. • The subsequent quarterly 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.	• 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 operation sites and waste disposal areas, and reviewing the daily records. The focus will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer and the Contractor will jointly inspect the sites.	• Dawei Power Generating Company Limited • Sub-contractor (Waste management company)

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste (Cont'd)	**During Operation** **Waste Segregation** • The project developer/contractor will design and implement a waste segregation system and procedure and communicate it to all operation 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 operation 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 operation 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;	• In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project developer and the operation 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. • Estimate cost: include of operation cost.	• Dawei Power Generating Company Limited • Sub-contractor (Waste management company)

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Waste (Cont'd)	• 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). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • No burning of wastes will be allowed. • Non-operation 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 power plant site in designated green areas. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. **On-site Record Keeping** The project developer/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. • Accessibility to the EHS Manager of the project developer for verification of operation 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.		• Dawei Power Generating Company Limited • Sub-contractor (Waste management company)

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Wastewater	**Design Concept** The Contractor will prepare detailed design of a wastewater management system for the Boil-off gas operation 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: • **Domestic Wastewater** - Toilet wastes will be separated from grey water or salvage. - Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. - Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. - Grey water will be discharged into the retention pond. - The retention pond will be designed as an oxidation pond with a hydraulic retention time of about 7 days. • **Operation Wastewater** - There is no wastewater discharged (closed system).	• Twice a year collection of one water samples at Effluent from release point of temporary drainage system. The treatment performance of the drainage system will be assessed from the monitoring data.. • Parameter of effluent sample compare with Myanmar and World Bank Group/IFC Guidelines include: - Oil and Grease = 10 mg/L,- pH = 6-9,- Total Suspended Solid = 50 mg/L,- BOD = 30 mg/L, - Total Nitrogen = 10 mg/L • Estmate cost: 600 USD/station/time	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Hazardous Waste	• 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.	• Monitoring of the hazardous 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 hazardous waste materials in the operation sites and hazardous waste disposal areas, and reviewing the daily records. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer and the Contractor will jointly inspect the sites.	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Hazardous Waste (Cont'd)		• In weekly site inspections, the EHS Manager will be participated by the Resident Engineer of the Project developer and the operation 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. • Estimate cost: include on operation cost	• Dawei Power Generating Company Limited
Traffic	• Strictly enforce the traffic regulations (on drivers and pedestrians) to reduce road traffic accidents • Construction the bridge at Nga Pitat village for local villagers and children walk across the project coastal road. • Prepare and implement an improvement program for improving safety of the local road network/navigation/shipping to cope with expected increase in traffic volume during Small Port operations	• Monitor number of vehicles two times per year at 2 sampling stations include 1) small port area and 2) at Nga Pitat Village. • Monitor traffic accident situation related to the project every day at project access road/ or even navigation. • Estimate cost: - 500 USD/station/time throughout operation phase - Cost for monitoring vehicle accident situation related to the project include on cost for operation.	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
OHS	**Design and Equipment Selection** (1) Incorporate in the EPC contract, all OHS requirements that the EPC contractor will in the design of the project and associated facilities, including equipment selection; give due consideration to, but not limited to, the following OHS requirements: (i) integrity of workplace structures; (ii) standard operating procedures for process shutdown, including emergency 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 developer an OHS management plan and implementation procedures specific to the power plant of this Project and in line with the Owner's OHS policy and procedures. The OHS management plan and implementation procedures will be submitted not later than one month before commissioning of Boil-off Power Plant and associated facilities. (3) The OHS management plan and implementation procedures will cover but not limited to the following subjects: • Organization and responsibilities of OHS management • Training plan • Communication plan • Contractor responsibilities • Safety measures for the Small Port's O&M, including-safety in project operations, fire, explosion, and chemical hazards.	Monitoring of OHS performance of the Contractor will be made through: • Daily informal inspections (walk through of the construction sites) • Weekly formal inspections of the work place. • Monthly formal inspections of the work place. • Audits • Corrective Action Reports The daily inspections will observe: (i) adherence of the operational personnel to the OHS 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.	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
OHS (Cont'd)	• Emergency response procedures. • Task-specific work requirements Compliance monitoring and evaluation plan • Audit plan • Reporting system • Documentation system **During Project Commissioning** During project commissioning, the EPC contractor will be required to conduct necessary orientation and training to the Owner's Boil-off Power Plant operational team to ensure that the operational team clearly understands the OHS plan and implementation procedures. **During Operations** The Plant Manager will implement the OHS plan and procedures as part of his operational control and management. The EHS Manager will monitor the implementation of OHS procedures to comply with relevant requirements.	The daily inspections will be carried out by the EHS Manager, the Operational Manager, and relevant unit heads. The Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OHS inspection notes as part of the site inspection notes. The weekly formal inspections will be carried out at weekly interval sand shall be documented using appropriate "Weekly OHS Inspection Checklists". The EHS Manager and the Operational 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. The monthly formal inspections will review the OHS 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 OHS 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 meetings on project performance. Estimate cost: include operation cost	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment and CSR	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans, such as noise, air quality and wastewater management. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the construction impacts on their daily living and properties. Establish the CSR Program to implement and support public relations and mitigation measures. **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 it is practicable after the completion of construction, the Contractor shall reinstate community facilities affected by the works, if any. • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all households in Villages). **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. • 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. • Estiamte cost: - 150,000 USD lump sump for group interview or village forum at 3 affected villages throughout operation phase - 2,000 USD / year for development fund during 1st-5th years of operation phase - 1000 USD / year for development fund during 6th-throughout operation phase.	• Dawei Power Generating Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment and CSR (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. • Ensure medical facilities, community centers, monastery and schools in the area have access to construction updates and community education during the construction. • Training and promotion household account record. • Support on development program such as electricity supply, improve on local road, and fishery program in new alternative fishing ground and boatyard area in CSR Program		• Dawei Power Generating Company Limited
Operation staff	• Provide a training program for operational staff. • Incentive idea for achieving goals.	• Set Key Performance Indicators (KPIs) for operation staff (individual staff or department). • Estimate cost: include on operation cost	• Dawei Power Generating Company Limited
Emergency Management Plan (Flooding, Tsunami, and Cyclone)	• Provide training program about emergency plan in orientation program. • Practice emergency plan every year taught by experts.	• Results of pre-test and post-test of construction workers (understanding and application of knowledge). • Estimate cost: include on operation cost	• Dawei Power Generating Company Limited

Our Ref: ENV/P03153/611007

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 Boil-Off Power Plant, Dawei District, the Republic of the Union of Myanmar

With reference to the Confirmation Letter, dated – 15th February, 2018, from The Ministry of National Resource and Environmental Conservation, Union Minister Office on "Environmental and Social Impact Assessment (ESIA) of Boil-Off Gas Power Plant by Dawei Power Generating Company Limited at the initial stage of Dawei Special Economic Zone".

We are pleased to submit the Final Report of ESIA for Boil-Off Power Plant, Dawei District, The Republic of the Union of Myanmar (include ESIA and EMP) for your consideration.

Sincerely yours,

S. Boonyuen

Dr. Sirinimit Boonyuen

Senior Executive Vice President - International

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.

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.

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)

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:

(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.

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:

(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)

(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, 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)

Page 1 of 1 (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 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. 6390406

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 กรรมการสองในห้าคนนี้ลงลายมือชื่อร่วมกันและประทับตราสำคัญของบริษัท//
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

(นางสาวนันทวรรณ พึ่งสอัมพีรโศภณ)

นายทะเบียน

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 สรุปผลในโครงการธุรกิจต่างๆ 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 สำรวจ เครื่องกล 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

ที่ สจ.3 054100 ออกให้ ณ วันที่ 15 เดือน พฤษภาคม พ.ศ. 2560

สำเนาเอกสารนี้แนบท้ายหนังสือรับรอง

วัตถุที่ประสงค์ของ ห้างหุ้นส่วน/บริษัท นี้ มี 38 ข้อ ดังนี้

(11) ประกอบกิจการซื้อ ขาย แลกเปลี่ยน เช่า หรือให้เช่าที่ดิน อาคารบ้านเรือน โรง และสิ่งปลูกสร้างทุกชนิด ตลอดจนซื้อขาย 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 ทั้งนี้รวมทั้งการรับจำนำเช่าสังหาริมทรัพย์ด้วย

(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 ห้องร่อง 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 เครื่องมือตรวจสอบ 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

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 (นางสาวนันทวรรณ พงศ์อัมพรโศภณ)

ทะเบียนเลขที่ ...0105521011519........................ นายทะเบียน

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการในทะเบียนที่ได้จดทะเบียนไว้แล้วของบริษัทเป็นดังนี้ (สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร)

1. มีมติพิเศษให้เพิ่มทุนของบริษัทเพิ่มขึ้นอีก แปดสิบสามล้านเก้าแสนสี่หมื่นแปดพันบาท (83,948,000) โดยการออก ...หุ้นใหม่ เป็นหุ้นสามัญจำนวน แปดแสนสามหมื่นเก้าพันสี่ร้อยแปดสิบหุ้น (839,480) มูลค่าหุ้นละ หนึ่งร้อยบาท (100)..........

2. ให้แก้ไขเพิ่มเติมข้อบังคับของบริษัทข้อ. 4 เป็นดังนี้

ข้อ 4. การโอนหุ้น

4.1 การโอนหุ้นจะมีผลโดยการจดทะเบียนแก้ไขลงในทะเบียนผู้ถือหุ้น

4.2 ถ้าผู้ถือหุ้นคนหนึ่งคนใดตาย หรือล้มละลาย ผู้รับมรดกหรือผู้จัดการมรดกหรือผู้มีสิทธิจะได้หุ้นนั้นจะต้องนำ ต้องนำหลักฐานอันชอบด้วยกฎหมายมาแสดงต่อบริษัท และเมื่อคณะกรรมการเห็นว่าเป็นการถูกต้องและ ไม่ขัดต่อข้อบังคับบริษัทแล้ว จะรับจดทะเบียนบุคคลนั้นเป็นผู้ถือหุ้นของบริษัทต่อไป

4.3 นอกจากบทบัญญัติแห่งข้อบังคับหมวดนี้ คณะกรรมการอาจกำหนดระเบียบใดๆ ตามความเหมาะสมในเรื่อง การจัดการเกี่ยวกับหุ้น

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) นายสานิต ร่างน้อย

(2) พลเอกวิเชียร ศิริสุนทร

(3) นายอิศรินทร์ ภัทรมัย

(ลงลายมือชื่อ)..กรรมการผู้ขอจดทะเบียน

(....นายประเสริฐ ภัทรมัย..............นายธนสาร ก้วยเจริญพานิชก์....)

หน้า....1......ของจำนวน....2......หน้า (ลงลายมือชื่อ)..นายทะเบียน

เอกสารประกอบคำขอที่ 1003260051110057 (นางสาวนันทวรรณ พงศ์อัมพรโศภณ......)

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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 ... (นางสาวนันทวรรณ พงศ์อัมพรไศภณ)

ทะเบียนเลขที่ ...0105521011519..................... นายทะเบียน

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการในทะเบียน ... สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร

4. ให้แก้ไขเพิ่มเติมจำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัท เป็นดังนี้...

............ข้อ 6. จำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัทได้ คือนายประเสริฐ ภัทรมัย นายพีรวัธน์ เปรมชื่น ....

นายธนสาร ก้วยเจริญพานิชก์ นายชวลิต จันทรรัตน์ นายอิศรินทร์ ภัทรมัย กรรมการสองในห้าคนนี้

ลงลายมือชื่อร่วมกัน 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 พงศ์อัมพรไศภณ....)

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กรมพัฒนาธุรกิจการค้า
กระทรวงพาณิชย์

เลขที่ออกเอกสาร 1-1003-60-4-038532 วันที่ออกเอกสาร 15 พฤษภาคม 2560

แบบ ก.

กรรมการเข้าใหม่

สำเนาถูกต้อง

ของ

บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่งแอนด์ แมเนจเมนท์ จำกัด

ข้าพเจ้ากรรมการทุกคนซึ่งได้ลงลายมือชื่อไว้นี้ ยินยอมให้นายทะเบียนตรวจสอบความถูกต้องและเปิดเผยข้อมูลตามที่ได้ระบุไว้ในรายการจดทะเบียนนี้ เพื่อใช้ประโยชน์ของทางราชการ

(นางสาวนันทวรรณ พงศ์อัมพรโสภณ)
นายทะเบียน
สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

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☐ ถือบัตรอื่น ๆ (ระบุ) .... เลขที่ ....

อยู่บ้านเลขที่ .... หมู่ที่/หมู่บ้าน .... ถนน ....

ตำบล/แขวง .... อำเภอ/เขต .... จังหวัด ....

หมายเลขโทรศัพท์ ....

(ลงลายมือชื่อ) ....

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(นายประเสริฐ ภัทรมัย นายธนสาร ก้วยเจริญพานิชก์)

หน้า 1 ของจำนวน 1 หน้า

(ลงลายมือชื่อ) นางสาวนันทวรรณ พงศ์อัมพรโสภณ นายทะเบียน
(............)

เอกสารประกอบคำขอที่ 1003260051100057

ถ้ากรรมการเป็นชาวต่างประเทศ ให้ระบุชื่อและที่อยู่เป็นภาษาอังกฤษกำกับไว้ด้วย

/E/D/TEAM/แบบ-ก_เพิ่ม3.pdf

สจ.3 14:54

สำเนาถูกต้อง

ข้อบังคับ

ของ

บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด

(ฉบับแก้ไขเพิ่มเติม)

(นางสาวนันทวรรณ พงศ์อัมพรโศภณ)
นายทะเบียน
สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

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 ก้วยเจริญพานิชก์)

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

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In recognition of the organization's Quality Management System which complies with

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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	

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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 ကုမ္ပဏီများညွှန်ကြားမှု ဦးစီးဌာနသို့ 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)

FINAL REPORT

ESIA FOR BOIL-OFF POWER PLANT

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ABBREVIATION

ABBREVIATION

ASME	American Society of Mechanical Engineers
ASMS	Ambient Air Quality Monitoring Stations
BAT	Best Available Techniques
BOG	Boil-Off Gas
CA	Concession Agreement
CCEMP	Contractor- CEMP
CEMs	Continuous Emission Monitoring System
CEMP	Construction Phase Environmental Management Plan
CIA	Cumulative Impact Assessment
CPMO	Contractor Project Management Office
CSR	Corporate Social Responsibility
CO	Carbon Monoxide
dB(A)	Decibel (A)
DDA	Dawei Development Association
DHF	Dengue Hemorrhagic Fever
DO	Dissolved Oxygen
DPG	Dawei Power Generating Company Limited
DSEZ	Dawei Special Economic Zone
DSEZMC	The DSEZ Management Committee
ECC	Environmental Compliance Certificate
ECD	Environment Conservation Department
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
ENCC	Environmental Conservation Committee
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
FAO	Food and Agriculture Organization
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
ITD	ITALIAN-THAI Development Public Company Limited
kJ	kilojoules
kWh	Kilowatt hours
L90	The noise level exceeded for 90% of the time
Leq (24 hrs)	Equivalent continuous noise level at 24 hours
Lmax	Maximum Noise Level
LNG	Liquefied natural gas
MIC	Myanmar Investment Commission
MOECAF	Ministry of Environmental Conservation and Forestry
MSL	Mean Sea Level
MW	Megawatt
NCEA	National Commission on Environmental Affairs
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
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
PM	Particulate Matter
PMO	Project Management Office
PPAH	Pollution Prevention and Abatement Handbook

PPPs	Public-Private Partnerships
PS	Performance Standards
SEZ	The Special Economic Zone
SOx	Sulphur Dioxide
SWB	Supporting Working Body
TBS	Total Business Solution Co., Ltd., Myanmar
TC	Traffic Counting
TGC	TEAM Group of Companies
THC	Total Hydrocarbon
TOR	Terms of Reference
TSP	Total Suspended Particle
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USD	U.S. Dollar
U.S. EPA	U.S. Environmental Protection Agency
V/C	Traffic Volume/Carrying Capacity
VECs	Valued Environmental Components
WB	World Bank
WHO	World Health Organization

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၁.၁ စီမံကိန်း အစီအစဉ်

ထားဝယ် ဓါတ်အားပေးကုမ္ပဏီလီမိတက်သည် သဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစီမံကိန်း ကို ထားဝယ်မြို့နယ် တနင်္သာရီတိုင်းဒေသကြီး ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် တည်ဆောက်မည်ဖြစ်ပါသည်။ ထိုစီမံကိန်းကို ထားဝယ် ဓါတ်အားပေးကုမ္ပဏီလီမိတက် (DPG) နှင့် စင်ကာပူအခြေစိုက် LNG Plus International private လီမိတက်တို့ ပူးပေါင်းဆောင်ရွက်မည်ဖြစ်ပါသည်။ DPG သည် နိုင်ငံတစ်ကာ စွမ်းအင်ထုတ်လုပ်ရေးလုပ်ငန်းများနှင့် ဖက်စပ်လုပ်ငန်းများလုပ်ကိုင်ပြီး ထားဝယ်စီးပွားရေးဇုန် အတွင်းရှိ အကြီးစား၊ အသေးစား စက်မှုလုပ်ငန်းများ၏ စွမ်းအင်လိုအပ်မှုကို ဖြည့်စည်းရန်ရည်ရွယ်ပါသည်။

ဤစီမံကိန်းသည် သဘာဝဓါတ်ငွေ့စွမ်းအားဖြင့်အပြန်အလှန် အင်ဂျင်လည် ပတ်စေခြင်းပုံစံတည်ဆောက် ထားပါသည်။ လျှပ်စစ်ဓါတ်အားပေးစက်ရုံ၏ အသားတင်စွမ်းအင်ထုတ်လုပ်မှုမှာ ၁၅.၄၈၈ မဂ္ဂါဝပ်ဖြစ်သည်။ ၎င်းလျှပ်စစ်ဓါတ်အားပေးစက်ရုံကို သဘာဝဓါတ်ငွေ့ရည်ပိုက်လိုင်းအားဖြင့် ဖြည့်တင်း၍အနီးအနားရှိ လျှပ်စစ်ဓါတ်အားအသုံးပြုသူများကို စွမ်းအင်ဖြန့်ဖြူးရန်ဖြစ်ပါသည်။

သယဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၏ လမ်းညွှန်မှုနှင့် မြန်မာနိုင်ငံ သဘာဝပတ် ဝန်းကျင်ဆိုင်ရာထိန်းသိမ်းစောင့်ရှောက်ရေး၊ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာထိန်းသိမ်းခြင်း ဥပဒေ (၂၀၁၂) နှင့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) အရ ၅၀မဂ္ဂါဝပ်အထက် ပိုသော သဘာဝ ဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံစီမံကိန်းသည် သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွား ထိခိုက်သက် ရောက်မှုလေ့လာစမ်းစစ်ချက် (ESIA) ကိုပြင်ဆင်တင်ပြရန်လိုအပ်ပါသည်။ ထားဝယ်မြို့တွင် တည်ဆောက်မည့် သဘာဝဓါတ်ငွေ့သုံး လျှပ်စစ်ဓါတ်အားပေးစီမံကိန်း၏ စွမ်းအင်ထုတ်လုပ်မှုသည် ၁၅မဂ္ဂါဝပ် သာရှိသော်လည်း သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားထိခိုက်သက်ရောက်မှုလေ့လာစမ်းစစ်ချက် (ESIA) ကိုပြင်ဆင်တင်ပြပါသည်။

DPG သည် သဘာဝပတ်ဝန်းကျင်နှင့်လူမှုစီးပွားထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ချက် (ESIA) ပြုလုပ်ခြင်းကို TEAM Consulting Engineering and Management ကုမ္ပဏီ နှင့် အတူပူးတွဲလျက် ပြည်တွင်းကုမ္ပဏီဖြစ်သော Total Business Solution (TBS) အဖွဲ့တို့မှ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားထိခိုက်သက်ရောက်မှု လေ့လာအကြံပေးများနှင့် ဆောင်ရွက်ခဲ့ပါသည်။

၁.၂ မူဝါဒများ၊ ဥပဒေဆိုင်ရာနှင့် ဖွဲ့စည်းဆောင်ရွက်ပုံဆိုင်ရာ လေ့လာသုံးသပ်ချက်

၁.၂.၁ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုလမ်းစဉ်များ ပူးပေါင်းဆောင်ရွက်ခြင်း

စီမံကိန်းတာဝန်ရှိသူများသည် ရေရှည်ဖွံ့ဖြိုးတိုးတက်မှုနိယာမအတိုင်း ပြုလုပ်ဆောင်ရွက်ရပါမည်။ အဆိုပါကိစ္စနှင့် စပ်လျဉ်း၍ စီမံကိန်းတာဝန်ရှိသူများသည် သင့်တော်သော စီမံကိန်းကာကွယ်မှု မူဝါဒဖြင့် ပတ်ဝန်းကျင်အားစီမံခန့်ခွဲရပါမည်။ ဤစီမံကိန်းလမ်းစဉ်သည် စီမံကိန်းကာကွယ်မှု မူဝါဒနှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်းမှုနည်းစဉ်များဖြင့် စီမံဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

ကာကွယ်ရေးမူဝါဒ၏ ပထမဆုံးအဆင့်အဖြစ် စီမံကိန်းတာဝန်ရှိသူများသည် စီမံကိန်း တည်ဆောက်မှုနှင့် လည်ပတ်မှုကာလများတွင် ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားမူဝါဒများမှ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားစီမံခန့်ခွဲခြင်းကို လုပ်ဆောင်ပါသည်။ ထိုလုပ်ဆောင်မှုများမှာ

- EIA တွင်ပါဝင်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် လုံခြုံရေးစီမံခန့်ခွဲမှုစနစ်များကို ဖွံ့ဖြိုးတိုးတက်အောင်လုပ်ဆောင်ရန်
- ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ပြီးမြောက်ရန်နှင့် စီမံကိန်းဆောက်လုပ်ရေးနှင့် လည်ပတ်ရေး ကာလများတွင် တိကျသောစစ်ဆေးခြင်းများလုပ်ဆောင်ရန်
- စီမံကိန်းတည်ဆောက်ရေးကာလများတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်အား ပြီးစီးအောင် ဆောင်ရွက်ရန်နှင့် သဘာဝဓါတ်ငွေ့သုံ့ဓါတ်အားပေးစက်ရုံ၏ ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် လုံခြုံရေးတိုင်းတာမှုများကို ပြင်ဆင်ဆောင်ရွက်မှုအတွက် EPC ကန်ထရိုက်တာ၏ အမည်စာရင်း တင်သွင်းရန်
- စီမံကိန်းလည်ပတ်ရေးကာလတွင် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် လုံခြုံရေးစီမံခန့်ခွဲမှုများသည် ဆိပ်ကမ်းစီမံကိန်းလည်ပတ်ရေး၊ သဘာဝဓါတ်ငွေ့ဂိတ်၊ ပိုက်လိုင်း နှင့် သဘာဝဓါတ်ငွေ့ ဓါတ်အားပေးစက်ရုံ၏ အဓိက အခန်းကဏ္ဍဖြစ်သည်။
- လုံလောက်သော ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားကာကွယ်မှု စွမ်းဆောင်ရည်များကိုဖော်ပြရန်
- ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် လုံခြုံရေးစီမံခန့်ခွဲခြင်းတွင် ပတ်ဝန်းကျင်လူထု၏ ပါဝင်မှုကို အားပေးရန်
- ပတ်ဝန်းကျင်ကျန်းမာရေးစနစ် စီမံခန့်ခွဲခြင်း၏ သတင်းအချက်အလက်များထိန်းသိမ်းရန်နှင့် ပူးပေါင်းဆောင်ရွက်မှုနှင့် အာဏာပိုင်အဖွဲ့အစည်းများအား တင်ပြရန် ပတ်ဝန်းကျင် ကျန်းမာရေးစနစ် စီမံခန့်ခွဲခြင်းဆောင်ရွက်မှုစာတမ်းပြင်ဆင်ရန်
- စီမံကိန်းတာဝန်ရှိသူများသည် စီမံကိန်းတည်ဆောက်ဆဲကာလမှ စတင်၍ ပတ်ဝန်းကျင် ကျန်းမာရေးစနစ် စီမံခန့်ခွဲခြင်းစနစ်ကို အကောင်အထည်ဖော်ရန်တို့ဖြစ်ပါသည်။

၁.၂.၂ မြန်မာနိုင်ငံ၏ မူဝါဒများ နှင့် ဥပဒေ မူဘောင်များ အပေါ် လေ့လာသုံးသပ်ချက်

ဤစီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော မူဝါဒနှင့် ဥပဒေဖွဲ့စည်းမှုများကို အပိုင်း (၄) ပိုင်း ခွဲခြားနိုင်ပါသည်။ အပိုင်းတစ်ခုစီ၏ အခြေအနေကို အောက်တွင် အကျဉ်းချုပ် ဖော်ပြထားရှိပါသည်။ ၎င်းတို့မှာ -

(၁) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အခြေခံတည်ဆောက်ခြင်း

(၂) သဘာဝ ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်နှင့် သဘာဝ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း လိုအပ်ချက်များ

(၃) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စံချိန်စံနှုန်းများ၊ဥပဒေ နှင့် လူမှုစီမံခန့်ခွဲခြင်းဆိုင်ရာ လိုအပ်ချက် များ

(၄) စီမံကိန်းတည်နေရာ နှင့် သီးခြားသက်ဆိုင်သော ဥပဒေများ

(၁) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အခြေခံတည်ဆောက်ခြင်း

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း တရားဥပဒေ အတိုင်းဖြစ်သော အခြေခံမူမှာ ၂၀၀၈ ဖွဲ့စည်းပုံ အခြေခံဥပဒေ၏ အခန်း ၃၇၊၄၂ နှင့် ၃၉၀ ကို ထောက်ခံအားပေးသော အမျိုးသား သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာမူဝါဒ (၁၉၉၄) ဖြစ်သည်။ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒကို သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ထိန်းသိမ်းခြင်း စည်းမျဉ်းများ အကောင်အထည်ဖော်ဆောင်ရန်အသေးစိတ် ရေးဆွဲထားသော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ထိန်းသိမ်းခြင်း ဥပဒေ (၂၀၁၂) ဟူ၍ ရေးဆွဲထားရှိပါသည်။ တရားဥပဒေ နှင့် အညီဖြစ်သာ စာတမ်းနှစ်ခုသည် တိုင်းပြည်၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း ဥပဒေဖွဲ့စည်း မှုအပေါ် သဘောပေါက်စေသည်။

(၂) သဘာဝ ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်နှင့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း လိုအပ်ချက်များ

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ထိန်းသိမ်းခြင်းဥပဒေတွင်ပါဝင်သော ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွား ထိခိုက်သက်ရောက်မှုလျှော့ချရေးနည်းလမ်းများ၏ အဓိကသော့ချက် ၃ခုမှာ - သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လမ်းညွှန်ချက် (၂၀၁၄)နှင့် အမျိုးသား သဘာဝပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅) တို့ဖြစ်ပါသည်။

(၃) သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စံချိန်စံနှုန်းများ၊ဥပဒေ နှင့် လူမှုစီမံခန့်ခွဲခြင်းဆိုင်ရာလိုအပ်ချက်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားထိခိုက်သက်ရောက်မှုစမ်းစစ်ခြင်းစာတမ်း၏ တရားဝင် လိုအပ်ချက်များကို စီမံကိန်းတည်ဆောက်ရေး ပြင်ဆင်မှုကာလ၊ တည်ဆောက်ဆဲကာလ၊ လည်ပတ်ရေးကာလနှင့် လုပ်ငန်းပိတ်သိမ်းခြင်းကာလများတွင် လိုက်နာရမည်ဖြစ်ပါသည်။ ၎င်းတို့မှာ - (၁) ပတ်ဝန်းကျင် အရည်အသွေးစံညွှန်း (လေထုအရည်အသွေး၊ ဆူညံမှု) နှင့် သက်ဆိုင်သော

ဥပဒေများ၊ (၂) ပတ်ဝန်းကျင်အလုပ်ခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ (၃) အတင်းအဓမ္မ ပြန်လည်နေရာ ချထားခြင်း၊ (၄) ယဉ်ကျေးမှုထိခိုက်ခြင်း (၅) ရှေးဟောင်းအဆောက်အဦးများ ကာကွယ်ထိန်းသိမ်းခြင်း၊ (၆) စက်ရုံများ၊ (၇) လူမှုဘေးကင်းလုံခြုံရေး၊ (၈) ဂေဟာစနစ်အရင်းအမြစ်များဖြစ်သော သစ်တော၊ သက်ရှိ သတ္တဝါများနှင့် သဘာဝနေရာများ၊ (၉) ကမ်းရိုးတန်းနှင့် ရေသယံဇာတ ပတ်ဝန်းကျင်တို့ဖြစ်ပါသည်။

(၄) စီမံကိန်းတည်နေရာ နှင့် သီးခြားသက်ဆိုင်သော ဥပဒေများ

ထားဝယ်အထူးစီးပွားရေးဇုန်၏ လုပ်ငန်းဆောင်ရွက်ရေးနှင့် ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် မြန်မာအထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၄)နှင့် ထားဝယ်အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၁)တို့ကို ပြဌာန်းထားသည်။ ထိုဥပဒေများသည် ထားဝယ်အထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွား ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် အဓိကအခန်းကဏ္ဍမှပါဝင်သည်။

၁.၂.၃ အပြည်ပြည်ဆိုင်ရာလုပ်ထုံးလုပ်နည်းများ ၊ အစဉ်အလာနှင့်သဘောတူညီချက်များ

သဘာဝပတ်ဝန်းကျင်နှင့် ပတ်သက်ဆက်နွယ်သော အပြည်ပြည်ဆိုင်ရာလုပ်ထုံးလုပ်နည်းများ၊ အစဉ်အလာ နှင့် သဘောတူညီချက်များစွာကို မြန်မာနိုင်ငံမှသဘောတူညီစွာ လက်မှတ်ရေးထိုး ပြီးစီးခဲ့ပါသည်။ အချို့သော သဘောတူညီချက်များမှာ

- အရှေ့တောင်အာရှနှင့် ပစိဖိတ်ဒေသ သစ်ပင်ထိန်းသိမ်းစောင့်ရှောက်ရေး သဘောတူညီမှု၊ ရောမ (၁၉၅၆)
- ရာသီဥတုပြောင်းလဲမှုအမျိုးသားလုံးသဘောတူညီမှု၊ နယူးယောက်ခ် (၁၉၉၂)၊ UMFCCC
- ဇီဝမျိုးတုံးမှုသဘောတူညီမှု၊ ရီယိုဒီဂျနေးဒိုး (၁၉၉၂)
- ကမ္ဘာ့ယဉ်ကျေးမှုနှင့် သဘာဝအမွေအနှစ် သဘောတူညီမှု၊ ပဲရစ် (၁၉၇၂)
- သဘာဝနှင့် သဘာဝသယံဇာတကာကွယ်ရေး အာဆီယံသဘောတူညီမှု၊ ကွာလာလမ်ပူ (၁၉၈၅)
- ဇီဝလုံခြုံမှု ကယ်တာဂျီနား ပရိုတိုကော၊ ကယ်တာဂျီးနား (၂၀၀၀)
- ရာသီဥတုပြောင်းလဲမှု ကျိုတို ပရိုတိုကော၊ ကျိုတို (၁၉၉၇)
- နိုင်ငံတကာရေကြောင်းအဖွဲ့အစည်း သဘောတူညီမှု၊ (၁၉၄၈)၊ MARPOL ၇၃/၇၈၊ ၁၉၇၈
- ပင်လယ်ပြင်ဆိုင်ရာ အမျိုးသားသဘောတူညီမှု ဥပဒေ (၁၉၈၂)

၁.၂.၄ မြန်မာနိုင်ငံတော်အစိုးရအဖွဲ့၏ မူဘောင်များ

ဤစီမံကိန်းအတွက်ဆောင်ရွက်သည့် EIA လုပ်ငန်းစဉ်အား ECD ဗဟိုမှ တိုင်းဒေသကြီးအဆင့်၊ ခရိုင်အဆင့်နှင့်မြို့နယ်အဆင့်ရှိ သက်ဆိုင်ရာအုပ်ချုပ်ရေး အာဏာပိုင်များနှင့်ပူးပေါင်းပြီး စီမံခန့်ခွဲ သွားမည်ဖြစ်သည်။

စီမံကိန်းအကောင်အထည်ဖေါ်နေစဉ်ကာလအတွင်း ထားဝယ်အထူး စီးပွားရေးဇုံ စီမံခန့်ခွဲမှု ကော်မီတီနှင့် SWB အနေဖြင့် အစိုးရနှင့် ရင်းနှီးမြှုပ်နှံသူဘက်မှ တင်ပြလာသော ပြဿနာ အခက်အခဲများကို တာဝန်ခံ ညှိနှိုင်းဖြေရှင်းသွားမည်ဖြစ်သည်။

၁.၂.၅ အပြည်ပြည်ဆိုင်ရာမူဝါဒလမ်းညွှန်မှုနှင့် စံနှုန်းများ

ယခုဖော်ပြပါ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုစီးပွားထိခိုက်သက်ရောက်မှုလေ့လာဆန်းစစ်ချက်၏ သက်ဆိုင်ရာ အပြည်ပြည်ဆိုင်ရာမူဝါဒ၊ လမ်းညွှန်မှုနှင့် စံနှုန်းများမှာ ကမ္ဘာ့ ကျန်းမာရေးအဖွဲ့အစည်း (WHO)၊ ယူအက်စ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး အေဂျင်စီ (EPA)၊ ကမာဘဏ်နှင့် အပြည်ပြည်ဆိုင်ရာ ငွေကြေးကော်ပိုရေးရှင်း (IFC)တို့မှလမ်းညွှန်မှုစံနှုန်းများဖြင့် ရည်ညွှန်းထားခြင်းဖြစ်သည်။

(၁) IFC

IFC ၏သတ်မှတ်ထားသောစွမ်းဆောင်ချက် စံနှုန်းများကို အသုံးပြုသူများသည် သတ်မှတ် ထားသောစံနှုန်းများဖြစ်သော သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုစီးပွားထိခိုက်မှုအကဲဖြတ်စီမံမှုများ၊ အလုပ်သမားနှင့် အလုပ်ခွင်အနေအထား၊ သယံဇာတရရှိမှုနှင့် ညစ်ညမ်းမှုကာကွယ်ခြင်း၊ ရပ်ရွာ ကျန်းမာရေး၊ လုံခြုံရေးနှင့် ဘေးကင်းရေး၊ မြေယာသိမ်းဆည်းခြင်းနှင့် စေတနာ အလျောက်မဟုတ်သော ရွှေ့ပြောင်းနေရာချထားခြင်း၊ ဇီဝမျိုးကွဲများထိန်းသိမ်းစောင့်ရှောက်ရေးနှင့် သဘာဝသယံဇာတများ ရေရှည်တည်တံ့စေရန် စီမံခန့်ခွဲခြင်း၊ တိုင်းရင်းသားလူမျိုးများနှင့် ယဉ်ကျေးမှုအမွေအနှစ်များစသည့် စံနှုန်းများကို လိုက်နာကျင့်သုံးကြသည်။ IFC၏ သဘာဝပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် အထွေထွေဘေးကင်းလုံခြုံမှု စံနှုန်းများနှင့် လမ်းညွှန်မှုများကို ၂၀၀၇ခုနှစ်တွင်လည်းကောင်း၊ အပူစွမ်းအင်သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံ၏ သဘာဝပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် အထွေထွေ ဘေးကင်းလုံခြုံမှုကို ၂၀၀၈ခုနှစ်တွင်လည်းကောင်း အသီးသီးဖော်ပြထားခဲ့ပြီးဖြစ်သည်။

(၂) ကမ္ဘာ့ဘဏ်၏ သန့်စင်သောထုတ်လုပ်မှုများအပေါ်ဦးတည်၍ ညစ်ညမ်းမှုကာကွယ်ရေးနှင့် လျော့နည်းစေရေး လက်စွဲစာအုပ် (၁၉၉၈)

ကမ္ဘာ့ဘဏ်၏ ညစ်ညမ်းမှုကာကွယ်ရေးနှင့် လျော့နည်းစေရေး လက်စွဲစာအုပ် (PPAH) သည် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းစီမံမှုများဖြစ်သော စက်ရုံညစ်ညမ်းမှုထိန်းသိမ်းရေး၊ စွန့်ထုတ်မှု ထောက်ခံချက်နှင့် ပတ်ဝန်းကျင် စံညွှန်းများအတွက် ပြီးပြည့်စုံသောလမ်းညွှန်မှုစာတမ်းဖြစ်သည်။ ထိုစာတမ်းတွင် အဓိကအားဖြင့် အပူစွမ်းအင်သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံသစ် တည်ဆောက်ခြင်း နှင့်လက်ရှိ အပူစွမ်းအင်သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံကို သင့်တော်သောနည်းလမ်းဖြင့် ပြန်လည် မွမ်းမံခြင်း တို့ပါဝင်သည်။

၁.၂.၆ စီမံကိန်းနှင့် သက်ဆိုင်သော လမ်းညွှန်ချက်နှင့် စံနှုန်းများ

စီမံကိန်းတည်ဆောက်ရေးနှင့် လည်ပတ်ရေး၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာထိန်းသိမ်းမှုများကို မြန်မာနိုင်ငံ (သို့မဟုတ်) အပြည်ပြည်ဆိုင်ရာ၏ သင့်တော်သော သဘာဝပတ်ဝန်းကျင် လမ်းညွှန်မှုနှင့် စံနှုန်းများဖြင့် ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။ မြန်မာနိုင်ငံ၏ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းမှုဆိုင်ရာ လမ်းညွှန်မှု၊ စံနှုန်းများ မရှိသည့်အခြေအနေတွင် အပြည်ပြည်ဆိုင်ရာ၏ သင့်တော်သော လမ်းညွှန်မှု စံနှုန်းများကို လက်ခံကျင့်သုံးသွားမည်ဖြစ်ပါသည်။ထို့အပြင် စီမံကိန်း၏ ခေါင်းတိုင်မှ ဓါတ်ငွေ့ထုတ်လွှတ်မှုအတွက် ဖော်ပြပါ စံညွှန်းများမှာ အထူးသဖြင့် စီမံကိန်းအတွက် အကြမ်းဖျင်း ခွင့်ပြုခြင်း သဘောတူညီမှု ရရှိပြီးဖြစ်သည်။

၁.၃ စီမံကိန်းဖော်ပြချက်နှင့် အခြားသောရွေးချယ်နည်းလမ်းများ

၁.၃.၁ စီမံကိန်းဖော်ပြချက်နှင့် အခြားသောနည်းလမ်းဖော်ပြချက်များ

(၁) စီမံကိန်းဖော်ပြချက်

စီမံကိန်းအရွယ်အစား

အဆိုပြုလျှပ်စစ်ဓာတ်အားပေးစီမံကိန်းကို ဧရိယာအကျယ်အဝန်း (၃၄ဧက) ရှိသော မြေပြင်တွင် တည်ဆောက်မည်ဖြစ်ပြီး သဘာဝဓာတ်ငွေ့ရည်ပိုက်လိုင်းများနှင့် ဆက်စပ်လျက်ထားဝယ်အထူးစီးပွား ရေးဇုန်၏ စက်မှုဇုန်အတွင်းတွင်တည်ဆောက်မည်ဖြစ်သည်။ ၎င်းနေရာသည် ဒီရေရောက်တော ကျဲပါးစွာပေါက်ရောက်သည့်ကမ်းခြေဖြစ်သည်အားလျော်စွာမြေပြန့်ပြူး၍ ပင်လယ်ရေမျက်နှာပြင်အထက် ပျမ်းမျှအားဖြင့် (၁) မီတာအမြင့်လောက်တွင် ဖြစ်သည်။ စီမံကိန်းတည်နေရာ ၏ (၅) ကီလိုမီတာ ဝန်းကျင်တွင် ရွာ သုံးရွာတည်ရှိသည်။ ငပိတက်ရွာသည်ရေလုပ်ငန်းဖြင့် အသက်မွေးသောရွာဖြစ် ၍ ကျန်ရွာနှစ်ရွာဖြစ်သော ညောင်ပင်ဆိပ်နှင့် မုဒူးတို့မှာ ကုန်းတွင်းပိုင်းဖြစ်၍ ဒီရေရောက်ချောင်း၏ ဆန့်ကျင် ဘက်အရပ်တွင်ရှိသည်။

အခြေခံအဆောက်အအုံများ

စီမံကိန်းတည်ဆောက်မှုတွင် သဘာဝဓါတ်ငွေ့သုံးအင်ဂျင်နှင့် ဓါတ်အားပေးစက်ရုံ၏ ဂျင်နရေတာ တို့ပါဝင်သည်။ အခြားသောအဆောက်အအုံများမှာ အင်ဂျင်ခန်းမ၊ လျှပ်စစ်ပစ္စည်းများ ထားရှိသော အဆောက်အအုံ၊ သိုလှောင်ရုံ နှင့် ထိန်းချုပ်ရေးနေရာ၊ ထောက်ပံ့ရေးပစ္စည်းများဖြစ်သော ဝက်ရှော့နှင့် အလုပ်ပြင်ရုံ၊ အုပ်ချုပ်ရေး အဆောက်အအုံ၊ လုံခြုံရေးတဲ တို့ပါဝင်သည်။ ဤထောက်ပံ့ရေးပစ္စည်းများသည် သဘာဝဓါတ်ငွေ့ရည်ပိုက်လိုင်း စီမံကိန်းနှင့် အတူခွဲဝေသုံးစွဲသွားမည် ဖြစ်ပါသည်။

အကောင်အထည်ဖော်ခြင်း အစီအစဉ်

စီမံကိန်းတည်ဆောက်ခြင်းအစီအစဉ်ကို ယေဘူယျအားဖြင့် ၂၀၁၇ခုနှစ်နောက်ပိုင်းကာလများတွင် စတင်မည်ဖြစ်ပြီး အကြမ်းဖျင်း ၁၅လကြာမြင့်ကာ ၂၀၁၈ခုနှစ်နောက်ပိုင်းကာလတွင် အပြီးသတ်နိုင်မည်ဟု သတ်မှတ်ထားသည်။

စီမံကိန်းကာလ

(က) တည်ဆောက်ရေးလုပ်ငန်းများ

အမြင့်ဆုံးအားဖြင့် တည်ဆောက်ရေးလုပ်ငန်းအတွက် လူဦးရေ (၅၀)ခန့် လိုအပ်ပါသည်။ စက်ယန္တယားပိုင်း နှင့် လျှပ်စစ်ပိုင်းလုပ်သားများမှာမူ (၁၇) ဦးနှင့် ကြီးကြပ်သူ(၂) ဦးခန့် လိုအပ်သည်။

(ခ) လျှပ်စစ်ဓါတ်အားအရင်းအမြစ်

တည်ဆောက်ရေးကာလ၏ လျှပ်စစ်ဓါတ်အားလိုအပ်မှုကို ထားဝယ်ဓါတ်အားပေးကုမ္ပဏီ လီမိတက်၏ အစီအစဉ်ဖြင့် ယာယီလျှပ်စစ်ဓါတ်အားပေးစက်ရုံမှ ထောက်ပံ့ပေးသွားမည် ဖြစ်ပါသည်။

(ဂ) ရေလိုအပ်မှု (ပမာဏနှင့် ရေအရင်းအမြစ်)

တည်ဆောက်ရေးကာလတွင် ဆောက်လုပ်ရေးလုပ်ငန်းများအတွက် ၁၀၀ ကျူဗစ်မီတာထက် မပိုသောရေ အသုံးပြုမှုကို ထားဝယ်အထူးစီပွားရေးဇုန်ရှိ အီတာလီယံထိုင်း ဆောက်လုပ်ရေးအဖွဲ့မှ ထောက်ပံ့ ပေးသွားမည် ဖြစ်ပါသည်။

(ဃ) တည်ဆောက်ရေးအသုံးအဆောင် ပစ္စည်း အမျိုးအစားများနှင့် အရေအတွက်

စီမံကိန်း၏ တည်ဆောက်ရေးပစ္စည်းများသည် ဓါတ်အားပေးခန်းအပါအဝင် အဆင်သင့် တပ်ဆင်ရန် အနေအထားဖြင့်တင်သွင်းလာမည်ဖြစ်ပါသည်။ ကျန်တည်ဆောက်ရေး အသုံးအဆောင်များမှာ ကုန်းလမ်းပို့ဆောင်ရေး ပစ္စည်းများ(ကုန်တင်ကား၊ ကရိန်)နှင့် ဂဟေဆက်ပစည်းများတို့ဖြစ်ပါသည်။

(င) တည်ဆောက်ရေးနှင့် သိုလှောင်ရုံ ပစည်းအမျိုးအစားများနှင့် အရင်းအမြစ်များ

တည်ဆောက်ရေးလုပ်ငန်းများအားလုံးကို အီတာလီယံ ထိုင်းကုမ္ပဏီ တည်ဆောက်ရေး အင်ဂျင်နီယာအဖွဲ့မှ တာဝန်ယူဆောက်လုပ်မည်ဖြစ်သောကြောင့် အီတာလီယံထိုင်း ကုမ္ပဏီစီမံကိန်း တည်ရှိရာနေရာတွင်ပင် တည်ဆောက်ရေးပစ္စည်းများကို သိမ်းဆည်းမည်ဖြစ်သည်။ စက်မှုနှင့် လျှပ်စစ်ပိုင်းဆိုင်ရာပစ္စည်း ကိရိယာများကိုမူ လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်မည့်အလုပ်သမားများ ထားရှိရာ နေရာတွင် ပင်သိမ်းဆည်း ထားရှိရပါမည်။

(စ) တည်ဆောက်ရေးဝန်ထမ်းများ စခန်းနေရာ

တည်ဆောက်ရေးဝန်ထမ်းများ၏ စခန်းနေရာသည် ဓါတ်အားပေးစက်ရုံတည်ဆောက်ရေးနေရာနှင့် နီးကပ်သောနေရာတွင်တည်ရှိသည့် ယာယီစခန်းနေရာဖြစ်သည်။

စီမံကိန်းလည်ပတ်ခြင်းကာလ

လျှပ်စစ်ဓါတ်အားပေးစက်ရုံ စီမံကိန်းလည်ပတ်ရာတွင် ပုံမှန်တာဝန်ထမ်းဆောင်ရန် ဝန်ထမ်း (၈)ဦး လိုအပ်ပါသည်။

(က) ၃လတစ်ကြိမ် ထိန်းသိမ်းရေးလုပ်ငန်းစဉ်

ထိန်းသိမ်းရေးလုပ်ငန်းများကို အောက်တွင်ဖော်ပြထားပါသည်။

ဖော်ပြချက်	လုပ်ဆောင်ချက်များ
အင်ဂျင်ဘလော့တုံး၊ စလင်ဒါလိုင်နာ	စစ်ဆေးခြင်း
လက်ကိုင်၊ လုံးတံ၊ ပင်စတင်	စစ်ဆေးခြင်း
စလင်ဒါခေါင်းပါသောဗာ့ဒ်	-
ဗာ့ဒ်စက် နှင့် ဝင်ရိုး	စစ်ဆေးခြင်း
တာဘိုချာဂျင်၊ လေအေးလမ်းကြောင်း၊ အညစ်အကြေးဂိတ်	စစ်ဆေးခြင်း / ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း
မီးကူးခြင်းစနစ်	အစားထိုးခြင်း/သန့်ရှင်းရေး/ညှိနှိုင်းခြင်း/ဆီထည့်ခြင်း/ချိန်ခြင်း
လောင်စာဆီစနစ်	စစ်ဆေးခြင်း / ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း/ အစားထိုးခြင်း
ချောဆီစနစ်	စစ်ဆေးခြင်း / ပြုပြင်တပ်ဆင်ခြင်း / ထိန်းသိမ်းခြင်း / အစားထိုးခြင်း / သန့်ရှင်းရေး / ညှိနှိုင်းခြင်း / ဆီထည့်ခြင်း/ချိန်ခြင်း
ရေအေးစနစ်	စစ်ဆေးခြင်း
အိတ်ဇောစနစ်	စစ်ဆေးခြင်း
အော်တိုမတ်ရှင်းနှင့် WECS 800 နှင့် UNIC	စစ်ဆေးခြင်း
အင်ဂျင်နှင့် ပြုပြင်မှု	-

မှတ်ချက်: ပြုပြင်ထိန်းသိမ်းခြင်းလုပ်ငန်းဆောင်တာများ၏ ကြာချိန်သည် ၁ရက်မှ ၄ ရက် အထိ ပြုပြင်ထိန်းသိမ်းမှုအမျိုးအစားများအပေါ်မူတည် ၍ကွဲပြားနိုင်ပါသည်။

(ခ) နှစ်တစ်ကြိမ် ထိန်းသိမ်းရေးလုပ်ငန်းစဉ်

ထိန်းသိမ်းရေးလုပ်ငန်းများကို အောက်တွင်ဖော်ပြထားပါသည်။

ဖော်ပြချက်	လုပ်ဆောင်ချက်များ
အင်ဂျင်ဘလော့တုံး၊ စလင်ဒါလိုင်နာ	စစ်ဆေးခြင်း/သန့်ရှင်းရေး/ညှိနိုင်းခြင်း/ဆီထည့်ခြင်း/ချိန်ခြင်း/ ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း
လက်ကိုင်၊ လုံးတံ၊ ပင်စတင်	စစ်ဆေးခြင်း/သန့်ရှင်းရေး/ညှိနိုင်းခြင်း/ဆီထည့်ခြင်း/ချိန်ခြင်း/ အစားထိုးခြင်း
စလင်ဒါခေါင်းပါသောဗာ့ဒ်	ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း / အစားထိုးခြင်း -
ဗာ့ဒ်စက် နှင့် ဝင်ရိုး	စစ်ဆေးခြင်း/ အစားထိုးခြင်း
တာဘိုချာဂျင်၊ လေအေးလမ်းကြောင်း၊ အညစ်အကြေးဂိတ်	စစ်ဆေးခြင်း / ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း/ အစားထိုးခြင်း
မီးကူးခြင်းစနစ်	အစားထိုးခြင်း/ သန့်ရှင်းရေး/ညှိနိုင်းခြင်း/ဆီထည့်ခြင်း/ချိန်ခြင်း
လောင်စာဆီစနစ်	စစ်ဆေးခြင်း / ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း/ အစားထိုးခြင်း
ချောဆီစနစ်	စစ်ဆေးခြင်း/ပြုပြင်တပ်ဆင်ခြင်း/ထိန်းသိမ်းခြင်း/အစားထိုးခြင်း/ သန့်ရှင်းရေး/ညှိနိုင်းခြင်း/ဆီထည့်ခြင်း/ချိန်ခြင်း
ရေအေးစနစ်	စစ်ဆေးခြင်း
အိတ်ဇောစနစ်	စစ်ဆေးခြင်း
အော်တိုမတ်ရှင်းနှင့် WECS 800 နှင့် UNIC	စစ်ဆေးခြင်း
အင်ဂျင်နှင့် ပြုပြင်မှု	စစ်ဆေးခြင်း -

မှတ်ချက်: ပြုပြင်ထိန်းသိမ်းခြင်းလုပ်ငန်းဆောင်တာများ၏ ကြာချိန်သည် ၇ရက်မှ ၈ ရက် အထိကြာမြင့်နိုင်ပါသည်။

(ဂ) စက်ရုံလည်ပတ်စဉ် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းမှုစီမံကွပ်ကဲခြင်း

စီမံကိန်းတည်ဆောက်ပုံစံတွင်အောက်ပါ အဆောက်အအုံ နှင့် ပံ့ပိုးမှုအစိတ်အပိုင်းများကို စက်ရုံ လည်ပတ်စဉ် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းမှု စီမံကွပ်ကဲခြင်းအတွက် ထည့်သွင်းရေးဆွဲရမည်။

- ထုတ်လွှတ်ခြင်းစနစ်: Wartsila အင်ဂျင်၏ ဓါတ်ငွေ့ထုတ်လွှတ်မှုဇယားကို အောက်တွင် ဖော်ပြထားသည်။

ဆာလဖာအောက်ဆိုဒ်	၂၀ ပီပီအမ်ထက် နည်းသည်
နိုက်ထရိုဂျင်အောက်ဆိုဒ်	O_2: ၇% ရှိချိန်တွင် ၁၂၀ ပီပီအမ်ထက်နည်းသည်
အမှုန်	၆၀ မီလီဂရမ်/မီတာကျူ.

အရင်းအမြစ်: WARTSILA, ၂၀၁၅

- စီမံကိန်း၏ ဆူညံမှုထိန်းချုပ်မှုတွင်: ၁မီတာအတွင်း

  အင်ဂျင် ဆူညံမှု ~ ၁၁၅ ဒက်စီဘယ် (အေ)

  ဓါတ်အားပေးစက်ရုံအတွင်း ဆူညံမှု ~ ၁၁၀ ဒက်စီဘယ် (အေ)

  ပြင်ပ : သာမာန်အခြေအနေသည် ပေ ၆၀၀ အထက်တွင် ၆၅ ဒက်စီဘယ် (အေ)ရှိသည်။

- ရေဆိုး : ရေဆိုးစွန့်စနစ် (စွန့်ပစ်ဆီ ၃၀၀၀ လီတာ) နှင့် အအေးခံရေ ၂၅၀၀ လီတာ ပမာဏ (၂၀၀၀ နာရီ) အတွက် သင့်လျော်သောစီမံခန့်ခွဲမှုရှိရမည်။

စီမံကိန်းတည်ဆောက်ပုံစံတွင် လုပ်ငန်းခွင်လုံခြုံရေးနှင့် ကျန်းမာရေး (OHS) ကို လိုအပ်ချက် ဖြည့်တင်းမှုအဖြစ် ထည့်သွင်းရမည်။

(၂) စီမံကိန်း အခြားသောရွေးချယ်နည်းလမ်းများဖော်ပြချက်

စီမံကိန်းတွင် BOG စနစ်သုံးလျှပ်စစ်ဓါတ်အားထုတ်လုပ်ရေးကို ရွေးချယ်အသုံးပြုရခြင်းမှာ သိသာထင်ရှားသော အကြောင်းအရင်းများစွာရှိပါသည်။ ပတ်ဝန်းကျင်ထဲသို့ အကျိုးမဲ့ လွှတ်ထုတ်လောင်ကျွမ်းပြစ်ရန်မလိုပဲ အကြွင်းအကျန်အနေဖြင့် ထုတ်လွှတ်လိုက်သော သဘာဝ ဓါတ်ငွေ့များကို အသုံးပြုကာလျှပ်စစ်ဓါတ်အား ထုတ်လုပ်ခြင်းဖြင့် လောင်စာကို အကျိုးရှိစွာ ပြောင်းလဲအသုံးချခြင်းဖြစ်သည်။ စီမံကိန်း၏အစီအစဉ် သဘောသဘာဝကိုလေ့လာစဉ်းစားရာတွင် လျှပ်စစ်ဓါတ်အားသုံးလည်ပတ်စက် များတွင် (၁) သဘာဝဓါတ်ငွေ့သုံးတာဘိုင်စက်နှင့် (၂) အပြန်အလှန်လည်ပတ်အင်ဂျင်စက် တို့ဖြစ်ကြပါသည်။

လျှပ်စစ်စွမ်းအင်ထုတ်လုပ်ရေးတွင် ထိုအင်ဂျင်စက်၂ခု၏ အားသာချက်၊ အားနည်းချက်များကို အောက်တွင်ဖော်ပြထားပါသည်။

(က) သဘာဝဓါတ်ငွေ့သုံးတာဘိုင်စက်

အားသာချက်များ

- ထိန်းသိမ်းမှုကြာရှည်ခံခြင်း
- ဓါတ်ငွေ့ထုတ်လွှတ်မှုနှုန်းနဲခြင်း
- တန်ဖိုးနည်းခြင်း (မြင်းကောင်ရေအသုံးပြုမှု မြင့်မားခြင်း)

အားနည်းချက်များ

- စက်သုံးဆီအသုံးပြုနှုန်းမြင့်မားခြင်း
- ထိန်းသိမ်မှုစရိတ်မြင့်မားခြင်း
- ဝန်လျော့ချမှုလျော့နည်းခြင်း
- တစ်ပတ်လည်စတင်ခြင်းနှင့် ရပ်ဆိုင်းခြင်းအတွက် အချိန်ယူခြင်း
- အမြင့်နှင့် ပတ်ဝန်းကျင်အပူချိန်သည် အင်ဂျင်၏စွမ်းအင်နှင့် အပူနှုန်းကို လျှင်မြန်စွာ ထိခိုက်စေနိုင်ခြင်း

(ခ) အပြန်အလှန်လည်ပတ်အင်ဂျင်စက်

အားသာချက်များ

- စက်သုံးဆီအသုံးပြုမှုနည်းခြင်း (စွမ်းဆောင်ရည်မြင့်မား)
- လုပ်ငန်းလည်ပတ်ခြင်း (အမျိုးမျိုးသောဝန်နှင့် ဖိအားအချိုး)
- လူသိများသော နည်းပညာရှိခြင်း

အားနည်းချက်များ

- နိုက်ထရိုဂျင်အောက်ဆိုဒ်ထုတ်လွှတ်မှုမြင့်မားခြင်း
- ထိန်းသိမ်းမှုစားရိတ်မြင့်၍အချိန်ကြာခြင်း
- ရှုပ်ထွေးခြင်း
- ဖိအားနိမ့်လျှင် ကွန်ပရက်စာ၏စွမ်းဆောင်မှုလျော့နည်းခြင်း

အထက်ဖော်ပြပါ နှိုင်းယှဉ်ချက်များသည် အောက်ဖော်ပြပါ အချက်အလက်များအပေါ်မူတည်၍ ဖော်ပြထားခြင်း ဖြစ်သည်။

- ❖ အင်ဂျင်စက်၂ခု၏ ကုန်ကျစရိတ် အားသာချက်များနှိုင်းယှဉ်ခြင်းမှ မြင်းကောင်ရေနာရီ ထုတ်လုပ်ခြင်းတွင် အပြန်အလှန်လည်ပတ်အင်ဂျင်စက် (စွမ်းဆောင်ရည် ၄၄.၃% နှင့် ၁.၇ မီလီယံဒေါ်လာ)သည် သဘာဝဓါတ်ငွေ့တာဘိုင်စက် (စွမ်းဆောင်ရည် ၃၂% နှင့် ၁.၉ မီလီယံဒေါ်လာ) ထက်ပို၍ စွမ်းဆောင်ရည်မြင့်မားသည်။
- ❖ နိုက်ထရိုဂျင်အောက်ဆိုဒ်နှင့် တိုတယ်ဟိုက်ဒရိုကာဗွန်ထုတ်လုပ်မှုတွင် သဘာဝဓါတ်ငွေ့ တာဘိုင်စက်သည် အပြန်အလှန်လည်ပတ်အင်ဂျင်စက်ထက်ပို၍ ထုတ်လုပ်မှုနည်းသည်။ သို့သော် အပြန်အလှန်လည်ပတ်အင်ဂျင်စက်သည် ကာဗွန်မိုနောက်ဆိုဒ်ထုတ်လုပ်မှုနည်းသည်။
- ❖ ဝန်ထမ်းဆောင်ခြင်းနှင့် စက်ရပ်နားချိန်၊ စက်စတင်ချိန်လျော့နည်းခြင်းတို့ကြောင့် သဘာဝဓါတ်ငွေ့ အင်ဂျင်စက်သည် သဘာဝဓါတ်ငွေ့တာဘိုင်စက်ထက်ပို၍ အသုံးပြုရန် သင့်တော်ပါသည်။

၁.၄ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားအခြေအနေဖော်ပြချက်

၁.၄.၁ လေ့လာမှုနောက်ခံနှင့် အကန့်အသတ်များ

လေ့လာမှုဧရိယာအကျယ်အဝန်းမှာ ၅ကီလိုမီတာအချင်းရှိသော စီမံကိန်းဧရိယာဖြစ်သည်။ ထိုဧရိယာသည် လောင်လုံနှင့် ရေဖြူမြို့နယ်အတွင်းတည်ရှိပြီး ကျေးရွာသုံးရွာပါဝင်သည်။ ပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှုလေ့လာဆန်းစစ်ချက် လုပ်ငန်းစဉ်များအရစီမံကိန်း ကန့်သတ်ချက် များမှာ ရုပ်ပိုင်းဆိုင်ရာ အစိတ်အပိုင်း ၊ သက်ရှိဇီဝများ၊ ယဉ်ကျေးမှုနှင့် လူမှုစီးပွားအစိတ်အပိုင်းနှင့် စက္ကူအာရုံ အစိတ်အပိုင်း များပါဝင်ပါသည်။

၁.၄.၂ ရုပ်ပိုင်းဆိုင်ရာအစိတ်အပိုင်းများ

စီမံကိန်းဧရိယာ၏ ရုပ်ပိုင်းဆိုင်ရာထင်ရှားသော ပတ်ဝန်းကျင်အနေအထားများမှာ အောက်ပါအတိုင်း ဖြစ်သည်။

- စီမံကိန်းဧရိယာသည် တနင်္သာရီတိုင်းဒေသကြီး၏ ကမ်းခြေဖြစ်သည့်အားလျော်စွာ မြေပြန့်ပြူး၍ ပင်လယ်ရေမျက်နှာပြင်အထက် ပျမ်းမျှအားဖြင့် (၁)မီတာအမြင့်တွင်တည်ရှိသည်။ စီမံကိန်း၏ အနောက်ဘက်တွင် ကျွန်းငယ်များစွာရှိပြီး အနီးဆုံးကမ်းလွန်မှာ ၂၅ ကီလိုမီတာတွင်တည်ရှိသည်။
- တိုင်းတာမှု ၃နေရာ (ငပိတက်၊ မူဒူးနှင့် ဆိပ်ကမ်းငယ်နေရာ)တွင် ပတ်ဝန်းကျင် လေထုအနေအထား (TSP, PM-10, SO_2 and NO_2) များမှာ ကမ္ဘာ့ဘဏ်မှ သတ်မှတ်ထားသော လေထုစံနှုန်းများနှင့် ကိုက်ညီသည်။
- တိုင်းတာမှု ၃နေရာ (ငပိတက်၊ မူဒူးနှင့် ဆိပ်ကမ်းငယ်နေရာ)တွင် တိုင်းတာသော အသံဝန်းကျင် အနေအထားနှင့် အသံတုန်ခါနှုန်းတို့မှာ ကမာဘဏ်မှ သတ်မှတ်ထားသော စံနှုန်းများနှင့် ကိုက်ညီသည်။
- ရေနမူနာရယူရာကမ်းရိုးတန်းနေရာ လေးခုစလုံး၏ သန့်ရှင်းမှုမှာ အောက်စီဂျင်ပါဝင်မှု မြင့်မားရုံမျှမက အခြားသတ္တုနှင့် သက်ရှိညစ်ညမ်းမှုပါဝင်မှုနည်းပါးပါသည်။
- ကုန်းတွင်းမြေအောက်ရေရယူရာ ရေတွင်းနစ်တွင်းမှာလည်း သန့်ရှင်း၍ သောက်သုံးရေအဖြစ် အသုံး ပြုနိုင်သော ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့၏စံချိန်အားဖြင့်ပြည့်မှီပါသည်။
- ပင်လယ်တွင်းအနည်အနှစ်နမူနာသဲကြမ်းများတွင်လည်း သက်ရှိညစ်ညမ်းမှုနှင့် သတ္တုများပါဝင်မှု နည်း၍ ညစ်ညမ်းမှုမရှိ သော NOAA's လိုအပ်ချက်နှင့် ကိုက်ညီသည်။

၁.၄.၃ သက်ရှိအစိတ်အပိုင်းပါဝင်မှုများ

စီမံကိန်းဧရိယာတွင်တွေ့ရှိရသော ကုန်းတွင်းသယံဇာတများနှင့် ရေအောက်ဂေဟစနစ်၏ အဓိက အချက်အလက်များမှာ အောက်တွင်ဖော်ပြထားပါသည်။

- စီမံကိန်းလေ့လာနေရာတွင် မည်သည့်သစ်တောမျှရှိမနေသော်လည်း ယခင်ကသစ်တော ကိုခုတ်ထွင် ရှင်းလင်း ထားသဖြင့် ယခုလက်ရှိအခြေအနေတွင် ဒီရေရောက်တော၊ ပင်လယ်ကမ်းနီး ခြုံနွယ်ပင်များ ရောနှောလျှက် ရွက်ပြတ်တော သစ်ပင်များ ပေါက်ရောက်လျှက်ရှိပါသည်။
- စီမံကိန်းလေ့လာနေရာအတွင်းတွင် အနည်းဆုံးသစ်ပင်မျိုးစိတ်ပေါင်း ၁၄၅ မျိုးခွဲခြား သတ်မှတ်နိုင် ပါသည်။ မျိုးစိတ်အနည်းစုမှာ ပျောက်ကွယ်ရန်စိုးရိမ်ရ၍ ထိခိုက်နစ်နာလွယ်ကူသော အခြေအနေ တွင်ရှိသည်။ မျိုးစိတ်ပေါင်း ၉၀ ဝန်းကျင်များမှ တောရိုင်းသစ်ပင်များအဖြစ် ကွင်းဆင်းလေ့လာ မှတ်တမ်းတင်၍ ခွဲခြား သတ်မှတ် ထားရှိသည်။
- ပင်လယ်တွင်းဂေဟစနစ်မှာလည်း ကောင်းမွန်သော အခြေအနေအဖြစ် ဖော်ပြထားရှိနိုင်ပြီး ပင်လယ်တွင်းရှိ အပင်ငယ်များ၊ သတ္တဝါငယ်များနှင့် ငါးမျိုးများ၏သိပ်သည်းမှုနှင့် မျိုးကွဲများစွာ ရှိနေပါသည်။ ငါးဖမ်းလုပ်ငန်းများမှာလည်း အတိုင်း အတာပမာဏအားဖြင့် နည်းပါး၍ အပြင်းအထန်လုပ်ကိုင်ခြင်းမရှိပါ။ ကမ်းရိုးတန်းတလျှောက်တွင် ငါးမျိုး စိတ်ပေါင်း များစွာနှင့် ရေနေသတ္တဝါများဖြစ်ကြသော ပုဇွန်၊ ဂဏန်းများစွာ ပေါကြွယ်လျှက်ရှိပါသည်။ အများဆုံး

တွေ့ရှိနိုင်သော ငါးမျိုးစိတ်များမှာ ပလာတူးငါးမျိုးများ အဝါရောင် အပြောက်ရှိ ကျောက်ငါးများ ဖြစ်ကြပါသည်။

၁.၄.၄ လူမှုစီးပွားအစိတ်အပိုင်း

စီမံကိန်းလေ့လာရွာသုံးရွာဖြစ်သည့် လောင်းလုံမြို့နယ်အတွင်းရှိ ငပိတက်ရွာနှင့်ညောင်ပင်ဆိပ်ရွာ၊ ရေဖြူမြို့နယ်ရှိ မုဒူးကျေးရွာများ၏လူမှုစီးပွားအခြေအနေများ၏လေ့လာတွေ့ရှိမှုအကျဉ်းချုပ်များမှာ အောက်ပါအတိုင်း ဖြစ်ပါသည်။

- စီမံကိန်းလေ့လာနေရာ၏ လူဦးရေစုစုပေါင်းမှာ- ၃၉၃၅ ရှိ၍ အိမ်ထောင်စု ၉၃၉ ရှိသဖြင့် တစ်အိမ်ထောင် တွင်ပျမ်းမျှ လူဦးရေ (၄) ဦး မှ (၅) ဦးခန့်ရှိပြီး အမျိုးသမီး အမျိုးသားအချိုးမှာ ၁.၀၂ အချိုး ၁ ဖြစ်ပါသည်။
- သို့ဖြစ်၍ အမျိုးသမီး၊ အမျိုးသားဦးရေမှာ တူညီလုနီးပါးရှိပြီး ၄င်းတို့၏ ဆောင်ရွက်မှု အခန်း ကဏ္ဍများမှာ လည်း တစ်ဦးနှင့်တစ်ဦးပံ့ပိုးကူညီမှုရှိကြပါသည်။
- ရွာသုံးရွာစလုံးတွင် ဆိုးရွားသော ကျန်းမာရေးအခြေအနေမရှိပါ။ ဆေးရုံမှာမူ ရေဖြူနှင့် မောင်းမကန်ရွာ တွင်သာ ရှိပြီး ၄င်းရွာများမှာ ၄ ကီလိုမီတာမှ ၁၇ ကီလိုမီတာအကွာအဝေးတွင် တည်ရှိသည်။
- ကမ်းရိုးတန်းရွာများဖြစ်သည့်အားလျော်စွာ ငါးဖမ်းခြင်း၊ ကမ်းစပ်ရေတိမ်ရှိသတ္တဝါများ ဖမ်းယူ ရောင်းချခြင်းသည်စိုက်ပျိုးရေးလုပ်ငန်းအတွက် အထောက်အပံ့ပေးသော စီးပွားရေး ဖြစ်ကြပါသည်။ ဥယျာဉ်ခြံစိုက်ခြင်းကို အဓိကအားဖြင့် မုဒူးကျေးရွာတွင် လုပ်ကိုင်ပါသည်။ ၄င်းကျေးရွာသည် ကွင်းဆင်းလေ့လာသော ရွာ၃ရွာတွင် ပင်လယ်နှင့် အဝေးဆုံးတွင်တည်ရှိသည်။
- အိမ်ထောင်စုတစ်ခု၏နှစ်စဉ်ပျမ်းမျှဝင်ငွေမှာ ၅၀၀၀ အမေရိကန်ဒေါ်လာနှင့်ညီမျှပြီး အသုံးစရိတ်မှာ အမေရိကန်ဒေါ်လာ ၄၀၀၀ နှင့် ညီမျှပါသည်။
- အလုပ်လက်မဲ့ဦးရေ ရှားပါးပါသည်။ ကျေးရွာသူ/သားများသည် ကိုယ်ပိုင် ငါးဖမ်းနှင့် စိုက်ပျိုးခြင်းကို လုပ်ကိုင် ကြပါသည်။
- ကျေးရွာသူ/သား အများစုမှာ မူလတန်းအဆင့် ပညာရေးကို တက်မြောက်ကြပါသည်။
- ထိခိုက်နစ်နာလွယ်ကူသူစာရင်းတွင် ထည့်သွင်းစဉ်းစားခံရမည့်ဦးရေမှာ နည်းပါးလှပါသည်။ လူမှုတည် ဆောက်ဖွဲ့စည်းပုံအရ သက်ကြီးရွယ်အို၊ ထိခိုက်နစ်နာလွယ်ကူသူများကို ၄င်းတို့၏ မိသားစုဝင်များ ဆွေမျိုးသားချင်းနှင့် အိမ်နီးချင်းက ဝိုင်းဝန်းစောင့်ရှောက်ကြပါသည်။
- စီမံကိန်းလေ့လာဧရိယာမှာ ၂၁၃၉၉.၅၄ ဧက ဖြစ်သည်။ ပင်လယ်ရေမျက်နှာပြင်မှာ ၄၆.၃၅% ဖြစ်သည်။ လေ့လာနေရာ၏ ကုန်းတွင်းပိုင်းဖြစ်သောရွာများနှင့် စိုက်ပျိုးမြေများမှာ စီမံကိန်း ဧရိယာ၏ ၂၃.၉၁% ဖြစ်ပြီး ခုတ်ထွင် ရှင်းလင်းပြီး ဖြစ်သော သစ်တောမြေ ၂၁% နီးပါးနှင့် ကျန်ရှိနေသည့်အခြားသော အသုံးချမှုများနှင့် ရေနှောမြေမှာ ၉% နီးပါးဖြစ်သည်။

၁.၄.၅ ယဉ်ကျေးမှုဆိုင်ရာ အစိတ်အပိုင်းများ

- လူအများစုမှာ ထားဝယ်ဒေသရှိ ဗမာလူမျိုးများဖြစ်ကြပြီး ထေရဝါဒဗုဒ္ဓ ဘာသာ ကိုးကွယ် ယုံကြည်ကြသူများဖြစ်ကြသည်။ ဒေသန္တရထားဝယ်စကားကို ပြောကြသည်။
- ကျေးရွာတိုင်းတွင် ဘုန်းကြီးကျောင်းများ စေတီပုထိုးများ နှင့် သင်္ချိုင်းရှိသည်။ အရေးကြီးတန်ဖိုး ထားသော သမိုင်းဝင်နေရာသည် နဘုလည် ဒေသတဝိုက်တွင်တည်ရှိသည်။
- အသက်မွေးမှုအတွက် ပင်လယ် ကမ်းရိုးတန်းနေ ရွာသားများ အဓိကမှီခိုအားထားရသည့် ပင်လယ်နှင့် ဒီရေရောက်တောမှ သဘာဝအရင်းအမြစ်များသာဖြစ်သည်။ ငပိတက်ရွာသား များသည်ဒီရောက်တောမှ ထွက်ကုန်များကိုအသုံးပြု၍ပြင်ကြီးချောင်းသည် ၄င်းတို့၏ ငါးဖမ်းလှေ များအတွက် လေပြင်းမုန်တိုင်း အကာအရံသဖွယ်ဖြစ်သည်။ မုဒူးရွာသားများသည် ကုန်းတွင်းပိုင်း သယံဇာတများကို မှီခိုနေသည်။
- ရပ်ကျေးလူထုများသည် ၄င်းတို့၏ဖွဲ့စည်းထားသော ကျေးရွာ အုပ်ချုပ်မှုအဖွဲ့အစည်းများ၊ လူမှုခေါင်းဆောင်များ၊ ရပ်ရွာအကြီးအကဲများကိုရှိသေမှုရှိကြသည်။ လူငယ်အဖွဲ့နှင့် အရံမီးသတ် တပ်ဖွဲ့များ မှာ ရပ်ရွာအကျိုးအတွက် တက်ကြွစွာပါဝင်ဆောင်ရွက်ကြသူများဖြစ်သည်။ အဓိက ရပ်ကျေး အခြေပြုအဖွဲ့မှာ ထားဝယ်ဖွံ့ဖြိုး တိုးတက်ရေးအဖွဲ့အစည်း (DDA) ဖြစ်သည်။

၁.၄.၆ စက္ခုပသာဒ အစိတ်အပိုင်းများ

စီမံကိန်းလေ့လာနေရာသည် ကမ်းရိုးတန်း နှင့် တောင်တန်းများနောက်ခံရှိသည့် ရှည်လျားလှသော ကမ်းစပ်တစ်ခု ကဲ့သို့ဖြစ်သည်။ မျက်စိပသာဒဖြစ်လှသောရှု့ခင်းမရှိလှပါ။ နဘုလည် နှင့် မောင်းမကန် ကမ်းခြေတို့မှာ သာယာလှပသည့် ကမ်းခြေအဖြစ် ခရီးသွားများအားဆွဲဆောင်လျက်ရှိသော အလားအလာ ကောင်းမွန်သည့် နေရာများဖြစ်သည်။ သို့သော် ၄င်းနေရာ များမှာ စီမံကိန်းနေရာနှင့် (၇)ကီလိုမီတာနှင့် (၁၂) ကီလိုမီတာ ဝေးကွာကြပါသည်။

၁.၅ သဘာဝပတ်ဝန်းကျင်အဓိကထိခိုက်သက်ရောက်မှုများနှင့် လျော့ချသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင် အဓိကထိခိုက်သက်ရောက်စေခြင်းတွင် စီမံကိန်းတည်ဆောက်ဆဲကာလအတွင်း ထိခိုက်နစ်နာမှုများကို ဇယား ၁.၅.၁ တွင်ဖော်ပြထားပြီး စီမံကိန်းလည်ပတ်ကာလအတွင်း ထိခိုက် နစ်နာမှုများကို ဇယား ၁.၅.၂ တွင် ဖော်ပြထားပါသည်။

ဇယား ၁.၅.၁

စီမံကိန်းတည်ဆောက်မှုပြင်ဆင်ဆဲကာလအတွင်းဖြစ်ပေါ်လာသော ထိခိုက်သတ်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဂေဟာစနစ်	သဘာဝဓါတ်ငွေ့သုံး ဓါတ်အားပေးစက်ရုံ၏ မြေနေရာ ရှင်းလင်းခြင်းနှင့် ပြင်ဆင်ခြင်းတို့ကြောင့် စိမ့်မြေ၊ ဒီရေတောများ၊ ကမ်းရိုးတန်းသစ်တောများ၊ ငါးနှင့် အခြားရေနေသတ္တဝါများ ဆုံးရှုံးပျောက်ကွယ်သွားရခြင်း	• စီမံကိန်းရှင်းလင်းခြင်း မစတင်မီ စီမံကိန်းမြေနေရာရှိ သစ်ပင်ပန်းမန်များ၏ မျိုးစိတ်များအား စစ်တမ်းကောက်ယူရန်နှင့် မျိုးသုဉ်းပျောက်ကွယ်ရန် အန္တရာယ်ရှိသည့် မျိုးစိတ်များကို တွေ့ရှိခဲ့ပါက ကာကွယ်ရေးစိမ့်မြေနှင့် ဒီရေတောဧရိယာအတွင်းသို့ ပြောင်းရွှေ့ထိန်းသိမ်းရန် • အာဏာပိုင်အဖွဲ့အစည်းများဖြစ်သော သယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ သစ်တောဦးစီးဌာနနှင့် ဒေသဆိုင်ရာ လူထုများနှင့် တွေ့ဆုံဆွေးနွေးပြီး ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပတွင် ဒီရေတောများပြန်လည်ပျိုးထောင်ရန် အစီအစဉ်များဆွေးနွေးရန်၊ ထိုအစီအစဉ်၏ ရည်ရွယ်ချက်မှာ စီမံကိန်းဧရိယာကြောင့် ပျက်စီးဆုံးရှုံးခဲ့သော ဒီရေတောများအစားထိုး အကောင်အထည်ဖော်ရန်ဖြစ်သည်။ • စီမံကိန်းဧရိယာ ပတ်လည်တွင် စိမ်းလန်းသောကြားခံဇုန်ကို အကောင်အထည်ဖော်ရန် • သစ်ပင်ခုတ်ခြင်းကို ရှောင်ရှားပြီး စီမံကိန်း၏ သက်ဆိုင်ရာ မန်နေဂျာ၏ခွင့်ပြုချက်မရလျှင်ခုတ်ခွင့်မရှိဟူ၍ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
အသက်မွေးဝမ်းကြောင်းမှု	စီမံကိန်းနေရာအနီးရှိ ငပိတက်ရွာမှ ဘာတနီချောင်းအတွင်း ငါးဖမ်းခြင်းနှင့် အခြားအရင်းအမြစ်များထိခိုက်ဆုံးရှုံးမှုနှင့် စီမံကိန်းနေရာရှိ ဒီရေတောများဆုံးရှုံးမှုရှိပါသည်။	• ပန်ဒအင်မြစ်အတွင်းရှိ ချိဦးခေါင်နေရာတွင် ငါးဖမ်းခြင်းနှင့် အခြားအသက်မွေးဝမ်းကြောင်းအလုပ်များလုပ်ကိုင်ရန်နှင့် ငါးဖမ်းသင်္ဘောများ ဆိုက်ကပ်ရန်နေရာအသစ်အနေဖြင့် အကောင်အထည်ဖော်ပေးရန် • စီမံကိန်းတာဝန်ရှိသူများသည် အသက်မွေးဝမ်းကြောင်းပြန်လည်တည်ထောင်မှု အစီအစဉ်များကို အစီအစဉ်များရေးဆွဲပြီး အကောင်အထည်ဖော်ရန်လုပ်ဆောင်ရမည်
ပျံ့လွင့်ဖုန်မှုန့်၊ ဆူညံမှုနှင့် ခါတ်ငွေ့ထုတ်လွှတ်မှုများ	စီမံကိန်းတည်ဆောက်မှုပြင်ဆင်ဆဲလုပ်ငန်းများ (လုပ်ငန်းသုံးစက်ကြီးများ - ဘူဒိုဇာ၊ မြေတူးစက်၊ မြေညှိစက်)ကြောင့် ငပိတက်ရွာတွင်ထိခိုက်မှုများဖြစ်ပေါ်လာနိုင်ပါသည်။	**ပျံ့လွင့်ဖုန်မှုန့်များလျော့ချခြင်း** • ရေဖြန်းပေးခြင်းဖြင့် ၇၅%သောဖုန်မှုန့်များ လျော့ချနိုင်ပါသည်။ **ဆူညံမှုများလျော့ချခြင်း** • ဆူညံမှုများထွက်ပေါ်သောနေရာတွင်လုပ်ကိုင်နေသော ဝန်ထမ်းများအား နားစိုများထောက်ပံ့ပေးရန်တို့ဖြစ်ပါသည်။

ဇယား ၁.၅.၂

စီမံကိန်းတည်ဆောက်ဆဲကာလအတွင်းဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဓါတ်ငွေ့ထုတ်လွှတ်မှု	စီမံကိန်းလုပ်ငန်းခွင်ကြိုတင်ပြင်ဆင်မှုများ၊ လုပ်ငန်းခွင်သုံးကုန်တင်ယာဉ်များ သုံးစွဲမှုနှင့် ကြီးမားသော ဆောက်လုပ်ရေးလုပ်ငန်းသုံးကိရိယာများ သုံးစွဲမှုတို့ကြောင့် လေထုအတွင်းဖုန်မှုန့်များဖြစ်ပေါ်လာကာ လေထုညစ်ညမ်းမှုများပြားလာစေပါသည်။	**စီမံကိန်းအတွင်း ဓါတ်ငွေ့ထုတ်လွှတ်မှုကို လျော့နည်းသက်သာစေရန်အစီအစဉ်များ** • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံး ကုန်တင်ယာဉ်များ လုပ်ငန်းခွင်သို့ဝင်ရောက်ရန် တန်းစီကြရာတွင် စက်နှိုးထားခြင်းကိုတားမြစ်ခြင်း • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးစက်ပစ္စည်းများ၏ပဂတိအရည်အသွေးအတိုင်းထိန်းသိမ်းစောင့်ရှောက်ခြင်း • စက်ပစ္စည်းသုံးစွဲသူ ဝန်ထမ်းများအား ထိုစက်ပစ္စည်းများ၏ သင့်တော်သော အသုံးပြုပုံကို လေ့ကျင့်ပေးခြင်း • စီမံကိန်းရှိပစ္စည်းများကို သင်တော်သော အရွယ်အစားသုံးရန် • နောက်ဆုံးပေါ်ဓါတ်ငွေ့ထုတ်လွှတ်မှု အနဲဆုံးနည်းပညာဖြင့် ထုတ်လုပ်ထားသော သင့်တော်သည့် အင်ဂျင်အသုံးပြုရန် (ပြန်လည်အားသွင်းအင်ဂျင်နှင့် လျှပ်စစ်ရထား) • စီမံကိန်းသုံးကိရိယာများကို လမ်းမပေါ်တွင်မောင်းနှင်ရသည့်အင်ဂျင်တပ်ထားသည့်ကုန်တင်ကားဖြင့်သယ်ဆောင်ရန် (လမ်းမပေါ်တွင်မောင်းနှင့်၍မရသည့်အင်ဂျင်စက်ထုတ်လွှင့်မှုနည်းသည်)

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
		• ဆောက်လုပ်ရေးဝန်ထမ်းများအတွက် ကားကြိုများ၊ ပို့ဆောင်ရေးယာဉ်များ၊ စက်ဘီးပါကင်များကို ထားရှိဆောက်လုပ်ပေးရန် • ဆောက်လုပ်ရေးလုပ်ငန်းသုံးယာဉ်များ၊ စက်ရုံကိရိယာများကို ဒီဇယ်မော်တာများအသုံးပြုပြီး ၎င်းတို့တွင် ဓါတ်ငွေ့ထုတ်လွှတ်မှုတိုင်းတာထိန်းချုပ်မှုကို တပ်ဆင်ထားပြီး ထုတ်လုပ်သူ၏လမ်းညွှန်မှုအတိုင်း ပုံမှန်ထိန်းသိမ်းသွားရန်တို့ဖြစ်ပါသည်။
ဆူညံမှုအသံကဏ္ဍ	စီမံကိန်းဆောက်လုပ်ရေးအတွင်း ဆူညံမှုနှုန်းထားမြင့်မားသော အချင်းအရာမှာ လုပ်ငန်းခွင်သုံးမြေညှိစက်ကြီးများနှင့် ကုန်တင်ယာဉ်များကြောင့်ဖြစ်ပါသည်။	• စီမံကိန်း၏ ဆူညံမှုကိုဖြစ်ပေါ်စေသော အဓိက ဆောက်လုပ်ရေးလုပ်ငန်းများကိုနေ့အချိန်တွင်သာပြုလုပ်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်များကို တစ်နာရီ ၄၀ကီလိုမီတာထက်မပိုစေရန် • ဆောက်လုပ်ရေးလုပ်ငန်းသုံးစက်ပစ္စည်းများ၏ ဆူညံမှုဖြစ်ပေါ်နှုန်းကို ရှင်းလင်းစွာဖော်ပြရန် • ရွှေ့ပြောင်းမရသောအသုံးအဆောင်ပစ္စည်းများ၏ ပတ်ဝန်းကျင်တွင်အသံတားဆီးနိုင်သည့်ယာယီတံတိုင်းများတပ်ဆင်ရန် • ဆူညံမှုထုတ်လွှတ်မှုအတိုင်းအတာများကို ပုံမှန်တိုင်းတာနေရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ရေဆိုးကဏ္ဍ	ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ရှိ ရေဆိုးထုတ်လွှတ်ခြင်းကဏ္ဍတွင် • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် နေထိုင်သောဆောက်လုပ်ရေးဝန်ထမ်း ၇၀၈၏နေ့စဉ်လူသုံးရေဆိုးထုတ်လွှတ်ခြင်း • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်ဘီးများဆေးကြောခြင်းနှင့် ကွန်ဂရစ်ဆေးကြောခြင်း • ဆေးကြောရေကြောင့် မြေမျက်နှာပြင်တွင် ရေစီးကြောင်းဖြစ်ပေါ်ခြင်း	**လူသုံးရေဆိုး** • မီးဖိုချောင်နှင့် ကန်တင်းများမှ စွန့်ထုတ်လိုက်သော အဆီပါဝင်သည့်ရေဆိုးများကို သိုလှောင်ကန်သို့မရောက်ခင် ဖယ်ရှားရန် • ၅ရက်တစ်ကြိမ် သန့်စင်ခန်းမှအညစ်အကြေးများကို မိလ္လာကန် (မိလ္လာကန်များ) အတွင်းသို့စွန့်ပြစ်ရန် • သန့်စင်ခန်းမှ အညစ်အကြေးရေဆိုးများကို ဓါတ်တိုးနည်းဖြင့် တည်ဆောက်ထားသောသိုလှောင်ကန်အတွင်းသို့ ၇ရက်တစ်ကြိမ်စွန့်ပြစ်ရန် **ဆေးကြောရေဆိုး** • ကွန်ဂရစ်ဆေးကြောရေနှင့် ဆောက်လုပ်ရေးသုံးယာဉ်ဘီးများဆေးကြောပြီးသော ရေဆိုးများကို ဘိလပ်မြေအနယ်စစ်ခြင်းဘေဇင်သို့ စွန့်ထုတ်ရန် • စွန့်ထုတ်ရေဆိုးများကို pHညှိရန် (လိုအပ်ပါက) နှင့် ပြန်လည်အသုံးပြုရန် • ကျန်ရှိသော စွန့်ထုတ်ရေဆိုးများကို သိုလှောင်ကန်အတွင်းသို့ပို့ရန် **မြေမျက်နှာပြင်တွင်ရေစီးကြောင်းဖြစ်ပေါ်ခြင်း** • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ပြင်ဆင်ခြင်း၊ မြေပြင်ရှင်းလင်းခြင်းနှင့် မြေပြင်ညှိ/ဖြည့်ခြင်းတို့ကို ခြောက်သွေ့ရာသီတွင်ပြုလုပ်ရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
		• ခါတ်အားပေးစက်ရုံတည်ဆောက်ရေးမြေနေရာကို ယာယီခြံစည်းရိုးများကာရံခြင်းဖြင့် မိုးရာသီတွင် လုပ်ငန်းခွင်သုံးဆေးကြောရေများ ပင်လယ်အတွင်းစီးဝင်မှုလျော့ချပေးရန် • ဆောက်လုပ်ရေးလုပ်ငန်းသုံး ဆေးကြောရေများကြောင့်ဖြစ်ပေါ်လာသော မြေမျက်နှာပြင်တွင် ရေစီးကြောင်းဖြစ်ပေါ်ခြင်းမှ ရေဆိုးများကိုတားဆီးရန် .ယာယီ ရေဆင်းလမ်းကြောင်းများ တည်ဆောက်ခြင်းအားဖြင့် ရေဆိုးများ ပင်လယ်အတွင်းသို့တိုက်ရိုက်စီးဝင်ခြင်းကို တားဆီးရန် • ပင်လယ်အတွင်းသို့မဟုတ် အနီးအနားရှိရေနုတ်မြောင်းအတွင်းသို့ သိုလှောင်ကန်ထဲမှရေများ မစွန့်ပြစ်မှီ စုဆောင်းထားသော မိုးရေများထည့်သွင်းခြင်းအားဖြင့် ပျံ့နှံ့အမှုန်များ ဖယ်ရှားရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဆောက်လုပ်ရေးအညစ်အကြေးကဏ္ဍ	စီမံကိန်း၏ဆောက်လုပ်ရေးကာလတွင်အောက်ဖော်ပြပါ အညစ်အကြေးများထုတ်လွှတ်မည်ဖြစ်သည်။ • မြေပြင်ရှင်းလင်းခြင်းမှ သစ်ပင်ပန်းပင်များ • မြေပြင်တူးဖော်ရေးလုပ်ငန်းများမှတူးဖော်မှုအပျက်အစီးများ (ကျောက်ခဲ၊ မြေကြီး) • ဆောက်လုပ်ရေးလုပ်ငန်းသုံးအမှိုက်များ (ဘိလပ်မြေ၊ သစ်သား၊ သတ္တုအပိုင်းအစများ) • အန္တရာယ်ရှိသော အညစ်အကြေး (လောင်စာတိုင်ကီများ၊ အသုံးပြုပြီးဆီစစ်ဇကာများ၊ ဘက်ထရီအဟောင်းများ၊ အသုံးပြုပြီးသားစက်ဆီများ၊ ဆီများ) • ဆောက်လုပ်ရေးဝန်းထမ်းများမှစွန့်ပြစ်သော လူသုံးကုန်စွန့်ပြစ်ပစ္စည်းများ (စားသောက်ကုန်စွန့်ပြစ်ပစ္စည်းများ၊ စာရွက်စာတမ်းများနှင့် ထုတ်ပိုးကုန်စွန့်ပြစ်ပစ္စည်းများ)	**အမှိုက်အမျိုးအစားခွဲခြားခြင်း** • ကန်ထရိုက်တာသည် အမှိုက်အမျိုးအစားခွဲခြင်းစနစ်ကို အကောင်အထည်ဖော်ကာ လုပ်ငန်းခွင်ရှိဝန်ထမ်းများအားလိုက်နာရန် ကြီးကြပ်ရန် • သင့်တော်သောဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် သင့်တော်သော အမှိုက်ကန်/ပုံး အရေအတွက်များ ထားရှိပေးရန် • အမှိုက်သိမ်းဆည်းခြင်းနှင့် ထိန်းသိမ်းခြင်း • အမှိုက်အမျိုးအစားအပေါ်မူတည်၍နေ့စဉ်အမှိုက်သိမ်းဆည်းခြင်းနှင့် ပို့ဆောင်ခြင်းကိုဆောင်ရွက်ရန် • အန္တရာယ်ရှိသော အညစ်အကြေးထိန်းသိမ်းခြင်းဧရိယာသည် အထူးဖန်တီးထားပြီး ထိုအညစ်အကြေးများမြေပြင်အတွင်းသို့စိမ့်ဝင်ခြင်းမရှိစေရန် **စွန့်ပြစ်ပစ္စည်းများအားပြန်လည်အသုံးပြုခြင်း** • လုပ်ငန်းခွင်မှဆောက်လုပ်ရေးအတွက်တူးဖော်ရရှိသောမြေများကို လိုအပ်သောနေရာတွင်ပြန်လည်မြေဖို့ခြင်း • ပေါင်းပင်မြက်ပင်များကင်းမဲ့နေသော မြေဆီအပေါ်လွှာကိုသိမ်းထားကာလိုအပ်သောနေရာတွင်လိုအပ်ပါကပြန်လည်အသုံးပြုရန် • ထုပ်ပိုးခွံအဟောင်းများ (ဥပမာ - သစ်သားအောက်ခံပြားများ) ကိုစုဆောင်းကာ ကုန်ပစ္စည်းသွင်းသူထံပြန်လည်ပို့ဆောင်ရန် • ပြန်လည်အသုံးပြုပစ္စည်းများကို ဒီဇိုင်းကန့်သတ်ထားသော ကွန်ဂရစ်၊ လမ်းမအောက်ခြေ၊ ကတရာစေးနှင့်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
		အခြားသောဆောက်လုပ်ရေးသုံးပစည်းများတွင် ပြန်လည်အသုံးပြုရန် • အသုံးပြုပြီးစက်ဆီများကို လိုင်စင်ရကန်ထရိုက်တာမှ ပြန်လည်စုဆောင်းသိမ်းဆည်းရန် **ပြန်လည်အသုံးပြု၍မရသော ကျန်ရှိသည့်စွန့်ပြစ်ပစ္စည်းများ** • ဆောက်လုပ်ရေးစွန့်ပစည်းများ စီမံရေးလုပ်ငန်းသည် အကျိုးရှိစွာနှင့် ပြီးမြောက်အောင်မြင်စွာလုပ်ကိုင်ရန် • ဆောက်လုပ်ရေးစွန့်ပစ္စည်းများအားစုပုံစွန့်ပြစ်ခြင်းအား တားဆီးရန် • ဆောက်လုပ်ရေး မဟုတ်သောစွန့်ပြစ်ပစည်းများကိုဆောက်လုပ်ရေး စွန့်ပြစ်ပစည်းများနှင့် အတူစွန့်ပြစ်ရန် • လုံလောက်သောပမာဏရှိသည့် အဖုံးအကာပါဝင်သောအမှိုက်ပုံး/ကန်များကိုထားရှိပေးပြီး နေ့စဉ်သိမ်းဆည်းပေးရန် • အန္တရာယ်ရှိသောစွန့်ပြစ်ပစ္စည်းများစီမံခန့်ခွဲမှုတွင်အမှိုက် အမျိုးအစားသတ်မှတ်ခြင်း၊ ခွဲခြားခြင်း၊ လိုက်လံ သိမ်းဆည်းကောက်ခံခြင်း၊ ပို့ဆောင်ခြင်းနှင့် စွန့်ပြစ်ခြင်း စသည့်နည်းစနစ်များကိုလိုက်နာဆောင်ရွက်ရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ကုန်းလမ်းသွားလာရေးကဏ္ဍ	အီတာလီယံထိုင်းကုမ္ပဏီစီမံကိန်း၏ ကမ်းရိုးတန်းလမ်းမကြီးနှင့် ငပိတက်လမ်းများတွင်ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးပစ္စည်းများနှင့် စက်ရုံသုံးပစ္စည်းများသယ်ယူပို့ဆောင်ရေးယာဉ်များ၊ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်မှစွန့်ပြစ်ပစ္စည်းများသယ်ယူပို့ဆောင်ရေးယာဉ်များ များပြားလာမည်ဖြစ်ပါသည်။	• ကုန်လမ်းပို့ဆောင်ရေးစီမံမှုလမ်းစဉ်အကောင်အထည်ဖော်ဆောင်ရေးနှင့် ဖွံ့ဖြိုးတိုးတက်ရေးအတွက်ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေး ထုတ်ဖော်ခြင်းများကို နိုင်ငံအဝန်း၊ ဒေသအဝန်းနှင့် သက်ဆိုင်ရာမြို့နယ်အဆင့်အလိုက်ဆောင်ရွက်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်များစီမံခန့်ခွဲမှုကို ၎င်းတို့၏ အစီအစဉ်ခွဲကဏ္ဍတွင်ထည့်သွင်းရေးဆွဲရန် • စက်ရုံသုံးပစ္စည်းကြီးများကိုသယ်ဆောင်သောကုန်တင်ယာဉ်ကြီးများသယ်ဆောင်ရာလမ်းတွင် ယာဉ်ထိန်းရဲ အကူအညီဖြင့် လမ်းကြောင်းရှင်းကာ သယ်ယူရန် • ဆောက်လုပ်ရေးလုပ်ငန်းများစတင်ရာတွင် ရပ်ရွာလူထုကိုရှင်းလင်းသော လမ်းညွှန်မှုဆိုင်းဘုတ်များဖြင့် လမ်းပြောင်းလဲသွားလာမှုကို ပြသခြင်းနှင့် အခြားသောယာဉ်အန္တရာယ် ကင်းရှင်းသောစီမံမှုများဆောင်ရွက်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင်ဝန်းထမ်းယာဉ်များရပ်နားရန် ယာဉ်ရပ်နားစခန်းဆောက်လုပ်ရန် • ဆောက်လုပ်ရေးအလုပ်ခွင်အနီးအနား၌လမ်းဖောက်လုပ်ရာတွင်ပလက်ဖောင်းနှင့် အနေးယာဉ်သွားလာရေးလမ်းများ ထည့်သွင်းဆောက်လုပ်ခြင်းဖြင့် သွားလာရေးအန္တရာယ်ကင်းရှင်းစေရေးဆောင်ရွက်ရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ကျေးရွာလူထုကဏ္ဍ	ရပ်ရွာလူထုစီးပွားရေးအခြေအနေ ဒေသထွက်ကုန်ဖြစ်သောအစားအသောက်နှင့် ကုန်ခြောက်ပစ္စည်းများရောင်းချခြင်းဖြင့်ရပ်ရွာလူထု၏စီးပွားရေးဝင်ငွေရရှိပါသည်။ စီမံကိန်းဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် ရပ်ရွာလူထုဝင်ရောက်အလုပ်လုပ်ခွင့်ရရှိပါသည်။	**ရပ်ရွာလူထုစီးပွားရေးအခြေအနေ** • ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူးကျေးရွာများမှ ကျေးရွာသူကျေးရွာသားများကို ပထမဦးစားပေးအနေဖြင့် စီမံကိန်းဆောက်လုပ်ရေးတွင်ဝင်ရောက်အလုပ်လုပ်ခွင့်ပေးရန် • ရပိုင်ခွင့်ဝင်ငွေများသည် အတွေ့အကြုံနှင့် အရည်အချင်းပေါ်မူတည်နေကြောင်းကို သိသာထင်ရှားစွာဖော်ပြရန် • စီမံကိန်းလုပ်ငန်းခွင်ရှိဝန်ထမ်းများကိုမြန်မာနိုင်ငံ၏အလုပ်သမားဥပဒေ၊ လူမှုပတ်ဝန်းကျင်လုံခြုံမှုဥပဒေ၊ ဝန်ထမ်းတစ်ဦး၏ရပိုင်ခွင့်နှုန်းထားနှင့် အခြားသက်ဆိုင်သောနည်းဥပဒေများဖြင့် ကာကွယ်ပေးသွားရန် • စီမံကိန်းတွင် ရပ်ရွာလူထုနှင့် ပတ်သတ်၍ ထိခိုက်မှုများ၊ လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် လုပ်ငန်းဆောင်တာများကိုပြောပြခြင်းအားဖြင့် ရပ်ရွာလူထုနှင့် ကောင်းမွန်သောဆက်ဆံမှုကိုတည်ဆောက်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်း၏ အဓိကလုပ်ငန်းဆောင်တာများမစခင်နှင့် ဆောက်လုပ်ဆဲကာလများတွင် သက်ဆိုင်သောသတင်းအချက်အလက်များကို ရပ်ရွာလူထုအားပေးရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
	အသက်မွေးဝမ်းကြောင်းမှု အသက်မွေးဝမ်းကြောင်းမှုအပေါ်အဓိကထိခိုက်မှုမှာ ငါးဖမ်းနေရာအသစ်နှင့် သင်္ဘောရပ်နားရာနေရာများတွင် ငါးဖမ်းခြင်းလုပ်ငန်းအပေါ်သက်ရောက်မှုရှိခြင်းဖြစ်သည်။ အစောပိုင်းအချိန်များတွင် ဒေသခံလူထုမှနေရာသစ်တွင် ငါးဖမ်းလုပ်ငန်းလုပ်ကိုင်ခြင်းကို ပိတ်ဆို့တားဆီးထားသည်။	• စီမံကိန်း တည်ဆောက်မှုပြင်ဆင်ဆဲကာလတွင် အသက်မွေးဝမ်းကြောင်းနှင့် ပတ်သတ်၍ ခိုင်မာသောအလုပ်အကိုင်နှင့် ပတ်သတ်သည့် ဗဟုသုတများရအောင် ကြိုးပမ်းရန် • အသစ်ပြောင်းလဲတည်ဆောက်ပေးထားသည့် ငါးဖမ်းဧရိယာနှင့် သင်္ဘောဆိပ်ကမ်းနှင့် ပတ်သတ်၍ ပြဿနာ၊ ထင်မြင်ချက် စသည့်သတင်းအချက်အလက်များကို စစ်တမ်းကောက်ယူရန် (ငပိတက်ရွာရှိ အိမ်ထောင်စုများ အားလုံးကောက်ခံရန်)
ပတ်ဝန်းကျင်လူထုကျန်းမာရေး၊ ဘေးအန္တရယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေးကဏ္ဍ	သင့်တော်သောစီမံမှုမရှိလျှင်ဆောက်လုပ်ရေးဝန်ထမ်းများ၌ ကျန်းမာရေးထိခိုက်မှုများဖြစ်သော ကူးစက်နိုင်သောအနာရောဂါများဖြစ်ပေါ်လာနိုင်ပါသည်။ ဥပမာ - လိင်မှတဆင့်ကူးစက်တတ်သော ရောဂါများ	**ကျန်းမာရေးအန္တရယ်** • စီမံကိန်းမှဝန်ထမ်းအားလုံးကို ကူးစက်စေနိုင်သောရောဂါကဲ့သို့ ကျန်းမာရေးစစ်ဆေးမှုများလုပ်ဆောင်ပြီးမှ ဝန်ထမ်းအဖြစ်ခန့်ထားရန် • နှစ်စဉ်ကျန်းမာရေးစစ်ဆေးမှုများပြုလုပ်ပေးရန် • ဝန်ထမ်းများအားကျန်းမာရေးစောင့်ရှောက်မှုသင်တန်းများ ဖြစ်သော တစ်ကိုယ်ရည်သန့်ရှင်းရေးနှင့် ကူးစက်ရောဂါများအကြောင်း သင်တန်းများပေးရန် **လုံခြုံမှုအန္တရယ်** • ဝန်ထမ်းများအားလုံးသည် ရပ်ရွာလုံခြုံရေးနှင့် အာဏာပိုင်များ၏ ပြစ်မှုမှတ်တမ်းကင်းရှင်းရန် • အီပီစီကန်ထရိုက်တာမှ မူးရစ်ဆေးဝါး တာဆီးပိတ်ပင်ခြင်း အပါအဝင်လိုအပ်သောစီမံကိန်းလုံခြုံမှုများကိုဆောင်ရွက်ရန်

ဇယား ၁.၅.၃

စီမံကိန်းလည်ပတ်ခြင်းကာလအတွင်းဖြစ်ပေါ်လာသော ထိခိုက်သတ်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
လေထုအရည်အသွေးကဏ္ဍ	မီးခိုခေါင်းတိုင်မှ ဓါတ်ငွေ့ထုတ်လွှတ်မှုအထူးသဖြင့် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ထုတ်လွှတ်မှုကြောင့်ကျေးရွာကို ထိခိုက်နိုင်ပါသည်။	• နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်ထုတ်လွှတ်မှုလျော့ကျစေရန် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်လောင်ကျွမ်းမှုလျော့နည်းစေခြင်းအားဖြင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှုစံနှုန်းနှင့် ကိုက်ညီရန် လုပ်ဆောင်ရမည်။ အခြားလျော့ချနည်းများဖြစ်သော SCR နည်းပညာကို မီးခိုးခေါင်းတိုင်တွင်တပ်ဆင်ရန်မလိုအပ်ပေ။
ရေဆိုးကဏ္ဍ	သဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံမှ ထွက်သောရေဆိုးအရင်းအမြစ်များမှာ • လူသုံးမိလ္လာရေဆိုး • စက်ရုံဆေးကြောရေဆိုး • မိုးရေ	• စက်ရုံဆေးကြောရေဆိုးများတွင် စက်ဆီများပါဝင်နိုင်ပြီး ထိုစက်ဆီများကို စက်ဆီဖယ်ရှားပြီးရေဆိုးများကို အခြားသောရေဆိုးများနှင့်ရောကာ အခြားသန့်စင်မှုပြုလုပ်ရန်ပို့ဆောင်ပေးရပါမည်။ • လူသုံးမိလ္လာရေဆိုးများကို အသေးစားသန့်စင်စက်ရုံဖြင့် သန့်စင်ကာ သန့်စင်ပြီးရေဆိုးများကို အခြားသော ရေဆိုးများနှင့် ရောကာ စွန့်ပြစ်ရပါမည်။ • မိုးရေနှင့် မြေပြင်ပေါ်ရှိရေများကို ရေနုတ်မြောင်းစနစ် အသုံးပြုခြင်းဖြင့် စုဆောင်းကာ စုဆောင်းကန် သို့မဟုတ် ပင်လယ်တွင်းသို့စွန့်ပြစ်ရန် ဖြစ်သည်။ • စက်သုံးဆီများ ပါဝင်နေသောမြေပြင်ပေါ်ရှိရေများကို သီးသန့် စုဆောင်းကာ စက်သုံးဆီဖယ်ရှားစနစ်ဖြင့် ဖယ်ရှားပြီးမှ ပင်မရေနုတ်မြောင်း အတွင်းသို့ စွန့်ပြစ်မည်ဖြစ်သည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
အညစ်အကြေးကဏ္ဍ	• စီမံကိန်းလည်ပတ်မှု ကာလတွင် ထိန်းသိမ်းရန် လိုအပ်သော အောက်ဖော်ပြပါ အညစ်အကြေးများထွက်ပေါ်မည်ဖြစ်ပါသည်။ • အင်ဂျင်စက်များပြုပြင်ထိန်းသိမ်းခြင်းမှ စက်ဆီချောဆီများစွန့်ထုတ်ခြင်း • လျှပ်စစ်ဓါတ်အားပေးစက်ရုံမှ စက်ဆီများနှင့် အအေးခံပစ္စည်းများ စွန့်ထုတ်ခြင်း	• စွန့်ပစ်ရည်အညစ်အကြေးများကို အမျိုးအစားခွဲခြားပြီး ထိုင်းနိုင်ငံသို့ ပို့ဆောင် ပေးရမည်ဖြစ်ပါသည်။ • ဓါတ်အားပေးစက်ရုံမှ အန္တရာယ်ဖြစ်စေသောစွန့်ပြစ်ရည်များတင်သွင်းခြင်း၊ စွန့်ထုတ်ခြင်းကိုတားဆီးရမည်၊ • လုံလောက်သော အဖုံးအကာပါသည့် အမှိုက်ပုံး/ကန်များကိုထားရှိရမည်။

ဇယား ၁.၅.၄

စီမံကိန်းပိတ်သိမ်းခြင်းကာလအတွင်းဖြစ်ပေါ်လာသော ထိခိုက်သတ်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
လေထုအရည်အသွေးကဏ္ဍ	ကုန်းပေါ်ရှိအဆောက်အအုံများဖြိုချခြင်းနှင့် မြေပြင်ပြန်လည်ပြုပြင်ခြင်းတို့မှ ဖုန်မှုန့်များထွက်ရှိပါမည်။	မကြာခဏရေဖြန်းခြင်းဖြင့် ဖုန်မှုန့်များပျံ့လွင့်မှု၏ ၇၅%ကို လျော့ချနိုင်ပါသည်။
ဆူညံမှုကဏ္ဍ	စီမံကိန်းသုံးစက်ကြီးများနှင့် ယာဉ်များအသုံးပြုမှုမှ ဆူညံမှုများပြားလာပါသည်။	• ဆူညံမှုများထွက်ပေါ်လာသောနေရာတွင်လုပ်ကိုင်နေသော ဝန်းထမ်းများအား နားစို့များထောက်ပံ့ပေးရန် • အဆောက်အအုံများဖြိုချခြင်နှင့် မြေပြင်ပြန်လည်ပြုပြင်ခြင်းများပြုလုပ်ရာတွင် အသံထွက်ပေါ်မှုကို ယာယီတားဆီးနိုင်သော အကာအကွယ်များကို တပ်ဆင်ခြင်းဖြင့် ငပိတက်ရွာသို့ ဆူညံမှုထိခိုက်ခြင်း လျော့နည်းစေရန်
အညစ်အကြေးစီမံခန့်ခွဲမှုကဏ္ဍ	• ဖြိုချခြင်းလုပ်ငန်းမှ အကြွင်းအကျန်ပစ္စည်းများ • အန္တရာယ်ရှိသော အညစ်အကြေးများ • စီမံကိန်း ဝန်းထမ်းများ၏ လူသုံးအညစ်အကြေးများ	• ကန်ထရိုက်တာမှ အမှိုက်အမျိုးအစားခွဲခြားနှင့် လုပ်ထုံးလုပ်နည်းများကို အကောင်အထည်ဖော်ဆောင်ရွက်ရန်နှင့် ဝန်ထမ်းများအားလုံး အမှိုက်အမျိုးအစားခွဲခြင်းကို လိုက်နာဆောင်ရွက်စေရန် • သင့်တော်သော အရေအတွက် အရွယ်အစားရှိသည့် အမှိုက်အမျိုးအစားကွဲ အမှိုက်ပုံ/ကန်များ ထားရှိပေးရန်နှင့် အမှိုက်အမျိုးအစားခွဲခြင်းတွင် ပြန်လည်အသုံးပြုခြင်း၊ ပြန်လည်အသုံးချခြင်းနှင့် စွန့်ပြစ်ရန်ဟူ၍ အမျိုးအစားခွဲရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
မြေနေရာပြန်လည်ပြုပြင်ခြင်း	မြေနေရာပြန်လည်ပြုပြင်ခြင်း	• စီမံကိန်း အကောင်အထည်ဖော်သူများသည် ဒေသအာဏာပိုင်နှင့် ကျေးရွာလူထုနှင့် ဆွေးနွေးကာ ပြီးဖျက်ပြီးမြေနေရာကို စီမံခန့်ခွဲရန် • ဒေသအာဏာပိုင်များ၏ ခွင့်ပြုချက်ဖြင့် မြေနေရာလွတ်များကို ဒီရေတောများပြန်လည်စိုက်ပျိုးခြင်း၊ အခြားသီးနှံပင်များစိုက်ပျိုးခြင်းနှင့် ဆိပ်ကမ်းနေရာအဖြစ်ပြောင်းလဲရန်

၁.၅.၂ ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အကဲဖြတ်စစ်ဆေးခြင်း

(၁) ပတ်ဝန်းကျင်တွင်ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - တည်ဆောက်ရေးပြင်ဆင်မှုကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

တည်ဆောက်ရေးပြင်ဆင်မှုကာလတွင် စီမံကိန်းနှင့် ပတ်သတ်၍ မသေချာမှု အဖြစ်အပျက် သို့မဟုတ် ပတ်ဝန်းကျင်စွန့်စားမှု ၂ခုရှိပါသည်။

- စီမံကိန်းသည် သယံဇာတနှင့် ပတ်ဝန်းကျင်ဦးစီးဌာန သို့မဟုတ် အခြားသောအာဏာပိုင် အဖွဲ့အစည်းများ၏ ပတ်ဝန်းကျင် လိုအပ်ချက်ဖော်ပြမှုများကို မလိုက်နာနိုင်ခြင်း
- ရပ်ရွာလူထုမှ စီမံကိန်းအားကန့်ကွက် ဆန့်ကျင်ခြင်း၊ အထူးသဖြင့် စီမံကိန်းပတ်ဝန်းကျင်ရှိ ရပ်ရွာလူထုများမှ ကန့်ကွက်ခြင်း

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စိစစ်ခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၁) - ပတ်ဝန်းကျင်လိုအပ်မှုများကို မလိုက်နာနိုင်ခြင်း

ဖြစ်ပေါ်လာနိုင်သော အကြောင်းအချက်များ

- EPC ကန်ထရိုက်တာသည် စီမံကိန်းအတွက်လုံလောက်မှုမရှိသည့် ပတ်ဝန်းကျင် စွမ်းဆောင်ရည် လိုအပ်မှုကို သိရှိနားလည်မှု မရှိခြင်း
- EPC ကန်ထရိုက်တာသည် စာချုပ်ထဲရှိ ရှုပ်ထွေးသော ပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များကို ကြိုတင်တွေးဆ၍ ချန်လှပ်ထားခဲ့ခြင်း
- ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို EPC ကန်ထရိုက်တာတို့မှ မလုံလောက်သော လုပ်ဆောင်မှုများနှင့် ကြီးကြပ်ခြင်း၊ စစ်ဆေးခြင်း
- မူလပထမ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို ပြောင်းလဲခြင်းမရှိပဲ ဆောက်လုပ်ရေးနည်းလမ်းများ သို့မဟုတ် ဒီဇိုင်းများပြောင်းလဲခြင်း
- မူလပထမ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို ပြောင်းလဲခြင်းမရှိပဲ ပတ်ဝန်းကျင်လိုအပ်ချက်များကို ပြောင်းလဲခြင်းတို့ဖြစ်ပါသည်။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၂) - စီမံကိန်းအား ပတ်ဝန်းကျင်မှ ကန့်ကွက်ဆန့်ကျင်ခြင်း

- ပတ်ဝန်းကျင် ပြင်းထန်မှုနှင့် ထိခိုက်မှုတို့အပေါ် စီမံကိန်းအား နားလည်မှုလွဲခြင်း သို့မဟုတ် သတင်းမှားများထွက်ပေါ်လာခြင်း
- ပတ်ဝန်းကျင်လူထုများနှင့် စီမံကိန်း အကြားတွင် ပြေလည်မှုမရှိခြင်း

(ဂ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အဆင့်ခွဲခြားခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၁)သည် အဓိက ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုဟု ယူဆလျက် အသက်မွေးဝမ်းကြောင်းမှုတွင် သက်ရောက်မှုမြင့်မား၍ ထိခိုက်မှုမြင့်မားသည်ဟု ဆုံးဖြတ်သည်။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၂)သည် အသေးအဖွဲ ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုဟု ယူဆလျက် အသက်မွေးဝမ်းကြောင်းမှုတွင် သက်ရောက်မှုနိမ့်၍ ထိခိုက်မှုနိမ့်သည်ဟု ဆုံးဖြတ်သည်။

(ဃ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်းတွင် သတ်မှတ်ထားသော အကြောင်းပြချက်များရှိသည်။ ဖော်ပြထားသော ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ၂ခု အတွက် လျော့ချရေးနည်းလမ်းများကို ဇယား ၆.၂.၂-၁ (အခန်း ၆) တွင် ဖော်ပြထားပါသည်။

(၂) ပတ်ဝန်းကျင်တွင်ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - တည်ဆောက်ရေးကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

တည်ဆောက်ရေးကာလတွင် စီမံကိန်းနှင့် ပတ်သတ်၍ မသေချာမှု အဖြစ်အပျက် သို့မဟုတ် ပတ်ဝန်းကျင်စွန့်စားမှု ၃ခုရှိပါသည်။

- စီမံကိန်းသည် သယံဇာတနှင့် ပတ်ဝန်းကျင်ဦးစီးဌာန သို့မဟုတ် အခြားသောအာဏာပိုင် အဖွဲ့အစည်းများ၏ ပတ်ဝန်းကျင် လိုအပ်ချက်ဖော်ပြမှုများကို မလိုက်နာနိုင်ခြင်း
- ရပ်ရွာလူထုမှ စီမံကိန်းအားကန့်ကွက် ဆန့်ကျင်ခြင်း၊ အထူးသဖြင့် စီမံကိန်းပတ်ဝန်းကျင်ရှိ ရပ်ရွာလူထုများမှ ကန့်ကွက်ခြင်း
- စမ်းသပ်ဆဲကာလနှင့် တည်ဆောက်မှုကာလများတွင် မီးလောင်ခြင်းနှင့် ပေါက်ကွဲမှုများ ဖြစ်ပေါ်နိုင်ပါသည်။ သို့သော် ၄င်းဖြစ်ပေါ်လာနိုင်သော အကျိုးသက်ရောက်မှုများသည် စီမံကိန်းလည်ပတ်မှု ကာလများနှင့်တူညီပြီး စီမံကိန်းလည်ပတ်ဆဲကာလတွင် ပါဝင်မည်ဖြစ်သည်။

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စိစစ်ခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၁) - ဆိုက်ကလုံးအခြေအနေ

အတိတ်မုန်တိုင်း အချက်အလက်များအရ အောက်ဖော်ပြပါ လေ့လာခြင်းကို ပြုလုပ်နိုင်ပါသည်။

- ၁၉၆၉ - ၂၀၁၁အတွင်း ထားဝယ်ကုန်းတွင်းပိုင်းသို့ ဆိုက်ကလုံး ဝင်ရောက်မှု မရှိခဲ့ပါ။
- ဆိုက်ကလုံးအများစုမှာ ထားဝယ်အနောက်ဖက်တွင်ဖြစ်ပေါ်ပြီး အဝေးသို့ ထွက်သွား ကြသည်။
- ထားဝယ်နှင့် အနီးဆုံးဆိုက်ကလုံး၏ အကွာအဝေးမှာ ကီလိုမီတာ ၂၀၀ဝေးကွာသည်။
- တောင်တရုတ်ပင်လယ်မှ ဖြစ်ပေါ်ဝင်ရောက်လာသော ဆိုက်ကလုံးမုန်တိုင်း၏ ထားဝယ်သို့ ဝင်ရောက်နိုင်ချေသည် နှစ်တစ်ရာတွင် တစ်ကြိမ်ဝင်ရောက်နိုင်ချေထက် နည်းသည်။

- ၎င်းသည် သဘာဝဓါတ်ငွေ့ဓါတ်အားပေးစက်ရုံနေရာအား မဝင်ရောက်နိုင်ချေများသည်။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၂) - ဆူနာမီ

၂၀၀၅ခုနှစ်တွင်ထုတ်ပြန်သော ၂၀၀၄ခုနှစ် ဒီဇင်ဘာလ ဆူမားတြား - အန်ဒမန် ငလျှင်မှဖြစ်ပေါ်လာသော မြန်မာ့ကမ်းရိုးတန်းတစ်လျှောက် ဆူနာမီစစ်တမ်းကောက်ခံခြင်း စာတမ်းအရ အောက်ဖော်ပြပါတို့ကို အကျဉ်းချုပ် ဖော်ပြထားပါသည်။ မောင်းမကန်ကမ်းခြေသည် ထိုစာတမ်းအတွင်း အကျုံးဝင်သည်။

- ၂၀၀၄ခုနှစ်တွင် မောင်းမကန်ကမ်းခြေရှိ ဆူနာမီရေလှိုင်းအမြင့်မှာ ၁.၈ မီတာရှိသည်
- မောင်းမကန်ကမ်းခြေအနီးရှိ လူနေအိမ်များ၊ ဈေးဆိုင်များအပေါ် သက်ရောက်မှုမရှိပဲ ကမ်းခြေတစ်လျှောက် ပင်လယ်ရေမြင့်တက်ခြင်းသာဖြစ်ပေါ်နိုင်ပါသည်။

(ဂ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အဆင့်ခွဲခြားခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၁) နှင့် (၂) သည် အလယ်အလတ်ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုဟုယူဆလျက် အသက်မွေးဝမ်းကြောင်းမှုတွင် အနိမ့်အနေအထား သက်ရောက်မှုနှင့် ထိခိုက်မှုတွင် အမြင့်အနေအထား သက်ရောက်မှုဟူ၍ ဆုံးဖြတ်သည်။

(ဃ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်း

ဆိုက်ကလုံးနှင့် ဆူနာမီ၏ သက်ရောက်မှုသည် ဖြစ်ပေါ်နိုင်ချေ အလွန်နည်းသော်လည်း အကျိုးသက်ရောက်မှု လျော့ချခြင်းကို လုပ်ဆောင်ရပါမည်။ ၎င်းတို့၏ ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်းများကို အောက်တွင်ဖော်ပြထားပါသည်။

- ဆိုက်ကလုံးနှင့် ဆူနာမီအား ခုခံနိုင်သော ဖွဲ့စည်းပုံရှိသည့် စီမံကိန်း ဒီဇိုင်းကို ပြင်ဆင်ရန်
- ဆိုက်ကလုံးနှင့် ဆူနာမီစောင့်ကြည့်ရေးနှင့် သတိပေးချက်များ ထုတ်ပြန်ရန်
- ဆိုက်ကလုံးနှင့် ဆူနာမီဖြစ်ပေါ်လာလျှင် ဝန်ထမ်းနှင့် လူထုများဘေးကင်းစွာ ပုန်းရှောင်နိုင်ရန် ဘေးအန္တရာယ်ကင်းဖုန်တည်ဆောက်ပေးရန်
- ဆိုက်ကလုံးနှင့် ဆူနာမီဖြစ်ပေါ်လာလျှင် ထွက်ပြေးရှောင်ခွာရန်နည်းလမ်းများနှင့် သင်တန်းများအား ဝန်ထမ်းအားလုံးကို သင်ကြားပေးရန်တို့ဖြစ်ပါသည်။

(၃) ပတ်ဝန်းကျင်တွင်ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - စီမံကိန်းလည်ပတ်မှုကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

(၁) စီမံကိန်း လည်ပတ်စဉ် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု

စီမံကိန်းတည်ဆောက်မှုနှင့် လည်ပတ်မှုကာလတွင် အဓိကအန္တရာယ်ရှိသော အခြေအနေမှာ စီမံကိန်းလည်ပတ်ရေးဝန်ထမ်း သို့မဟုတ် အနီးအနားရှိ ကျေးရွာလူထုမှ ထိခိုက်ဒဏ်ရာရရှိမှု နှင့် သေဆုံးမှု ဖြစ်ပေါ်ခြင်းဖြစ်သည်။ ဓါတ်အားပေးစက်ရုံ၏ အန္တရာယ်ရှိမှုကို အားလုံးနားလည်သကဲ့သို့ များပြားလှသော စံညွှန်းများနှင့် စက်ရုံဒီဇိုင်း၊ တည်ဆောက်ခြင်း၊ တပ်ဆင်ခြင်း၊ စမ်းသပ်ခြင်း၊ ဆောက်လုပ်ခြင်း၊ လည်ပတ်ခြင်းနှင့် ထိန်းသိမ်းခြင်းအားဖြင့် ဓါတ်အားပေးစက်ရုံအားလုပ်ဆောင်သွားမည်ဖြစ်ပါသည်။

ဓါတ်အားပေးစက်ရုံ၏ အဓိက အန္တရာယ်တွင် ဓါတ်ငွေ့ယိုစိမ့်မှု၊ အတွင်းပိုင်း ပေါက်ကွဲမှုနှင့် စက်လည်ပတ်မှု မအောင်မြင်ခြင်းတို့ပါဝင်သည်။ ထိုအန္တရာယ်ရှိသော ဖြစ်ပေါ်မှုများမှာ အလွန်ဖြစ်ပွားခဲသော်လည်း အခြားစက်ရုံများတွင် ဖြစ်ပွားခဲ့ပါသည်။

(၂) ဖြစ်ပေါ်လာနိုင်သော ညစ်ညမ်းမှုများထိန်းချုပ်ခြင်း

ပတ်ဝန်းကျင်လိုအပ်ချက်များနှင့် ပတ်သတ်၍ လိုက်နာခြင်းမရှိသောကြောင့် ဖြစ်ပေါ်လာနိုင်သော အခြားသက်ရောက်မှုများမှာ (၁) ထုတ်လွှတ်မှုစံနှုန်း၊ ပတ်ဝန်းကျင် လေထုအရည်အသွေးစံညွှန်း၊ စောင့်ကြည့်လေ့လာခြင်းအပါအဝင် ဓါတ်ငွေ့ထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်း (၂) ပြုပြင်ထိန်းသိမ်းပြီး စွန့်ထုတ်မှုစံနှုန်း အပါအဝင် ညစ်ညမ်းရေစီမံခန့်ခွဲမှု တို့ဖြစ်ပါသည်။ ထိုအခြင်းအရာတို့သည် ပတ်ဝန်းကျင်တွင်ဖြစ်ပေါ်စေနိုင်သော ပြဿနာများ အတွက် ထိခိုက်နိုင်ချေနည်းသော အနေအထားဖြစ်ပြီး ဓါတ်အားပေးစက်ရုံနှင့် အခြားသော ပတ်ဝန်းကျင်များအပေါ် မကောင်းသောထိခိုက်မှုမရှိပါ။

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများစိစစ်ခြင်း

(၁) စီမံကိန်း လည်ပတ်စဉ် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု

အကျိုးဆက်များ

အကယ်၍ ပြင်းထန်သော မတော်တဆထိခိုက်မှု ဖြစ်ပွားခဲ့သည်ရှိသော် ပျက်စီးဆုံးရှုံး ထိခိုက်မှုများသည် ဓါတ်အားပေးစက်ရုံအပါအဝင် ၂.၂၂ ကီလိုမီတာ အတွင်းရှိ ပတ်ဝန်းကျင် လူထုများအထိ ထိခိုက်နိုင်ပါသည်။

အခြေခံအကြောင်းတရားများ

ဓါတုနှင့် ဓါတ်အားပေးစက်ရုံများတွင် ဖြစ်ပေါ်တတ်သော ပျက်စီးဆုံးရှုံးမှုများအတွက် မြောက်များစွာသောလေ့လာမှုများရှိပြီး ပျက်စီးဆုံးရှုံးမှုများ၏ အဓိက နှင့် အခြေခံ အကြောင်းအရင်းများမှာ (၁) ဒီဇိုင်းမှားယွင်းနေခြင်း (၂) မှားယွင်းသော ကိရိယာများသုံးစွဲမှုနှင့် မသင့်တော်သော ကိရိယာများတပ်ဆင်မှု/တည်ဆောက်မှု (၃) မလုံလောက်သော/ မသင့်တော်သော စီမံကိန်းလည်ပတ်မှုနှင့် ထိန်းသိမ်းမှုနည်းလမ်းများ (၄) စီမံကိန်း လည်ပတ်မှုနှင့် ထိန်းသိမ်းမှုတွင် လူ့အမှားများတို့ဖြစ်ကြပါသည်။

အသက်မွေးဝမ်းကြောင်းအဖြစ်အပျက်များ

စီမံကိန်းလည်ပတ်မှုကြောင့် အသက်မွေးဝမ်းကြောင်းမှုအပေါ် ထိခိုက်မှုမှာ အလွန်နည်းပါသည်။ (၁) စာချုပ်ထဲတွင် နည်းပညာဆိုင်ရာ သတ်မှတ်ချက်များနှင့် လိုအပ်သော လုပ်ဆောင်မှုများကို ရှင်းလင်းစွာဖော်ပြထားခြင်း (၂) ကိရိယာတန်ဆာပလာများသည် ကောင်းသောမှတ်တမ်းနှင့် စိတ်ချမှုရှိခြင်း (၃) တည်ဆောက်ခြင်းနှင့် တပ်ဆင်ခြင်း လုပ်ငန်းများတွင် အနီးကပ် ကြီးကြပ်ကွပ်ကဲမှုနှင့် အရည်အသွေးထိန်းချုပ်ခြင်း (၄) စက်ကိုင်တွယ်သူဝန်ထမ်းများကို တိကျသော သင်တန်းပေးမှုများရှိခြင်း (၅) လုပ်ငန်း လုပ်ဆောင်မှုများနှင့် ထိန်းသိမ်းမှုများအပေါ် လုံလောက်ရှင်းလင်းသော စက်ရုံလည်ပတ်မှု အစီအစဉ်များရှိခြင်း (၆) အကျိုးရှိသော စက်ရုံ လုံခြုံရေး ထိန်းသိမ်းမှုရှိခြင်းတို့ဖြစ်ပါသည်။

(၂) ဖြစ်ပေါ်လာနိုင်သော ဓါတ်ငွေ့ထုတ်လွှတ်မှုများထိန်းချုပ်ခြင်း

အကျိုးဆက်များ

ဤစီမံကိန်းတွင် နိုက်ထရိုဂျင်အောက်ဆိုဒ်နှင့် ဆာလဖာဒိုင်အောက်ဆိုဒ် ထုတ်လွှတ်မှု ပမာဏမှာ အလွန်နည်းသည်။ ထို့ကြောင့် ထုတ်လွှတ်မှုစံနှုန်းများညီရန်နှင့် စောင့်ကြည့် ထိန်းချုပ်မှုများပြုလုပ်ရန် မလိုအပ်ပေ။ အကယ်၍ထုတ်လွှတ်မှုများရှိခဲ့သော် ထိုပမာဏသည် ပတ်ဝန်းကျင်လေထုအရည်အသွေးအား သိသာထင်ရှားသော ထိခိုက်မှုရှိမည် မဟုတ်ပါ။ လိုက်နာမှုမရှိကြောင်းရှာဖွေတွေ့ရှိခဲ့သည်ရှိသော် အလျှင်အမြန်ပြင်ဆင်ရန် လိုအပ်ပေသည်။

အခြေခံအကြောင်းတရားများ

ဓါတ်ငွေ့ထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်းမရှိပါက အောက်ဖော်ပြပါ အခြေအနေကို ဖြစ်ပေါ်စေပါသည်။

- လောင်ကျွမ်းခြင်းဖြင့် နိုက်ထရိုဂျင်အောက်ဆိုဒ် လျှော့ချခြင်းစနစ်၏ အမှန်တကယ် အကျိုးရှိမှုမှာ ဓါတ်ငွေ့ထုတ်လွှတ်မှုစံနှုန်းတွက်ချက်ခြင်းထက် ၃၀%လျှော့နည်းခြင်း ဖြစ်ပေါ်ပါသည်။

အသက်မွေးဝမ်းကြောင်းအဖြစ်အပျက်များ

အထက်ဖော်ပြပါ ဖြစ်နိုင်ချေ အကြောင်းအရာများကြောင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်းအတွက် လိုက်နာရန် မလိုအပ်သော အသက်မွေးဝမ်းကြောင်း အဖြစ်အပျက်များ၏ သက်ရောက်မှုသည် အနည်းငယ်မျှသာရှိသည်။

(၃) ဖြစ်ပေါ်လာနိုင်သော ရေဆိုးများထိန်းချုပ်ခြင်း

အကျိုးဆက်များ

ဓါတ်အားပေးစက်ရုံလည်ပတ်မှုမှ ထုတ်လုပ်လိုက်သော ရေဆိုးများသည် သန့်စင်ရန် မလိုအပ်လောက်အောင် ပမာဏ အလွန်နည်းပြီး ပင်လယ်ရေအား အဆိပ်အတောက် မဖြစ်ပေါ်စေပါ။ ထို့ကြောင့် သန့်စင်ပြီးစွန့်ပြစ်မှုစံညွှန်းနှင့် စောင့်ကြည့်ထိန်းချုပ်မှုများအား ပြုလုပ်ရန် မလိုအပ်ပေ။ အကယ်၍ ထုတ်လွှတ်မှုများရှိခဲ့သော် ထိုပမာဏသည် ပင်လယ်ရေ အရည်အသွေးအား ထိခိုက်နိုင်မည် မဟုတ်ပါ။ လိုက်နာမှု မရှိကြောင်းတွေ့ရှိခဲ့သော် အလျှင်အမြန်ပြင်ဆင်ရန် လိုအပ်ပေသည်။

အခြေခံအကြောင်းတရားများ

ရေဆိုးထိန်းချုပ်မှု လိုအပ်ချက်များနှင့် ပတ်သတ်၍ မလိုက်နာမှုများမှာ

- ရေဆိုးစုဆောင်းမှုအတွက် မလုံလောက်သော စီမံခန့်ခွဲမှုဖြစ်ခြင်း၊ မလုံလောက်သော သန့်စင်မှု အနေအထားဖြစ်ပေါ်ခြင်း၊ သန့်စင်မှုလျော့နည်းခြင်းနှင့် စောင့်ကြည့်ထိန်းချုပ်မှုများအားမျက်ကွယ်ပြုခြင်း
- ရေဆိုးစုဆောင်းမှုနှင့် သန့်စင်မှုအတွက် မလုံလောက်သော စီမံခန့်ခွဲမှုရှိခြင်းတို့ဖြစ်ပါသည်။

အသက်မွေးဝမ်းကြောင်းအဖြစ်အပျက်များ

အထက်ဖော်ပြပါ ဖြစ်နိုင်ချေ အကြောင်းအရာများကြောင့် ရေဆိုးထိန်းချုပ်မှု၏ လိုအပ်ချက်များအတွက် လိုက်နာရန် မလိုအပ်သော အသက်မွေးဝမ်းကြောင်း အဖြစ်အပျက်များ၏ သက်ရောက်မှုသည် အလယ်အလတ် အနေအထားရှိသည်။

(ဂ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အဆင့်ခွဲခြားခြင်း

(၁) စီမံကိန်း လည်ပတ်စဉ် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု

ဓါတ်အားပေးစက်ရုံ၏ စီမံကိန်းလည်ပတ်မှုတွင် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုး သက်ရောက်မှုများမှာ ဆိုးရွားသော အကျိုးဆက်များရှိသော်လည်း အသက်မွေးဝမ်းကြောင်း အဖြစ်အပျက်မှာ အနည်းငယ်သာရှိသည်။ ထို့ကြောင့် ၄င်းတို့အားသုံးသပ်လျက် အလယ်အလတ် အကျိုးသက်ရောက်မှုဟုယူဆသည်။

(၂) ဖြစ်ပေါ်လာနိုင်သော ညစ်ညမ်းမှုထုတ်လွှတ်မှုများထိန်းချုပ်ခြင်း

ဓါတ်ငွေ့ထုတ်လွှတ်မှုထိန်းချုပ်ခြင်း

ဓါတ်ငွေ့ထုတ်လွှတ်မှုထိန်းချုပ်ခြင်း လိုအပ်မှုများအတွက် အကျိုးသက်ရောက်မှုကို အနည်းငယ် သို့မဟုတ် မထင်ရှားသော အကျိုးသက်ရောက်မှုဟု ယူဆသည်။

ရေဆိုးထုတ်လွှတ်မှုထိန်းချုပ်ခြင်း

ရေဆိုးထုတ်လွှတ်မှု ထိန်းချုပ်ခြင်း လိုအပ်မှုများအတွက် အကျိုးသက်ရောက်မှုကို အနည်းငယ် သို့မဟုတ် မထင်ရှားသော အကျိုးသက်ရောက်မှုဟုယူဆသည်။

(ဃ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်း

(၁) စီမံကိန်း လည်ပတ်စဉ် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု

စီမံကိန်းလည်ပတ်မှုတွင် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများ စီမံခန့်ခွဲခြင်းတွင် ၂မျိုးခွဲခြားနိုင်သည်။ ပထမတစ်မျိုးမှာ ဒီဇိုင်းမှားယွင်းမှုများ၊ ကိရိယာပစ္စည်းများ မှားယွင်းခြင်း၊ တပ်ဆင်ခြင်း၊ ဆောက်လုပ်ခြင်းများကို လျော့ချခြင်းဖြစ်ပါသည်။ ဒုတိယတစ်မျိုးမှာ စီမံကိန်းလည်ပတ်ခြင်း ထိန်းသိမ်းခြင်းလုပ်ငန်းစဉ်နှင့် လူပြုလုပ်သည့်အမှားများအား လျော့ချရန်ဖြစ်ပါသည်။ ပထမတစ်မျိုးကို ကိုင်တွယ်ဖြေရှင်းရာတွင် EPC ကန်ထရိုက်တာများ၊ ဒီဇိုင်းပိုင်းဆိုင်ရာအကြံပေးများနှင့် လက်ထောက်ကန်ထရိုက်တာများနှင့် ညှိနှိုင်း ဆောင်ရွက်ရမည်။

ဒုတိယတစ်မျိုးကို ကိုင်တွယ်ဖြေရှင်းရာတွင် EPC ကန်ထရိုက်တာများအပြင် သဘာဝဓါတ်ငွေ့သုံး ဓါတ်အားပေးစက်ရုံ၏ လည်ပတ်မှုအဖွဲ့နှင့် ညှိနှိုင်းကာ ဆောင်ရွက်ရပါမည်။

(၂) ဖြစ်ပေါ်လာနိုင်သော ညစ်ညမ်းမှုထုတ်လွှတ်ခြင်းအား ထိန်းချုပ်ခြင်း

ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများလျော့ချရန် အထွေအထူးနည်းလမ်းဟူ၍ မရှိချေ။ လောင်ကျွမ်းခြင်းဖြင့် နိုက်ထရိုဂျင်အောက်ဆိုဒ်လျော့ချနိုင်သောစနစ်တပ်ဆင်ရန် ရွေးချယ်မှု ပြုလုပ်ခြင်းဖြင့် ဖြစ်ပေါ်လာနိုင်သော အကျိုးသက်ရောက်မှုများကို လျော့ချနိုင်ပါသည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုပြုလုပ်ခြင်းဖြင့် ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများကို လျော့ချနိုင်ပါသည်။

(၄) ပတ်ဝန်းကျင်တွင်ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - စီမံကိန်းပိတ်သိမ်းခြင်းကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

ဓါတ်အားပေးစက်ရုံအား ပိတ်သိမ်းခဲ့သော် စီမံကိန်းလည်ပတ်မှုနှင့် အဆောက်အအုံများအား ဖြိုချဖျက်သိမ်းရန် လိုအပ်ပါသည်။ စက်ရုံပိတ်သိမ်းမှုကာလတွင် အဓိကလုပ်ဆောင်မှုများမှာ ကိရိယာပစ္စည်းများ၊ ပိုက်များ၊ ကေဘယ်များ ရွှေ့ပြောင်းခြင်း၊ တိုင်ကီများနှင့် ပိုက်များ၊ ကိရိယာများ သန့်စင်ခြင်း နှင့် ထိန်းချုပ်အဆောက်အအုံအား ဖြိုချခြင်းနှင့် ကိရိယာတန်ဆာပလာများ ရွှေ့ပြောင်းခြင်းတို့ဖြစ်ပါသည်။ အဓိက ပတ်ဝန်းကျင်ပြဿနာမှာ စက်ကြီးများနှင့် ကိရိယာများကြောင့် ဖုန်မှုန့်များထွက်ခြင်း၊ အသံဆူညံမှုများနှင့် အမှိုက်စွန့်ပြစ်ခြင်း၊ အန္တရာယ်ရှိသော အမှိုက်များ စွန့်ပြစ်ခြင်းတို့ပါဝင်သည်။ ထိုပြဿနာများဖြစ်ပွားမှုကြောင့် ပင်လယ်ရေ၊ မြေကြီး၊ မြေအောက်ရေ နှင့် လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် လုံခြုံရေးများအားထိခိုက်နိုင်ပါသည်။

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများစိစစ်ခြင်း

စီမံကိန်း၏ လေထု၊ ဆူညံမှု၊ ရေနှင့် အလုပ်ခွင်ကျန်းမာရေး ထိခိုက်မှုတို့အား လေ့လာ စိစစ်ထားပါသည်။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများမှာ အောက်ဖော်ပြပါ အကြောင်းအရာများ ကြောင့်ဖြစ်ပေါ်သည်။

ဖြစ်ပေါ်လာနိုင်သော အကြောင်းအချက်များ

- EPC ကန်ထရိုက်တာသည် စီမံကိန်းအတွက်လုံလောက်မှုမရှိသည့် ပတ်ဝန်းကျင် စွမ်းဆောင်ရည် လိုအပ်မှုကို သိရှိနားလည်မှု မရှိခြင်း
- EPC ကန်ထရိုက်တာသည် စာချုပ်ထဲရှိ ရှုပ်ထွေးသော ပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များကို ကြိုတင်တွေးဆ၍ ချန်လှပ်ထားခဲ့ခြင်း
- ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို EPC ကန်ထရိုက်တာတို့မှ မလုံလောက်သော လုပ်ဆောင်မှုများနှင့် ကြီးကြပ်ခြင်း၊ စစ်ဆေးခြင်း
- မူလပထမ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို ပြောင်းလဲခြင်းမရှိပဲ ဆောက်လုပ်ရေးနည်းလမ်းများ သို့မဟုတ် ဒီဇိုင်းများပြောင်းလဲခြင်း
- မူလပထမ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများကို ပြောင်းလဲခြင်းမရှိပဲ ပတ်ဝန်းကျင်လိုအပ်ချက်များကို ပြောင်းလဲခြင်းတို့ဖြစ်ပါသည်။

(ဂ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အဆင့်ခွဲခြားခြင်း

လုပ်ငန်းခွင်ပိတ်သိမ်းမှုကာလတွင် ဖြစ်ပေါ်လာနိုင်သော အကျိုးသက်ရောက်မှုများမှာ အဓိကအကျိုးဆက်များရှိသော်လည်း အသက်မွေးဝမ်းကြောင်းအဖြစ်အပျက်မှာ အလယ်အလတ် အကျိုးသက်ရောက်မှုဟု ယူဆပါသည်။

(ဃ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်း

(က) ဖုန်မှုန့်ထွက်ပေါ်မှုအားလျော့ချခြင်းနည်းလမ်းများ

လုပ်ငန်းခွင်ပိတ်သိမ်းခြင်း အလုပ်ခွင်တွင် ဖုန်မှုန့်ထွက်ပေါ်မှုကို တိုင်းတာရမည်။ လျော့ချပေးနိုင် သောနည်းလမ်းများမှာ

- ဖြိုချနေသောကာလတွင် ပိတ်သိမ်းနေသော စီမံကိန်းဧရိယာ နှင့် လမ်းများအားရေဖြန်းခြင်း
- စီမံကိန်းပိတ်သိမ်းမှုကာလတွင် စီမံကိန်းသုံးယာဉ်များအား တစ်နာရီ ၄၀ ကီလိုမီတာထက် ပိုမမောင်းရန် အမြန်နှုန်း သတ်မှတ်ပေးရပါမည်။ စီမံကိန်းပိတ်သိမ်းခြင်း လုပ်ဆောင်မှုများကို အစီအစဉ်များရေးဆွဲ၍ လုပ်ဆောင်ခြင်းဖြင့် အနှောက်အယှက် ဖြစ်စေသော ဧရိယာများကို နည်းစေမည်ဖြစ်ပါသည်။
- စီမံကိန်း ပိတ်သိမ်းမှုကာလတွင် အမှိုက်မီးရှို့ခြင်းများကိုတားဆီးရပါမည်။
- လုပ်ငန်းခွင် အလုပ်သမားများအားလုံးအတွက် ဖုန်မှုန့်ကာကွယ်ရေးနှာခေါင်းစီးများ ထောက်ပံ့ပေးရပါမည်။

(ခ) အသံဆူညံမှုအားလျော့ချခြင်းနည်းလမ်းများ

(၁) ရုပ်ပိုင်းဆိုင်ရာနည်းလမ်းများ

- စီမံကိန်းရှိ အသံဆူညံမှု ထွက်ပေါ်ရာနေရာများ ပတ်လည်တွင် အနည်းဆုံး ၃မီတာမြင့်သော အသံပျံ့နှံ့မှုကို ကာကွယ်ပေးနိုင်သော နံရံများဖြင့် ကာကွယ်ထားရပါမည်။ အကယ်၍ အနီးဆုံး ရပ်ရွာလူနေမှုသည် စီမံကိန်းဧရိယာမှ ၆၀၀မီတာအတွင်း မရှိနေလျှင် လုပ်ဆောင်ရန် မလိုအပ်ပေ။
- အသံဆူညံမှုဖြစ်ပေါ်သည့်နေရာတွင် အလုပ်လုပ်ကိုင်နေသော ဝန်ထမ်းများအား နားစို့များ ထောက်ပံ့ပေးရပါမည်။

(၂) စီမံခန့်ခွဲမှုဆိုင်ရာ နည်းလမ်းများ

အောက်ဖော်ပြပါ စီမံခန့်ခွဲမှုဆိုင်ရာ နည်းလမ်းများလုပ်ဆောင်ခြင်းဖြင့် ရုပ်ပိုင်းဆိုင်ရာ နည်လမ်းများပြီးမြောက်အောင်မြင်ပါသည်။

- အဓိကဆောက်လုပ်ရေးလုပ်ငန်းများ လုပ်ဆောင်မှုကို နေ့အချိန်တွင်သာ လုပ်ဆောင် ရပါမည်။ အကယ်၍ ညအချိန်တွင်လုပ်ကိုင်ရန်လိုအပ်ပါက ဆိုက်အင်ဂျင်နီယာ၏ ခွင့်ပြုချက်ဖြင့် လုပ်ဆောင်ပြီး လုံလောက်သောဆူညံမှု အကာအကွယ်ပစ္စည်းများ တပ်ဆင်ပြီး လုပ်ကိုင်ရပါမည်။
- စီမံကိန်းလုပ်ငန်းခွင်သုံးယာဉ်များမှာ တစ်နာရီ ၄၀ ကီလိုမီတာထက်မပိုစေရန် ကန့်သတ် ထားရပါမည်။

- မရွေ့ပြောင်းနိုင်သော ပစ္စည်းကိရိယာများကို ယာယီ အသံကာကွယ်မှုတံတိုင်းများဖြင့် ကာကွယ်ထားရပါမည်။

(ဂ) အညစ်အကြေးများ စီမံခန့်ခွဲမှုနှင့်လျော့ချရေးနည်းလမ်းများ

- ကန်ထရိုက်တာသည် အမှိုက်အမျိုးအစားခွဲခြားမှုဒီဇိုင်းနှင့် စီမံကိန်းရှိဝန်ထမ်းများအားလုံး လိုက်နာဆောင်ရွက်ရန် လုပ်ဆောင်ရပါမည်။
- သင့်တော်လုံလောက်သော အမျိုးအစားခွဲခြားထားသည့် အမှိုက်ပုံ/ကန်များအား ထောက်ပံ့ပေးထားရန်နှင့် အမှိုက် အမျိုးအစားခွဲခြားမှုတွင် ပြန်လည်အသုံးပြုခြင်း၊ ပြန်လည်အသုံးချခြင်းနှင့် စွန့်ပြစ်ရန်အမှိုက်ဟူ၍ အမျိုးအစားခွဲကာ သတ်မှတ်ပေးထားရပါမည်။

၁.၆ စုပေါင်းပြီးဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်မှုကို အကဲဖြတ်စစ်ဆေးခြင်း

စုပေါင်းပြီးဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်မှုကို အကဲဖြတ်စစ်ဆေးခြင်းတွင် အောက်ဖော်ပြပါ အကြောင်းအပစရာများပါဝင်သည်။

ကနဦးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံစီမံကိန်း (၄၂၀ မဂ္ဂါဝပ်)ဘေးတွင် သဘာဝဓါတ်ငွေ့သုံး လျှပ်စစ်ဓါတ်အားပေးစက်ရုံ စီမံကိန်းတည်ရှိခြင်းကြောင့် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်ထုတ်လွှတ်မှုသည် စီမံကိန်း၂ခုမှ ထုတ်လွှတ်မှုဖြစ်သည်။

စီမံကိန်း ဧရိယာတွင် ဓါတ်အားပေးစက်ရုံ ၂ခုရှိနေခြင်းကြောင့် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ဓါတ်ငွေ့ထုတ်လွှတ်မှုကို အမြင့်ဆုံးပါဝင်မှုနှုန်းအဖြစ် ခန့်မှန်းထားပါသည်။ ဓါတ်အားပေးစက်ရုံ၂ခုမှ လည်ပတ်မှုကာလအတွင်း နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်ထုတ်လွှတ်မှု၏ အသေးစိတ် အနေအထားကို အောက်တွင်ဖော်ပြထားပါသည်။

တစ်နာရီတိုင်းတာမှုအတွက်အခြေခံအဆင့် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် လေထုပတ်ဝန်းကျင် ထဲတွင်အမြင့်ဆုံး ပါဝင်နှုန်းမှာ စီမံကိန်းလုပ်ငန်းခွင်ထဲတွင်တွေ့ရှိရသည်။ တစ်နာရီတိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ်ပါဝင်နှုန်းမှာ ၁၀၉.၂၈ µg/m³ (AAQS ၏ ၅၄.၆၄ %) ဖြစ်သည်။ ထိခိုက်လွယ်သောနေရာ၏ တစ်နာရီတိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပါဝင်နှုန်းမှာ ၅၇.၉၁ - ၇၆.၅၃ µg/m³ (AAQS ၏ ၂၈.၉၆ - ၃၈.၂၇%) ဖြစ်သည်။ ထိုတန်းဖိုးများသည် အမြင့်ဆုံးအဖြစ် သတ်မှတ်ထားသော ၂၀၀ µg/m³ ထက်နည်းကြသည်။

နှစ်ဆယ့်လေးနာရီတိုင်းတာမှုအတွက်အခြေခံအဆင့် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် လေထုပတ်ဝန်း ကျင်ထဲတွင်အမြင့်ဆုံး ပါဝင်နှုန်းမှာ စီမံကိန်းလုပ်ငန်းခွင်ထဲတွင်တွေ့ရှိရသည်။ နှစ်ဆယ့်လေးနာရီ တိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပါဝင်နှုန်းမှာ ၄၄.၂၈ µg/m³ (AAQS ၏ ၂၉.၅၂ %) ဖြစ်သည်။ ထိခိုက်လွယ်သောနေရာ၏ နှစ်ဆယ့်လေးနာရီတိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက် ဆိုဒ် ပါဝင်နှုန်းမှာ ၁၉.၁၈ - ၂၂.၂၇ µg/m³ (AAQS ၏ ၁၂.၇၉ - ၁၄.၈၅%) ဖြစ်သည်။ ထိုတန်းဖိုးများသည် အမြင့်ဆုံးအဖြစ် သတ်မှတ်ထားသော ၁၅၀ µg/m³ ထက်နည်းကြသည်။

တစ်နှစ်တိုင်းတာမှုအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် (အခြေခံအဆင့်တိုင်းတာထားသော အချက်အလက်များ မရှိသဖြင့် ထည့်သွင်းထားခြင်းမရှိ) လေထုပတ်ဝန်းကျင်ထဲတွင် အမြင့်ဆုံးပါဝင်နှုန်းမှာ စီမံကိန်းလုပ်ငန်းခွင်ထဲတွင်တွေ့ရှိရသည်။ တစ်နှစ်တာ တိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပါဝင်နှုန်းမှာ ၄.၃၁ μg/m^3 (AAQS ၏ ၁၀.၇၈%) ဖြစ်သည်။ ထိခိုက်လွယ်သောနေရာ၏ တစ်နှစ်တိုင်းတာခြင်းအတွက် နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် ပါဝင်နှုန်းမှာ ၀.၁၃ - ၀.၅၄ μg/m^3 (AAQS ၏ ၀.၃၃ - ၁.၃၅%) ဖြစ်သည်။ ထိုတန်းဖိုးများသည် အမြင့်ဆုံးအဖြစ် သတ်မှတ်ထားသော ၄၀ μg/m^3 ထက်နည်းကြသည်။

၁.၇ ပတ်ဝန်းကျင်စီမံခန့်ခွဲနည်းလမ်းများ

၁.၇.၁ ဆောက်လုပ်ရေးပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းများအကျဉ်းချုပ်

(၁) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအကန့်အသတ်များ

သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားထိခိုက်မှုလေ့လာဆန်းစစ်အကြံပေးသူများ၏ ခန့်မှန်းပြင်ဆင် ချက်များ အရဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် ဖြစ်ပေါ်လာနိုင်သည့် သဘာဝပတ်ဝန်းကျင် ပြဿနာများမှာ အောက်ဖော်ပြပါတို့ဖြစ်ပါသည်။ (ဇယား - ၁.၇ - ၁တွင်ကြည့်ရန်)

ဇယား ၁.၇ - ၁

ဆောက်လုပ်ရေးကြာမြင့်ချိန်လများအပေါ်မူတည်၍ မျှော်လင့်ထားသော ထိခိုက်မှုများ

ဆောက်လုပ်ရေးလုပ်ငန်းများ	ကြာမြင့်ချိန် (လ)	ထိခိုက်မှုများ
အဆင့် (၁) မြေတူးခြင်း၊အခြေခံအုတ်မြစ်ချခြင်း နှင့် အဆောက်အဦးတည်ဆောက်ပုံ	၆.၅	ဖုန်မှုန့်၊ ဆူညံမှု၊ ရေဆိုး၊ အမှိုက်အညစ်အကြေး၊ လမ်းသွားလာရေး၊ ဒီရေတော၊ လူမှုရေးနှင့် အသက်မွေးဝမ်းကြောင်းမှု
အဆင့် (၂) ဓါတ်ငွေ့အင်ဂျင်နှင့် သက်ဆိုင်ရာပစ္စည်းများ တက်ဆင်ခြင်း	၂	လေထု၊ ဆူညံမှု၊ လမ်းသွားလာရေး
အဆင့် (၃) စွမ်းဆောင်မှု စစ်ဆေးခြင်းနှင့် လွှဲအပ်စစ်ဆေးခြင်း	၂	လေထု၊ ဆူညံမှု
အဆင့် (၄) ပြီးမြောက်ခြင်းအဆင့်	၄	လေထု၊ ဆူညံမှု

(၂) ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု နည်းလမ်းခွဲများ

ဆောက်လုပ်ရေးအဆင့်တွင် ဖော်ပြပါပြဿနာများကို စီမံခန့်ခွဲရန်လိုအပ်သည်။ ၎င်းတို့မှာ (၁) ယေဘူယျ ဆောက်လုပ်ရေး (၂) ဆူညံမှု (၃) စွန့်ပြစ်ပစ္စည်းများစီမံခန့်ခွဲမှု (၄) လေထုအရည်အသွေး စီမံခန့်ခွဲမှု (၅) ရေဆိုးစီမံခန့်ခွဲမှု (၆) ယာဉ်အသွားအလာစီမံခန့်ခွဲမှု (၇) လုပ်ငန်းခွင်ဘေးကင်းလုံခြုံရေးနှင့် ကျန်းမာရေး (၈) အရင်းအမြစ်စီမံခန့်ခွဲမှု (၉) ပတ်ဝန်းကျင်လူမှုရေး တို့ဖြစ်ကြပါသည်။

ဤစီမံခန့်ခွဲမှုနည်းလမ်းခွဲအသီးသီး၌ ရည်ရွယ်ချက်၊ လုပ်ဆောင်ချက်၊ တိုင်းတာမှုများ၊ အရင်းအမြစ်များ၊ သက်ဆိုင်သောစံနှုန်းများ၊ ထိခိုက်မှုလျော့ချရေးနည်းလမ်းများ၊ တိုင်းတာစစ်ဆေးခြင်းနှင့် စာတမ်းတင်ခြင်း တို့ပါဝင်သည်။ စီမံခန့်ခွဲမှုနည်းလမ်းခွဲ အသီးသီးသည် စာတမ်းများအဖြစ်ရေးသားတင်ပြပြီး ဤစာတမ်း များကိုပြန်လည်သုံးသပ်ကာ ပြုပြင်ရန်လိုအပ်ခြင်းသို့မဟုတ် အဆင့်မြင့်တင်ရန်လိုအပ် သည်များကို လိုအပ်မှုများအပေါ်မူတည်၍ ဆောက်လုပ်ရေးအချိန်ဇယားများကို ပြုပြင်ပြောင်းလဲခြင်း၊ စီမံခန့်ခွဲမှုပြောင်းလဲခြင်းများ ပြုလုပ်သွားပါမည်။ နည်းလမ်းခွဲများ၏ တိုင်းတာစစ်ဆေးခြင်း လုပ်ဆောင်မှုများတွင်ပတ်ဝန်းကျင်အနေအထား၊ လုပ်ငန်းခွင်ကြည့်ရှုစစ်ဆေးခြင်းနှင့် ပတ်ဝန်းကျင်အဖြစ်အပျက်တို့ ပါဝင်သည်။

(၃) တိုင်းတာစစ်ဆေးခြင်းစာတမ်း

ပတ်ဝန်းကျင်တိုင်းတာစစ်ဆေးခြင်းနှင့် လုပ်ငန်းခွင်ကြည့်ရှုစစ်ဆေးခြင်းများပြုလုပ်ခြင်းများ ပြုလုပ် ခြင်းအားဖြင့် (၁) လုပ်ငန်းခွင်ကြည့်ရှုစစ်ဆေးခြင်းပါဝင်သော ရုံးတွင်းစစ်ဆေးရေးစာတမ်း (၂) သယံဇာတ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ ၂လတစ်ကြိမ်တင်ရသောစစ်ဆေးရေးစာတမ်း ဟူ၍ပါဝင် သည်။

(၄) မှန်ကန်သောလုပ်ဆောင်မှုများ

ဆောက်လုပ်ရေးပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းများ အကောင်အထည်ဖော်သူသည် လုပ်ငန်းခွင် လုပ်ဆောင်မှုနှင့် စက်ပစ္စည်းများလုပ်ဆောင်မှုတွင် လိုက်နာမှုမရှိသောအခြေအနေများကို မှန်ကန်သော လုပ်ဆောင်မှုများဖြစ်ပေါ်စေရန်လုပ်ဆောင်ပေးရမည်။ ထိုလုပ်ဆောင်မှုများတွင် ဥပဒေ လိုက်နာမှုမရှိခြင်း၊ စီမံကိန်းအတွင်းပိုင်းလိုအပ်မှုများကိုလိုက်နာမှုမရှိခြင်း၊ မသင့်တော်သော ပတ်ဝန်းကျင်လုပ်ဆောင်မှုများ၊ ပတ်ဝန်းကျင်အဖြစ်အပျက်များနှင့် ပတ်ဝန်းကျင်မှတိုင်ကြားမှု (သို့မဟုတ်) မကျေနပ်မှုများကို မှန်ကန်သော လုပ်ဆောင်မှုများဖြစ်အောင်ပြန်လည်ပြုပြင်ရန်ဖြစ်သည်။

(၅) စီမံကိန်းလည်ပတ်ခြင်း၏ သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းစနစ်အစီအစဉ်

စီမံကိန်းလည်ပတ်ခြင်း၏ သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းစနစ်အစီအစဉ်တွင် (၁) EPC ကန်ထရိုက်တာ၊ စီမံခန့်ခွဲမှုအဖွဲ့၊ ကြီးကြပ်အကြံပေးသူများနှင့် သယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန၏ တာဝန်ခွဲဝေပေးခြင်း (၂) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့၏ ဖွဲ့စည်းပုံ (၃) စာရွက်စာတမ်း လုပ်ဆောင်မှုများ (၄) ဆက်သွယ်ရေးအစီအစဉ်များ (၅) စီမံခန့်ခွဲမှု ပြန်လည်စမ်းစစ်ခြင်း (၆) ပြည်သူတို့နှင့် ညှိနှိုင်းဆွေးနွေးဖော်ထုတ်ခြင်း (အဖွဲ့အစည်း၊ သတင်းအချက်အလက်ဖော်ထုတ်ခြင်း၊ ကန့်ကွက်မှုနှင့် နစ်နာကြေးများပေးရန်) (၇) စစ်ဆေးခြင်း တို့ဖြစ်ကြပါသည်။

တတိယအဖွဲ့အစည်းသည် ဤစီမံကိန်းလုပ်ဆောင်မှုများအတွက် နိုင်ငံအလိုက်၊ ဒေသအလိုက်၊ မြို့နယ် အလိုက်ရှိ လူထုခေါင်းဆောင်နှင့် ကိုယ်စားလှယ်များနှင့်တွေ့ဆုံခဲ့ပါသည်။ ထိုအဖွဲ့အစည်းသည် စီမံကိန်း အကောင်အထည်ဖော်သူ၊ အစိုးရအာဏာပိုင်များနှင့် ရပ်ရွာလူထုကိုကိုယ်စားပြုပါသည်။ ထိုအဖွဲ့ အစည်းတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲရေးနှင့် အကြံပေးသူများပါဝင်သည်။

၁.၇.၂ စီမံကိန်းလည်ပတ်မှုစီမံခန့်ခွဲရေးနည်းလမ်းများ အကျဉ်းချုပ်

(၁) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အကန့်အသတ်များ

ဓါတ်အားပေးစက်ရုံစီမံခန့်ခွဲမှု အဖွဲ့အစည်းမှစီမံကိန်းလည်ပတ်မှုနှင့် ထိန်းသိမ်းရေးလုပ်ဆောင်မှု များ၏ရိုးရှင်းသော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် စီမံခန့်ခွဲမှုစနစ်ကို အကောင်အထည်ဖော်မည် ဖြစ်ပါသည်။ ထိုပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် စီမံခန့်ခွဲမှုစနစ်တွင် ဝန်ထမ်းအင်အား စဉ်းဖြင့် ဓါတ်အားပေးစက်ရုံ၏ အလုပ်ခွင်ကျန်းမာရေးနှင့် လုံခြုံရေးကို အလေးပေးဆောင်ရွက် ပေးသွားမည်ဖြစ်ပါသည်။

(၂) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းခွဲများ

ဓါတ်အားပေးစက်ရုံ၏ လုပ်ရိုးလုပ်စဉ်ကြည့်ရှုစစ်ဆေးခြင်းနှင့် ထိန်းသိမ်းခြင်းများမှလွဲ၍ အခြားသော ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ချရေးလုပ်ငန်းစဉ်များပြုလုပ်ရန် မလိုအပ်ပေ (အပိုင်း ၆.၃.၅တွင် ကြည့်ရန်)။ ဓါတ်အားပေးစက်ရုံစီမံခန့်ခွဲမှုအဖွဲ့အစည်းမှ ပတ်ဝန်းကျင်ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်ကို နောက်ဆက်တွဲ အတွဲ (၂)တွင်ဖော်ပြထားပါသည်။

(၃) တိုင်းတာစစ်ဆေးခြင်းစာတမ်း

ပတ်ဝန်းကျင်တိုင်းတာစစ်ဆေးခြင်းနှင့် စီမံကိန်းကြည့်ရှုစစ်ဆေးခြင်းစာတမ်းတွင် အောက်ဖော်ပြပါ အချက်များပါဝင်သည်။ (၁) အတွင်းပိုင်းတိုင်းတာစစ်ဆေးခြင်းစာတမ်းတွင် စီမံကိန်းတိုင်းတာစစ်ဆေးခြင်း နှင့် ပတ်ဝန်းကျင်တိုင်းတာစစ်ဆေးခြင်း (၂) သယံဇာတနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ ၆လတစ်ကြိမ် တိုင်းတာစစ်ဆေးမှုပို့ဆောင်ခြင်းတို့ပါဝင်သည်။ ထိုစာတမ်းတွင် လေထုအရည်အသွေး၊ အသံဆူညံမှုတိုင်းတာခြင်း အစီအစဉ်များပါဝင်သည်။ မီးခိုးခေါင်တိုင်မှ လေထုအရည်အသွေး တိုင်းတာခြင်းကို ခေါင်းတိုင်အတွင်း တိုင်းတာစက်ဖြင့်ချိတ်ဆက်ကာ ထုတ်လွှတ်မှု စဉ်ဆက်မပြတ် တိုင်းတာခြင်းစနစ်ဖြင့် (CEMS)ဖြင့်တိုင်းတာပါမည်။

(၄) မှန်ကန်သောလုပ်ဆောင်မှုများ

စီမံကိန်းလည်ပတ်ရေးကာလတွင် စီမံကိန်းလုပ်ငန်းစဉ်နှင့် စက်ကိရိယာတို့အား ဓါတ်အားပေး စက်ရုံ၏ မှန်ကန်သောလုပ်ဆောင်မှုများအနေဖြင့် ပြုလုပ်ပါမည်။ မှန်ကန်သော လုပ်ဆောင်မှုများ အစီအစဉ်တွင် ဓါတ်အားပေးစက်ရုံ၏ သတင်းအချက်အလက်စနစ်၏ ခြေရာခံစနစ်လိုအပ်မှုများပါဝင်သည်။

(၅) စီမံကိန်းလည်ပတ်ခြင်း၏ သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းစနစ် အစီအစဉ်

အဆိုပြုထားသော စီမံကိန်းလည်ပတ်ခြင်း၏ သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းစနစ် အစီအစဉ်တွင် (၁) ပတ်ဝန်းကျင်ကျန်းမာရေး၊ လုံခြုံမှုနှင့် စီမံကိန်းလည်ပတ်ခြင်း၏ တာဝန်များခွဲဝေခြင်း (၂) ပတ်ဝန်းကျင် ကျန်းမာရေး၊ လုံခြုံမှုအဖွဲ့အစည်း၏ တည်နေရာသတ်မှတ်ခြင်း (၃) စာရွက်စာတမ်းလုပ်ဆောင်မှုများ (၄) ဆက်သွယ်ရေး အစီအစဉ်များ (၅) စီမံခန့်ခွဲမှုပြန်လည်စမ်းစစ်ခြင်း (၆) ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေး ဖော်ထုတ်ခြင်း (အဖွဲ့အစည်း၊ သတင်းအချက်အလက်ဖောထုတ်ခြင်း၊ ကန့်ကွက်မှုနှင့် နစ်နာကြေးများ ပေးရန် နှင့် (၇) စစ်ဆေးခြင်းများပါဝင်သည်။

၁.၈ ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးခြင်းဖော်ထုတ်ချက်

ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးမှု ၂ ကြိမ်တွင် ၄င်းတို့၏ထင်မြင်ချက်များ တုံ့ပြန်ချက်များထွက်ပေါ် လာပါသည်။ စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာအကြံပေးသူများသည် ပြည်သူများ၏ ထင်မြင်ချက်များ၊ တုံ့ပြန်ချက်များအပေါ်မူတည်သည့် အစီရင်ခံစာကို (နောက်ဆက်တွဲ ၉ခ) တွင်ဖော်ပြထားပါသည်။ အဓိကပြဿနာများကို အကျဉ်းချုပ်၍အောက်တွင်ဖော်ပြထားပါသည်။

၁.၈.၁ ဒေသအာဏာပိုင်အဖွဲ့အစည်းများ

(က) ဒေသအာဏာပိုင်အဖွဲ့အစည်းများ

တနင်္သာရီတိုင်းဒေသကြီး အတွင်းဝင်ရုံး၊ တနင်္သာရီတိုင်းဒေသကြီး၏ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာန၊ ထားဝယ်အထူးစီးပွားရေးဇုန်၏ ဝန်ထမ်းများကိုယ်စားပြုအဖွဲ့၊ ရေဖြူမြို့နယ်မှ ရပ်ရွာလူကြီးများ၏ အဓိကစိုးရိမ်ပူပန်မှုနှင့် ထင်မြင်ချက်များမှာ

(၁) တနင်္သာရီတိုင်းဒေသကြီး အတွင်းဝင်ရုံး

တနင်္သာရီတိုင်းဒေသကြီး အတွင်းဝင်မှ အကြံပြုချက်မှာ ကျေးရွာများရှိလူထုနှင့် တရားဝင်တွေ့ဆုံပြီး ဆွေးနွေးရန်နှင့် ကျေးရွာလူထုသည် အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ၏ လွှမ်းမိုးမှုရှိနိုင်သည်ဟု အကြံပေးပြောကြားသွားပါသည်။

(၂) တနင်္သာရီတိုင်းဒေသကြီး၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ လက်ထောက်ညွှန်ကြားရေးမှူးမှ ထားဝယ်ဧရိယာ ဖွံ့ဖြိုးတိုးတက် ရေးနှင့် ပတ်သတ်၍ အရပ်ဖက်အဖွဲ့အစည်းများမှ မကောင်းမြင်မှုများရှိသည်ဟု တင်ပြသွားပါသည်။ ၄င်းမှ ပြည်သူလူထု၏ သိလိုသမျှမေးမြန်းမှုအား ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးအကြံပေးအဖွဲ့မှ ဖြေဆိုပေးရန် အကြံပြုပြောကြားသွားပါသည်။

(၃) ထားဝယ်အထူးစီးပွားရေးဇုန်၏ ဝန်ထမ်းများကိုယ်စားပြုအဖွဲ့

ဝန်ထမ်းများ ကိုယ်စားပြုအဖွဲ့မှ ၂၀၁၅၊ အောက်တိုဘာလ ၅ရက်မှ - ၁၁ရက် အတွင်းပြုလုပ်မည့် လုပ်ငန်းစဉ်များနှင့် ပတ်သတ်၍ မေးမြန်းသွားသည်။ ၄င်းတို့မှ ဒီရေတောကာကွယ်ရေးနည်းလမ်းများနှင့် စီမံကိန်းဖွံ့ဖြိုးရေးမှ ခေါင်းပုံဖြတ်မှုများမပြုလုပ်ရန် ပြောကြားခဲ့သည်။ ထို့အပြင် ကျေးရွာလူထုညှိနှိုင်း ဆွေးနွေးရေးနှင့် အိမ်ထောင်စုစစ်တမ်းများ မကောက်ခံခင် ကျေးရွာလူကြီးများနှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနအား တရားဝင်အစီအရင်ခံစာတင်ရန် ပြောကြားသွားသည်။

(၄) ရေဖြူမြို့နယ်မှ ရပ်ရွာအုပ်ချုပ်ရေးလူကြီးများ

ရေဖြူမြို့နယ်မှ ရပ်ရွာအုပ်ချုပ်ရေးလူကြီးများမှ စီမံကိန်းလုပ်ငန်းဆောင်တာများအား တရားဝင် ပြဋ္ဌာန်းထားသောနည်းလမ်းများအတိုင်း ဆောင်ရွက်ရန်ပြောကြားခဲ့သည်။

(ခ) ရပ်ရွာလူထုအုပ်စုများ

ရပ်ရွာလူထုနှင့် ညှိနှိုင်းဆွေးနွေးခြင်းအစီအစဉ်ကို ၂၀၁၅ခုနှစ် အောက်တိုဘာလ ၇ရက် - ၈ရက်တွင် မှုဒူး၊ ညောင်ပင်ဆိပ်နှင့် ငပိတက်ကျေးရွာများတွင်ပြုလုပ်ခဲ့သည်။ တက်ရောက်လာသူ ရွာသူရွာသားများ၏ ဆွေးနွေးချက်များမှာ

(၁) မှုဒူးကျေးရွာ

မှုဒူးရွာနှင့် ကမြိုင်ဆွယ်ရွာမှ တက်ရောက်သူ ၇၃ဦးရှိပါသည်။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ လက်ထောက်ညွှန်ကြားရေးမှူးလဲ တက်ရောက်ပါသည်။ ကျေးရွာလူထု၏ အဓိကဆွေးနွေးချက်မှာ အငွေ့ထုတ်လွှတ်မှုနှင့် ဓါတ်အားပေးစက်ရုံ၏ အခြားသောမကောင်းသည့် အချက်များ၊ အကျိုးသက်ရောက်မှုရှိသော တိုင်းတာခြင်းစနစ်၊ ကျေးရွာမှ ဘုန်းကြီးကျောင်းသို့ဆက်သွယ်သော လမ်းအခြေအနေဆိုးရွားမှုရှိနေခြင်းဖြစ်သည်။

(၂) ညောင်ပင်ဆိပ်ကျေးရွာ

ကျေးရွာလူထု အယောက် (၄၀) ဦး တက်ရောက်ပါသည်။ တက်ရောက်သူအများစုမှာ အမျိုးသမီးများဖြစ်ပြီးအမျိုးသားများမှာ ပင်လယ်ငါးဖမ်းထွက်နေသောကြောင့် ဖြစ်သည်။ အဓိက ဆွေးနွေးမှုမှာ ဓါတ်အားပေးစက်ရုံမှ ထုတ်လွှတ်မှု၊ ဒီရေတောအရင်းအမြစ် အသုံးချနိုင်စွမ်း၊ လျှပ်စစ်ဓါတ်အားထုတ်လွှတ်မှုနှင့် လမ်းပန်းဆက်သွယ်ရေးမဖြောင့်ဖြူးမှုတို့ပါဝင်သည်။

(၃) ငပိတက်ကျေးရွာ

ကျေးရွာလူထု ၇၃ဦးတက်ရောက်ပါသည်။ အဓိကဆွေးနွေးမှုမှာ ဓါတ်အားပေးစက်ရုံမှ ထုတ်လွှတ်မှုဖြစ်ပြီး ဒီရေတောအရင်းအမြစ်အသုံးချနိုင်စွမ်းတို့ဖြစ်ပါသည်။

၁.၈.၂ ပြည်သူများနှင့် ဒုတိယအကြိမ် ညှိနှိုင်းဆွေးနွေးခြင်း

(က) ဒေသအာဏာပိုင်အဖွဲ့အစည်းများ

ညှိနှိုင်းဆွေးနွေးခြင်းကို ၂၀၁၅ခုနှစ် ဒီဇင်ဘာလ ၂၃ရက်နေ့တွင် ဒေသဆိုင်ရာနှင့် နယ်မြေဆိုင်ရာ အစိုးရအဖွဲ့များနှင့် တွေ့ဆုံဆွေးနွေးခဲ့ပါသည်။ အစိုးရ အဖွဲ့ရုံး (၂၀) ပါဝင်တက်ရောက်ခဲ့ပါသည်။ ၄င်းတို့ထဲတွင် ထားဝယ်ဒေသမှ သက်ဆိုင်ရာအဖွဲ့အစည်း (၉) ဖွဲ့ပါဝင်ပါသည်။ ၄င်းတို့မှာ - အလုပ်သမားကိုယ်စားပြုအဖွဲ့၊ လျှပ်စစ်ဓါတ်အားဖြန့်ဝေရေးအဖွဲ့၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ တနင်္သာရီတိုင်းဒေသကြီး ငါးလုပ်ငန်းဦးစီးဌာန စသည်တို့ပါဝင်သည်။

အဓိကဆွေးနွေးသော အကြောင်းအရာများမှာ

- ရေနေသယံဇာတများအားထိခိုက်မှု
- ဆောက်လုပ်ရေးကာလအတွင်းထိခိုက်မှု
- အနီးပတ်ဝန်းကျင်ရှိ ကျေးရွာများအား အဖိုးအခနည်းနည်းဖြင့် လျှပ်စစ်ဓါတ်အားရရှိရေး တို့ဖြစ်ပါသည်။

(ခ) ရပ်ရွာလူထုအုပ်စုများ

ရပ်ရွာလူထုများနှင့် ညှိနှိုင်းဆွေးနွေးခြင်း အစီအစဉ်ကို ၂၀၁၅ခုနှစ် ဒီဇင်ဘာလ ၂ရက် - ၃ရက်တွင် ငပိတက်ကျေးရွာ၊ မူဒူးကျေးရွာ (ကမြိုင်ဆွေကျေးရွာ အပါအဝင်)နှင့် ညောင်ပင်ဆိပ်ကျေးရွာများ တွင်ပြုလုပ်ခဲ့သည်။

တက်ရောက်လာသူရွာသူရွာသားများ၏ ဆွေးနွေးချက်များမှာ

(၁) ငပိတက်ကျေးရွာ

ငပိတက်ကျေးရွာမှ တက်ရောက်သူ (၈၂)ဦးရှိပါသည်။ အဓိကဆွေးနွေးချက်များမှာ

- ဆောက်လုပ်ရေးလုပ်ငန်းခွင်၏ မကောင်းသောထိခိုက်မှုများကြောင့် ရေသယံဇာတများ လျော့နည်းမှုနှင့် ငါးဖမ်းနေရာ ကန့်သတ်ချက်များရှိလာခြင်း
- စီမံကိန်းလုပ်ငန်းခွင်တွင် အလုပ်အကိုင်ရရှိမှုနှင့် အတွေ့အကြုံမရှိသော ကျေးရွာသူ ကျေးရွာသားများအား သင်တန်းများပေးရန်
- ငပိတက်ကျေးရွာနှင့် စီမံကိန်းနှင့် နီးသောအခြားကျေးရွာများအား မီးရရှိရေးစသည့် အကြောင်းအရာများကို အလေးပေးဆွေးနွေးခဲ့ကြသည်။

(၂) မူဒူးကျေးရွာ

မူဒူးကျေးရွာနှင့် ကမြိုင်ဆွေကျေးရွာအပါအဝင် တက်ရောက်သူ (၈၉)ဦးရှိပါသည်။ အဓိက ဆွေးနွေးချက်များမှာ -

- ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ချက် အစီရင်ခံစာအကြောင်းနှင့် ၎င်း၏ အစီအစဉ်များ
- စီမံကိန်း၏ ထိခိုက်မှုများကို လေ့လာတိုင်းတာမှုအဖွဲ့အကြောင်းအရာများ
- စီမံကိန်း၏ ထိခိုက်မှုများကို ရေတို/ရှည် လေ့လာတိုင်းတာရန် အကြံပြုပြောကြား ဆွေးနွေးခဲ့ကြပါသည်။

(၃) ညောင်ပင်ဆိပ်ကျေးရွာ

ညောင်ပင်ဆိပ်ကျေးရွာမှ တက်ရောက်သူ (၆၆)ဦးရှိပါသည်။ ၎င်းတို့သိလိုသည်မှာ စီမံကိန်း ဆောက်လုပ်ရေးကာလနှင့် လည်ပတ်ရေးကာလအတွင်း ထိခိုက်မှုများအကြောင်း ဖြစ်ပါသည်။

(ဂ) အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ

၂၀၁၅ခုနှစ် ဒီဇင်ဘာလ (၄)ရက်နေ့တွင် တာဗိုရန် အမျိုးသမီးအဖွဲ့နှင့်တွေ့ဆုံခဲ့ပါသည်။ ထိုအဖွဲ့အစည်းမှ နောင်ကျင်းပမည့် ကျေးရွာအလိုက် ပြည်သူလူထုနှင့် ညှိနှိုင်းဆွေးနွေးပွဲများကို တက်ရောက်ရန် စိတ်အားထက်သန်ပါသည်။ ၎င်းမှာ သက်ဆိုင်ရာ အဖွဲ့အစည်းများနှင့် သဘောတူညီမှုရရှိပြီး သဘောပေါက်နားလည်ရန် မျှော်လင့်ချက်ဖြစ်ပါသည်။

CHAPTER 1

EXECUTIVE SUMMARY

CHAPTER 1

EXECUTIVE SUMMARY

1.1 INTRODUCTION

Dawei Power Generating Company Limited (Project Proponent) intends to develop a Boil-off Power Plant Project (Project) in Dawei Township in the Tanintharyi Region. The project proponent is Dawei Power Generating Company Limited (DPG),a company incorporated in Myanmar and has 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' to meet the need of large and small industrial in DSEZ.

The Project will utilize BOG from the proposed LNG terminal project as fuel for power generation using reciprocating gas engines. The net generation capacity of about 15.488 MW. The generated power will be used in the LNG terminal operation and the surplus power will be supplied to other users around the power plant site.

According to Myanmar Conservation and the EIA Laws (2012) and EIA Procedure (2015) prepared by Ministry of Environmental Conservation and Forestry, the more than 50 MW of natural gas power plant project is necessary to have Environmental Impact Assessment prepared and approved prior to the construction. Even through, this project is only 15 MW, ESIA is conducted due to environmental concern.

DPG engaged TEAM Consulting Engineering and Management Co., Ltd., (TEAM) and Total Business Solution (TBS), herein after referred to as the EIA Consultant, to conduct the EIA study.

1.2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

1.2.1 Corporative Environment 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 boil-off gas power plant;
- During the operational phase, EHS management will be an integral part of the operational management of the small port, the LNG terminal and gas pipeline, and the boil-off gas 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.

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 legal foundation for environmental management is the National Environmental Policy (1994) which supports Articles 37, 42 and 390 of the new Constitution (2008). The National Environmental Policy was translated into actions by the Environmental Conservation Law (2012) which is elaborated for implementation by the Environmental Conservation Rules (2014). The two legal documents provide the comprehensive legal framework for environmental management of the country.

(2) Regulations Related to Environmental Impact Assessment and Management

The Administrative Instruction of EIA Procedure (2015), Environmental Impact Assessment Guideline (2014), and National Environmental Quality (Emission) Guidelines (2015) are three key legal instruments for environmental management of development activities through the ESIA process as stipulated in the Environmental Conservation Law.

(3) Laws and Regulations Related to Environmental Protection and Social Impact Management

In addition to legal requirements related to ESIA, the Project will have to comply with other laws in its management of environmental, social and cultural aspects during its pre-construction, construction, operations, and decommission. These aspects include: (i) Law Related to Environmental Quality Standard e.g. Air Quality and Noise, (ii) community and occupational health and safety; (iii) involuntary resettlement; (iv) cultural impact; (v) The Protection and Preservation of Ancient Monuments, (vi) factories, (vii) social safety, (viii) ecological resources associated to forest, wildlife and natural area; and (ix) coastal and marine environment.

(4) Law Specific to the Project Site

The Myanmar Special Economic Zones Law (2014) and The Dawei Special Economic Zone Law (2011) were specifically promulgated for the development and operations of DSEZ. The law accords the importance of environmental and social aspects in the development 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 arePlant 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

The EIA process for this Project will be administered by the central ECD in coordination with the regional ECD and various concerned government organizations at the regional, township, and district levels.

During the project implementation, the DSEZ Management Committee and the DSEZ Supporting Working Body will be responsible for facilitating resolving issues raised by the government parties or the developers/investors.

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 GuidelinesisEnvironmental, 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 pre-construction, construction, operation, and decommission will comply with the national and 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.

1.3 PROJECT DESCRIPTION AND ALTERNATIVES

1.3.1 Project and Description of Alternatives

(1) Project Description

Project Site

The proposed Boil-Off Gas Power Plant will be constructed on a 34 acre of land plot, adjacent to the LNG Terminal, in the designated industrial estate area.

The site is relatively flat with an average elevation at about 1 m above mean sea level (+1.0 m MSL). Three villages are located within 5 kilometer radius from the project site. One village is the fishing village of Nga Pitat. The remaining two villages, Nyaung Bin Siek and Mu Du, are located further inland and on the opposite side of the tidal creek.

Facilities and Infrastructure

The Project will construct a 2 units of natural gas-engine and generator power plant. Other components include Engine hall, Electrical equipment Building, Tank yard and switch yard, and; Support facilities including compact workshop and warehouse, administration and social facility building, guardhouse, etc. These support facilities will be shared by the LNG terminal project.

Time Schedule

The construction would commence in the last quarter of 2017 and would be completed by the end of 2018 (Approx. 15 months).

Construction Phase Activities

(a) Construction Works

The civil works construction would require about 50 workers. The installation and erection of all mechanical and electrical works would require about 17 persons including two supervisors.

(b) Source of Electricity

During construction, electricity will be supplied from a temporary power plant to be set up by the same developer (DPG)

(c) Water Requirement (Quantity and Source of Water)

During construction, not more than 100 m^3 per day would be required for civil works construction. The water will be supplied by the ITD construction team from the existing reservoir in DSEZ.

(d) Types and Number of Construction Equipment

As all elements of the power plant including the power house will be imported as pre-fabricated or ready- to-install forms, construction equipment for this Project will be mainly transport equipment (trucks and cranes) and welding equipment and tools.

(e) Types and Source of Construction Material and Storage Area

Construction materials will therefore be stored in the existing ITD camp. All equipment and tools for mechanical and electrical works will be stored in a worker camp at the power plant construction site.

(f) Location of Worker Camp Site

The worker camp will be on a temporary site to be located adjacent to the Boil-off Gas Power Plant.

Operation Phase Activities

The power plant will be routinely operated as base load power plant by about 8 operators

1) Maintenance Every 3 Months

The activities are listed below:

Description	Activities
Engine Block, Cylinder Liner	Check
Crankshaft, Connecting Rod, Piston	Check
Cylinder Head with Valve	-
Valve Mechanism and Camshaft	Check
Turbo-charging, Charge Air Cooling and Waste Gate	Check/ Overhaul/maintain
Ignition System	Replace/Clean/Adjust/Lubricate/Calibrate
Fuel System	Check/ Overhaul/maintain/Replace
Lubricating Oil System	Check/Overhaul/maintain/Replace/ Clean/Adjust/Lubricate/Calibrate
Cooling Water System	Check
Exhaust System	Check
Automation and WECS 800 and UNIC	Check
Engine and Fixing	-

Remark: The estimated downtime of maintenance works will take 1-4 days, depending on types of maintenance activities.

2) Maintenance Every Two Years

The activities are listed in the table below:

Description	Activities
Engine Block, Cylinder Liner	Check/ Clean/Adjust/Lubricate/Calibrate/Overhaul/maintain
Crankshaft, Connecting Rod, Piston	Check/ Clean/Adjust/Lubricate/Calibrate/Replace
Cylinder Head with Valve	Overhaul/maintain/Replace
Valve Mechanism and Camshaft	Check/ Replace
Turbo-charging, Charge Air Cooling and Waste Gate	Check/Overhaul/maintain/Replace
Ignition System	Replace/Clean/Adjust/Lubricate/Calibrate
Fuel System	Check/ Overhaul/maintain/Replace
Lubricating Oil System	Check/Overhaul/maintain/Replace/ Clean/Adjust/Lubricate/Calibrate
Cooling Water System	Check
Exhaust System	Check
Automation and WECS 800 and UNIC	Check
Engine and Fixing	Check

Remark: The estimated downtime of maintenance works will take 7-8 days.

3) Environmental Management during Operations

The Project will be designed to include the following equipment or facilities for environmental management during operations:

- Emission: The table below quotes typical emissions of Wartsila gas engines:

SOx	Less than 20 ppm
NOx	Less than 120 ppm at O_2 : 7%
Particulate	Less than 60 mg/m^3

Source : WARTSILA, 2015.

- Noise control for the project inlcude:

  Engine noise at 1 meter: ~ 115 dB(A)

  Power House interior: ~ 110 dB(A)

  Outside: typical design is 65 dB(A) @ 600 ft

- Wastewater: Approximately 3,000 liters of waste lube oil and 2,500 liters of coolant water every 2,000 hours (3 months).

The Project facilities will be designed to fully meet occupational health and safety (OHS) requirements.

(2) Description of Project Alternatives

The Project has to use BOG for power generation for obvious reasons. BOG is the only fuel available in the project site and, if it is not used, it will have to be flared, i.e. destroyed by burning out, or returned to the LNG terminal. Therefore, there is no other fuel alternative. The project alternatives are therefore between reciprocating gas engines and gas turbines.

In term of prime mover for power generation, the two engine alternatives have their advantages and disadvantages, illustrated as follows:

A. Gas Turbine Engine:

Advantages

- Long maintenance intervals
- Low emission rate
- Low cost (high horsepower applications)

Disadvantages

- High fuel consumption rate (low efficiency)
- High maintenance costs
- Minimal turndown/load reduction
- Starting and stopping takes hours off life cycle
- Altitude and ambient temperature quickly affect its power and heat rate

B. Reciprocating Engine:

Advantages

- Low fuel consumption rate (high efficiency)
- Operational function (variable loads and pressure ratios)
- A well known technology

Disadvantages

- NO_x High emission rate
- High maintenance intervals and costs
- Complex package
- Low compressor efficiency at lower pressure ratios

Some of the above comparisons are supported by data as follow:

❖ Compares cost advantage of the two alternatives. The reciprocating as engine alternative (44.3% efficiency with 1.7 million USD) is more cost effective as indicated by its cost per hp-hour output of gas turbine (32% efficiency with 1.9 million USD).

❖ The data show that gas turbine engines generate fewer amounts of NO_x and THC (Total Hydrocarbon), while the reciprocating engines generate higher amount of NO_x and THC; but less CO.

❖ The gas engine alternative is more suitable for base load operation than the gas turbine alternative due to its shorter time in stopping and starting.

1.4 DESCRIPTION OF THE ENVIRONMENTAL AND SOCIAL CONDITION

1.4.1 Study Area and Scope of the Environment

The EIA study area is defined as an area within a 5 km radius of the Project site. The study area covers 3 villages in Yebyu and Luanglon Townships. 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 EIA 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 study area is relatively flat area (+1 m. MSL), situated in the coastal area of Tanintharyi Region. To the west of study area lies several islands, the nearest is about 25 km offshore.
- Values of all ambient air quality parameters (TSP, PM-10, SO2 and NO2) in three stations (Nga Pitat, Mudu, and existing small port) met World Bank's air quality standards.
- Levels of ambient noise in three stations (Nga Pitat, Mudu, and existing small port) and vibration at Nga Pitat Village met World Bank's noise and vibration standards.
- Seawater at four sampling stations was clean as indicated by high levels of dissolved oxygen and very low concentrations of heavy metals and organic pollutants.
- Groundwater in two surveyed wells (Nga Pitat and Mudu Villages) was met the WHO standards for drinking purpose.
- Sea bed sediment samples were not contaminated by heavy metals and organic pollutants, which met the NOAA's requirement

1.4.3 Biological Components

The following key features of the terrestrial resources and aquatic ecosystem in the Project area are observed:

- The study area has no conservation forest although scattering patches of degraded forest areas still exist consisting of mangrove forest, beach forest, mixed forest, and deciduous forest.

- At least 145 plant species were identified in the 5 km radius of study area. Few species are listed as Near Threatened Species and Vulnerable Species. Nearly 90 small wildlife species were recorded in the surveys, and mostly are classified as Least Concern Species.

- The marine ecosystem was healthy as indicated by high densities and diversities of phytoplankton, zooplankton, benthos and fisheries. Fishing activities are still small scale and are not intensive. The coastal water was still rich in fish species and aquatic animals, such as crabs and prawns. Dominant fish specified found were trevally, yellow spotted trevally and bludger.

1.4.4 Socio-Economic Components

Key findings on socio-economic conditions of these communities including Nga Pitat and Nyaung Bin Seik Village in Launglon Township, and Mudu village in Yebyu Township are summarized below:

- The study area has a total population of 3,935 living in 939 households, an average household size of 4-5 persons, and a female to male ratio of 1.02 to 1.

- Female and male populations in the communities are nearly equal in number, and their roles are supportive to each other.

- There were no serious health problems in the three villages. Hospital services are available only in Yebyu and Maungmagan, about 4 to17 km from individual villages.

- In the three coastal villages, fishing and collecting aquatic animals were main economic activities supplemented by agriculture. Farming was the main occupation of people in Mudu village, which is farthest from the sea among the three villages.

- Average annual household income was about 5,000 USD equivalent while the annual expense was about 4,000 USD equivalent.

- Unemployment was low as villagers were self-employed in fishing and agriculture.

- Most people received only primary education.

- Persons who could be considered vulnerable were small in number. By social structure, the vulnerable groups were taken care of by their families, relatives and neighbors.

- The study area covers 21,399.54 acres, in total. Mostly, 46.35% is water body (coastal water). Village/built up area and agricultural area cover 23.91%. About 21% of the study area is covered by forest land and the rest (about 9%) is miscellaneous land.

1.4.5 Cultural Components

- The majority of people belong to Dawei ethnic group of Bamar, practicing Theravada Buddhism and speaking the native language of Dawei.
- Temples and cemeteries exist in every village. An important historical and religious site of Na Bule is nearby the villages.
- The coastal villagers rely mostly on marine and mangroves resources for their livelihoods. Nga Pitat villagers utilize mangroves and Britney creek as storm shelters for their fishing boats. Mudu community lives on land resources.
- The local communities pay respect to their formal and informal leaders. Only youth groups and firefighting teams are active in some villages. The key community base organization is Dawei Development Association-DDA.

1.4.6 Visual Components

The study area has coastal scenery with mountains as distant background. Its landscape has no unique appeal. Na Bule and Maungmagan beaches are beautiful beaches with tourism potentials but these two places are 7 km and 12 km from the Project site, respectively.

1.5 IMPACT AND RISK ASSESSMENT MITIGATION MEASURES

1.5.1 Summary of Impact

The identified environmental disturbances and mitigation measures during pre-construction phase are presented in ***Table 1.5-1***, the identified environmental disturbances and mitigation measures during construction phase are presented in ***Table 1.5-2***, the identified environmental disturbances and mitigation measures during operation phase are presented in ***Table 1.5-3 and*** the identified environmental disturbances and mitigation measures during decommissioning phase are presented in ***Table 1.5-4***

TABLE 1.5-1

IMPACTS DURING PRE-CONSTRUCTION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Ecosystem	The site clearance and filling of boil-off power plant will permanently eliminate the existing swamp, mangrove, beach forest, fish, other aquatic animals and wildlife.	• 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 swamps and mangrove areas. • In consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers, design and implement a mangrove reforestation program in areas outside DSEZ. The purpose is to compensate for the loss of mangrove area by the Project. • 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.
Livelihood	Permanent Impact on Villagers in Nga Pitat Village near the Project site, harvest fish and other resources due to loss of the Britney Creek and mangrove in the Project site.	• The Project Proponent intends to develop Chi Oo Klong area inside Pan Din In River to provide the new ground for fishing and resource harvesting and the new area for fishing boats berthing. • 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
Fugitive Dust, Noise and Gaseous Emissions	Nga Pitat Village will impact from dust diffusion and increase noise level due to site preparation works and heavy equipment e.g. bulldozers, excavators and graders	**Mitigation for Fugitive Dust** Water spraying could reduce as much as 75% of the dust. **Mitigation for Noise** Provide ear muff to workers working in the excessive noise environment.

TABLE 1.5-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Impacts from Gaseous Emission	Increases emissions from operation of trucks and heavy construction equipment.	**Mitigation Measures for to minimize gaseous emissions at sources** • 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. • 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 (repowered engines, electric drive trains). • 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. • 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.

TABLE 1.5-2
IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Noise	Increase ambient noise level at the construction activities that generate excessive noise include soil compaction by heavy graders and truck	• Major construction activities which generate loud noise should be limited to only during the day time. • Speeds of vehicles in the construction site will not be more than 40 km/hr. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Temporary sound barriers or shielding should be installed for non-mobile equipment. • The EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period.
Wastewaters	Wastewaters from construction activities include: • Domestic sewage generated by daily living activities of about 70 construction personnel at peak of the construction • Wash waters in the construction site, mainly from truck wheel washing and concrete wash waters • Surface runoff	**Domestic Wastewater** • Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. • Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. • Grey water will be discharged into the retention pond which designed as an oxidation pond with a hydraulic retention time of about 7 days. **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.

TABLE 1.5-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Wastewaters (Cont'd)		**Surface runoff** • The site preparation activities, including land clearing and site filling and compaction, should be carried out during the dry season. • The power plant construction site should be surrounded by temporary fences to limit the amount of sediment that could be washed from the construction area during the raining time into the sea. • Construct a temporary drainage system to collect the surfaced runoff from the construction area to avoid the discharge of surface runoff into the open sea. • The collected storm water will be drained into a retention pond for removal of suspended solids before discharging into the sea or a nearby drainage channel, if exist.
Construction Wastes	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)	**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. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes; • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil.

TABLE 1.5-2
IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Construction Wastes (Cont'd)		**Waste Reuse and Recycling** • 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; • Collection and recycling of used oils by a licensed contractor; **The remaining wastes that cannot be reused or recycled** • An efficient construction waste management system should be established and implemented. • Haphazard disposal of construction waste in or off the construction site will be prohibited. • Non-construction wastes will be disposed off with the construction wastes. • Provide adequate number of refuse bins or containers with tight covers, daily collection of disposal. • 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.

TABLE 1.5-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Road Traffic	Increase number of vehicle at ITD coastal road and Nga Pitat road due to transport construction wastes, construction materials, and plant equipment.	• In consultation with the concerned authorities at the national, regional, and township levels, develop and implement a Construction Traffic Management Plan • Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan • Heavy trailer trucks transporting heavy and large plant equipment will have to be directed by a traffic police car. • 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 work sites. • Provide traffic controls designed for the safe movement of pedestrians and cyclists near the worksites.
Local Communities	**Local Economy** - Cash injection into the local economy due to workers requirement on local services, particularly foods and sundries - Opportunities of local people to work during project construction	**Local Economy** • Priority should be given to local employment, especially the villages close to the construction site; e.g. Nga Pitat, Nyaung Bin Seik and Mudu. • 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.

TABLE 1.5-2
IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Local Communities (Cont'd)	**Livelihood** The major livelihood effect is adjust fishing ground activities in the new alternative fishing ground and boatyard area. In the early stage, the local people will obstruct to adjust fishing ground activities in the new area.	**Local Economy (Cont'd)** • 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 **Livelihood** • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village).
Community Health, Safety and Security	- Without proper management, the influx of construction workers could pose health risks to the communities in case of communicable diseases such as sexually transmitted diseases - The influx of workers could also pose security risks to the communities in terms of crimes and drug abuses.	**Health Risks** • All recruited workers should receive health examinations for screening of major communicable diseases before employment. Subsequently, annual check-ups should be provided. • Provide health awareness training to workers on hygiene and sanitation, communicable and infectious diseases. **Security Risk** • 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.

TABLE 1.5-3

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	• Affect to village due to gas emission from stack especially NO_2	• The reduction of NO_2 at source using 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.
Wastewaters	Waste Waters of the boil-off gas power plant will come from the following sources: • Domestic sewage • Plant wash water • Strom water	• The wash water contaminated with oil will be segregated for oil removal in an oil separator. The oil-free wash water will then be combined with other wastewater streams for further treatment. • Domestic sewage will be treated in a small treatment plant. The treated effluent will be combined with the effluents from the wash water and domestic sewage. • A drainage system will be provided to collect surface runoff and storm water discharged into the sewers or directly into the coastal water. Surface runoff from open areas contaminated by oil will be separately drained into an oil separator before discharging into the main drainage system.
Waste	During the operation phase, the following waste will be generated and need to be controlled: • Lubricating oil from maintenance of the engines • Waste lube oil and spent coolant from maintenance of the power plant	• 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 prohibited. • Provide adequate number of bins or containers with tight covers, collection of liquid waste.

TABLE 1.5-4
IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	Dust diffusion during demolition of onshore facilities and land reclamation	Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust.
Noise	Increase noise level from heavy equipments and vehicles.	• A practical measure is to provide ear muff to workers working in the excessive noise environment. • Temporary sound barrier should be setting during demolition and land reclamation of small port to reduce noise impact to Nga Pitat Village.
Waste Management	• Residue from demolition activities • Hazardous waste • Domestic wastes from site workers	• 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.
Land Reclamation	Land Reclamation	• Developer should design with discuss with concerned authority and local villagers to management on the open land after demolition complete. • Typical utilization on the open land such as mangrove reforestation, develop agriculture land, transfer port and area to local authorities to confirm use.

1.5.2 Risk Assessment

(1) Environmental Risk Management - Pre-construction Phase

A. Risk Identification

During pre-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 affected people in nearby communities.

B. 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
- 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

C. Risk Classification

Risk 1 is considered major risk as it would have a high level of likelihood of occurrence and a high level of impacts.

Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a high level of impacts.

D. 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 6.2.2-1 (Chapter 6)***.

(2) Environmental Risk Management - Construction Phase

A. Risk Identification

During the construction phase, three uncertain events or three 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.

B. Risk Analysis

Risk 1-Cyclone Situation

Based on the historical storms, the following observations can be made:

- No cyclone in the period 1969 - 2011 made landfall in Dawei;
- Most of the cyclones are generated west of Dawei and move away from the site;
- The smallest distance between Dawei and a cyclone was 200 km.
- The probability of cyclone occurrence at Dawei is considered to be < 1 in 100 years for storms with a lower intensity that travel over land from the South China Sea.
- This would not motivate capital investments in the structures of the Boil-off Power Plant.

Risk 2-Tsunami

According to the result from "Report on Post Tsunami Survey along the Myanmar Coast for the December 2004 Sumatra-Andaman Earthquake, 2005", The study covered on Muangmagan beach. The study can summarize as follow:

- The tsunami height during 2004 at Muangmagan beach approximate 1.8 m,
- No adverse affected on the house and shop near Muangmagan beach. The effected only on increase water level on the beach along Muangmagan.

C. Risk Classification

Both Risk 1 and Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a high level of impacts.

D. Risk Mitigation Measures

Even through very low effect from cyclone and tsunami to the small port and facilities, 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 as follow:

- Prepare the detail design of small port structure to withstand the cyclone and tsunami.
- Establish and regularly monitor the warning system for tsunami and cyclone.
- Set the safety zone for evacuation of staff and people in case of tsunami and cyclone.
- Set up the evacuation plan for tsunami and cyclone and train all staff in small port.

(3) Environmental Risk Management - Operation Phase

A. 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 power plant and could cause injuries and fatalities to operational personnel and people in the nearest communities. The hazards in the 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-fired power plants include gas leakage, internal explosions, and failure of rotating machinery. Although these hazardous incidents are very rare for natural gas-fired power plants but they did occur.

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 power plant or the surrounding communities.

B. Risk Analysis

1) Operational Risks

Consequences

If a serious accident occurs, the damages would be contained within the power plant site as the nearest community is about 2.22 km away.

Underlying Causes

Several studies of failures of chemical and 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 very small amounts of NOx and 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 actual efficiency of the installed low NOx 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 power plant operation, even without treatment, will contribute only insignificant amounts of non-toxic pollutants into the sea. Therefore, non-compliance with the treated effluent standards and monitoring requirements, if occurs, will not result in a serious degradation of the seawater 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 medium.

C. Risk Classification

1) Operational Risks

Although the operational risks could have serious consequences on the 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 or insignificant risk.

D. 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 boil-off gas power plant operational team.

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.

(4) Environmental Risk Management - Decommissioning Phase

A. Risk 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 equipment, pipes, and cables, cleaning the equipment, tanks, and pipes, and demolition of control building and removal of instrument. 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 are coastal water, soil, groundwater and occupational health and safety of personnel.

B. Risk Analysis

It is study in case of opportunity of proposed project site to get impact form air, noise, water 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

C. Risk Classification

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.

D. Risk Mitigation Measures

a. Mitigation Measures to Reduce Fugitive Dust

At all 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.

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 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.
- Speeds of vehicles in the decommissioning site will not be more than 40 km/hr.
- Temporary sound barriers or shielding should be installed for non-mobile equipment.

c. Mitigation Measures for Waste Management

- 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 to support the segregation. Each waste category will be segregated into recycles, reuse and disposal sub-categories.

1.6 CUMULATIVE IMPACT ASSESSMENT

The CIA has to adopt the following assumptions:

Due to the boil-off power plant located next to initial phase power plant project (420 MW), the CIA impact will be study on concentrated of NO_2 accumulated from the two projects

The predicted maximum concentration of NO_2 clearly indicates that the study area could have two power plant. Details on NO_2 concentration from emission under 2 power plant 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 109.28 $\mu g/m^3$ (54.64% of AAQS). For the concentrations of NO_2-1 hr at sensitive receptors, the values were between 57.91-76.53 $\mu g/m^3$ (28.96-38.27 % 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 44.28 $\mu g/m^3$ (29.52 % of AAQS). For the concentrations of NO_2-24 hr at sensitive receptors, the values were between 19.18-22.27 $\mu g/m^3$ (12.79-14.85 % 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 4.31 $\mu g/m^3$ (10.78 % of AAQS). For the concentrations of annual NO_2at sensitive receptors, the values were between 0.13-0.54 $\mu g/m^3$ (0.33-1.35% of AAQS) which are below the permissible maximum of 40 $\mu g/m^3$.

Results of assessment show that there will be no cumulative impact on sensitive receptors.

1.7 ENVIRONMENTAL MANAGEMENT PLANS

1.7.1 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 EIA study purpose (see ***Table 1.7-1***).

TABLE 1.7-1

ANTICIPATED IMPACTS AT VARIOUS MONTHS OF THE CONSTRUCTION

Construction Activities	Duration (Months)	Impacts
Phase 1: Earth and Foundation work and Building Structures	6.5	Dust, Noise, Wastewater, Solid Waste, Road Traffic, Mangrove, Social and Livelihood
Phase 2: Installation of Gas Engines and Associate Equipments	2	Air, Noise, Road traffic
Phase 3: Load Test and Commission Test	2	Air, Noise
Phase 4: Completion Stage	4	Air, Noise

(2) Environmental Management Sub Plans

The following issues will be managed during the construction phase: (i) general construction, (ii) noise; (iii) waste management; (iv) air quality management, (v) wastewater management; (vi) traffic management, (vii) OSH management, (viii) resource management and (ix) social environment

Each sub-plan 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.

1.7.2 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 8 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 6.3.5*). 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.

1.8 PUBLIC CONSULTATION AND DISCLOSURE

During the two 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:

1.8.1 The First Period of Consultation Meeting

(a) Government Authorities

Major concerns and comments from the Secretary of Tanintharyi Regional Government Office, Deputy Director of ECD Regional Office, Support Working Body of DSEZ and Head of Yebyu Township Administration were:

1) Secretary of Tanintharyi Regional Government Office

The Secretary of Tanintharyi Regional Government had suggested the Consultant to organize the village meetings to be in line with the official procedure. He also notified that questions raised by the communities might be influenced by the Non Governmental Organizations (NGOs).

2) Deputy Director of ECD Regional Office

The ECD Deputy Director informed about negative views of civil organizations on the proposed development in Dawei area. He suggested the Consultant to answer all questions raised by communities.

3) Support Working Body of DSEZ - SWB

The SWB Committee had questioned on types of activities carried out between 5 - 11 October 2015. He asked about the method to protect mangrove forest, and suggested not to be exploited by the project development. They recommended the Consultant to inform the village headmen and ECD officials concerned before the conduct of public consultations and household surveys.

4) Head of Yebyu Township Administration

Head of Yebyu Township Administration had short comment on implementation of the Project activities which must follow official bureaucracy.

(b) Local Communities Groups

Consultation meetings at the village level were conducted between 7-8 October 2015, at three villages of Mudu, Nyaung Bin Seik and Nga Pitat.

Issues identified by the participating villagers are as follows:

1) Mudu Villages

Seventy three (73) villagers from Mudu and also include Kamyaingswea participated in the meeting. The ECD Deputy Director also joined as observer. The villagers' main concerns were on emission and other negative impacts from the power plant, effectiveness of the monitoring system, and poor conditions of the road link to the monastery nearby.

2) Nyaung Bin Seik Village

Forty villagers (40) participated in the meeting. Most of them were women as men went out for fishing in the sea.Their main concerns were on emission from the power plant, accessibility to mangroves resources and electricity generated by the project including poor conditions of the road.

3) Nga Pitat Village

Seventy three (73) villagers participated in the meeting. Their main concerns were on emission from the power plant and accessibility to natural resource in mangroves forest.

1.8.2 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

(2) Local Communities Groups

Consultation meetings at the village level were conducted between 2-3 December 2015, at three villages of Nga Pitat, Mudu (including Kamyaingswe) and Nyaung Bin Seik.

Issues identified by the participating villagers are as follows:

1) Nga Pitat Village

Eighty two (82) villagers participated in the meeting.Their major concerns were:

- Negative impact from construction might make marine resources declined and limitation of fishing ground
- Employment opportunity with the Project and training for unskilled labour of villagers
- Request to provide electricity to their village, as Nga Pitat is the nearest village to the Project site

2) Mudu Village

Eighty nine (89) villagers from Mudu and also include Kamyaingswea participated in the meeting.Their major issues were:

- Asking about current status of the EIA study and its entire procedure
- Asking about organization to monitor the project impacts
- Suggestion to monitor on short and long term impacts from the project implementation

3) Nyaung Bin Seik Village

Sixty six (66) villagers participated in the meeting.Their concern was only on the project impacts during construction and operation periods.

(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.

CHAPTER 2

INTRODUCTION

CHAPTER 2

INTRODUCTION

2.1 PRESENTATION OF THE PROJECT PROPONENT

The Boil-off Power Plant Project is proposed by Dawei Power Generating Company Limited ("DPG"), a company incorporated in Myanmar, which is awarded by the DSEZ Management Committee ("DSEZMC") to undertake its Project under each relevant concession agreement in 5 August, 2015. 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 its proposed Project in the most efficient manner.

The selected project site covers about 34 acres of coastal land. The large land tract of industrial estate are is about 8 km long along the beach, and about 21 km from Dawei Town-the administrative center of Tanintharyi Region.

The Project will utilize BOG from the proposed LNG terminal project as fuel for power generation using reciprocating gas engines. The net generation capacity of about 15.488 MW. The generated power will be used in the LNG terminal operation and the surplus power will be supplied to other users around the power plant site.

Name of DPG's representative formatters regarding this ESIA and environmental clearance, and his contact address is given below:

Mr. Poawpadet Vorabutr

Dawei Power Generating Company Limited

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224/A, U Wisara Road, Bahan Township, Yangon,

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Tel. +668-1825-2490

e-mail:poawpadet@lngplusinternational.com

2.2 PRESENTATION OF THE ENVIRONMENTAL AND SOCIAL EXPERTS

According to Myanmar Conservation and the EIA Laws (2012) and EIA Procedure (2015) issued by Ministry of Environmental Conservation and Forestry, the more than 50 MW of natural gas power plant project is necessary to have Environmental Impact Assessment prepared and approved prior to the construction.

Even through, this project is only 15 MW, ESIA is conducted due to environmental concern.

The EIA Consultant engaged by DPG consists of TEAM Consulting Engineering and Management Co., Ltd., Thailand (TEAM), and Total Business Solution Co., Ltd., Myanmar (TBS).

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 and among the ESIA team, Project Proponent, Environmental Conservation Department, and other concerned government agencies in the project area, especially those agencies in Dawei District and Tanintharyi Region.

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 Report, including: (i) involuntary resettlement; (ii) marine ecology; (iii) coastal engineering; (iv) social impact assessment; (v) public participation; (vi) occupational health and safety; and (vii) environmental management planning. The environmental management planning expert will assist the Team Leader in ensuring that all reports will meet all requirements prescribed in the ESIA Procedure, and that the 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: (i) coastal zone ecology; (ii) coastal ecological surveys; and (iii) air and noise surveys.

A simple organizational structure for conducting and managing the ESIA study is shown in ***Figure 2-1***. Names of key members of the ESIA study team from local consultant (TBS) and foreign consultant (TEAM) are shown in ***Figure 2-2*** and ***Figure 2-3***. The brief CV of key members of the ESIA study team are given in ***Appendix 2A***.

2.3 STRUCRTURE OF THE ESIA REPORT

This ESIA Report is submitted with a stand-alone Environmental Management Plan as required in Article 76 of the Environmental Impact Assessment Procedure, 29 December 2015. The ESIA documents therefore consist of two volumes: Volume I-ESIA Report and Volume II-Environmental Management Plan

The ESIA Report is structured as prescribed in Article 63 of the Environmental Impact Assessment Procedure, 29 December 2015. According to Article 63, Executive Summary is presented as Chapter 1 while the main text is presented in 8 chapters. However, this ESIA Report has two additional text:

- Section 2.3-Structure of the ESIA Report: This section is added as it would be useful for reviewers of this ESIA Report. (This section is prescribed in Appendix 5 of the Environmental Impact Assessment Guidelines 2014 but not in the Environmental Impact Assessment Procedure.

- Chapter 10-Conclusions and Recommendations: This chapter is added to presents major conclusions and recommendations.

After this introductory chapter, the subsequent chapters are outlined as follows:

Chapter 3-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 phase of the Project.

Chapter 4-Project Description and Alternative Selection. This chapter present 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 methodologies, the result of the comparative analysis, and reasons supporting the selected alternatives are explained in this chapter. Detailed description of the selected alternative is also included. 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 phase of the Project.

Chapter 5-Description of the Surrounding Environment. 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 in this chapter 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 identifies and assesses environmental and social impacts of the Project, and proposes appropriate management and physical measures for mitigating the identified impacts. 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 Plan. This chapter summarizes the EMP presented in Volume 2 which consists of Construction Phase EMP and Operational Phase EMP. The two EMPs are based on the basic environmental management principle. Details of each plan are presented in Volume 2.

Chapter 9-Public Consultations and Disclosure. This chapter presents results of public consultations and disclosure conducted as part of the scoping study and as part of the ESIA study. The presentation is focused on the process of consultation involving the affected communities and the project stakeholders, including recommendations for future consultations.

Chapter 10-Conclusions and Recommendations. This section should present 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. In addition, resettlement action plan of this project was include in appendixes section.

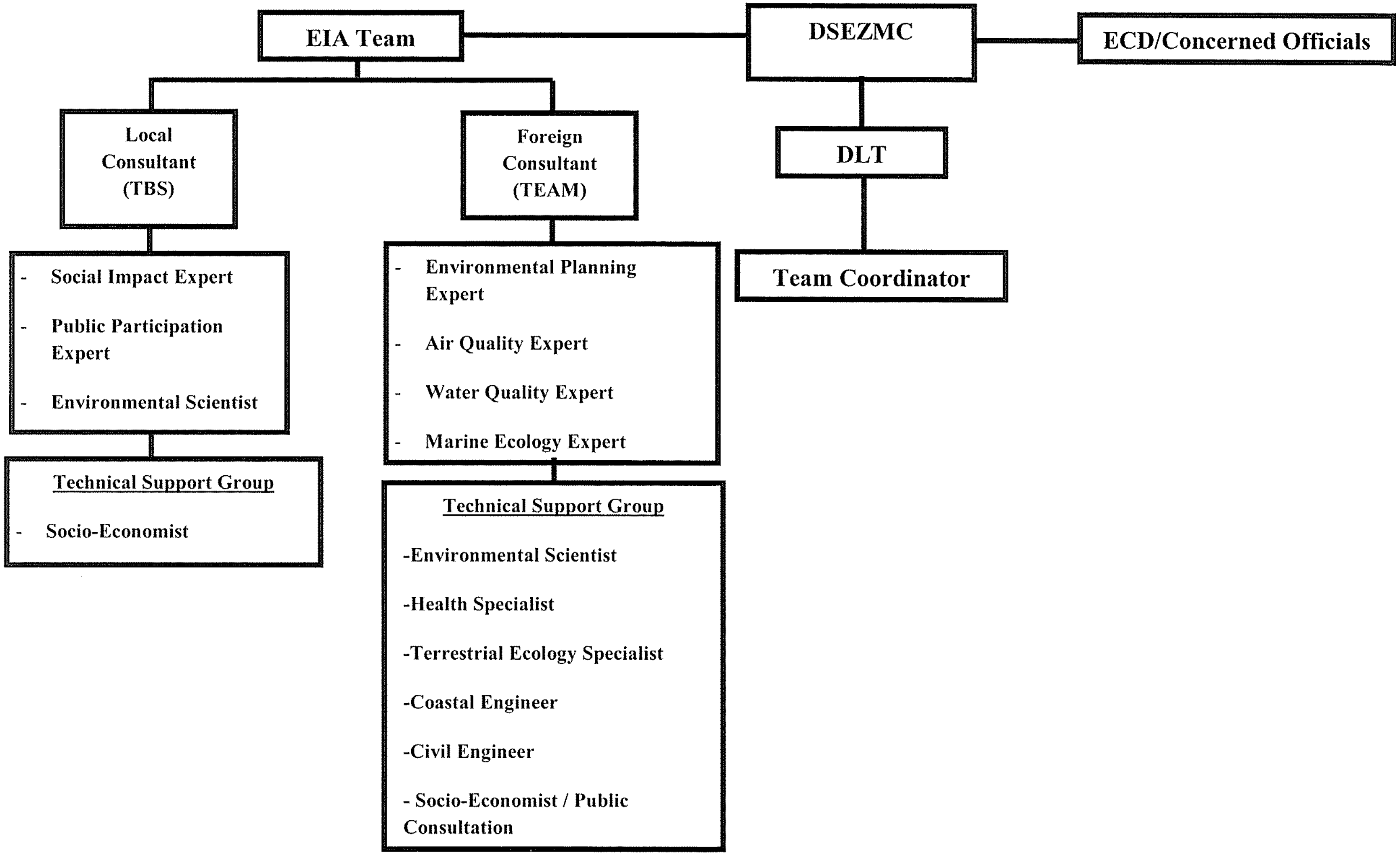


FIGURE 2-1 : ORGANIZATIONAL STRUCTURE FOR CONDUCTING AND MANAGING THE ESIA STUDY

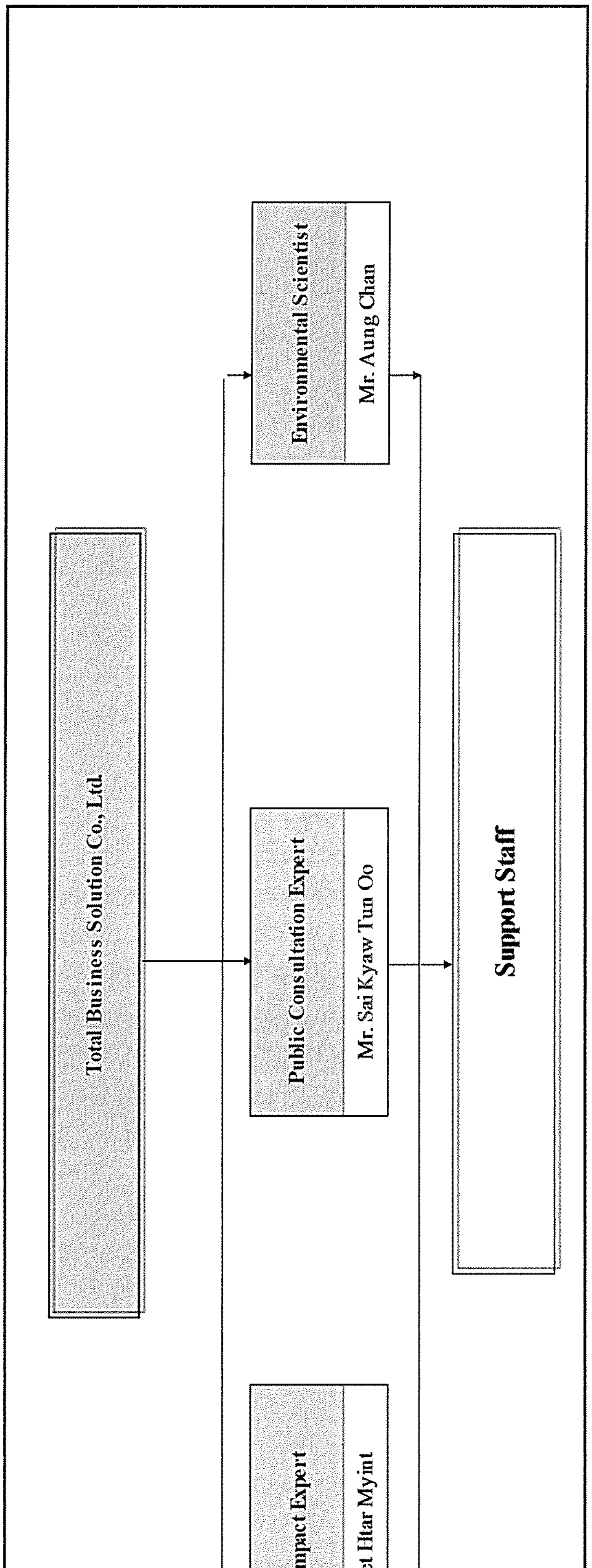


FIGURE 2-2 : ORGANIZATION CHART FOR THE ESIA DAWEI SEZ INITIAL PHASE DEVELOPMENT FROM TBS

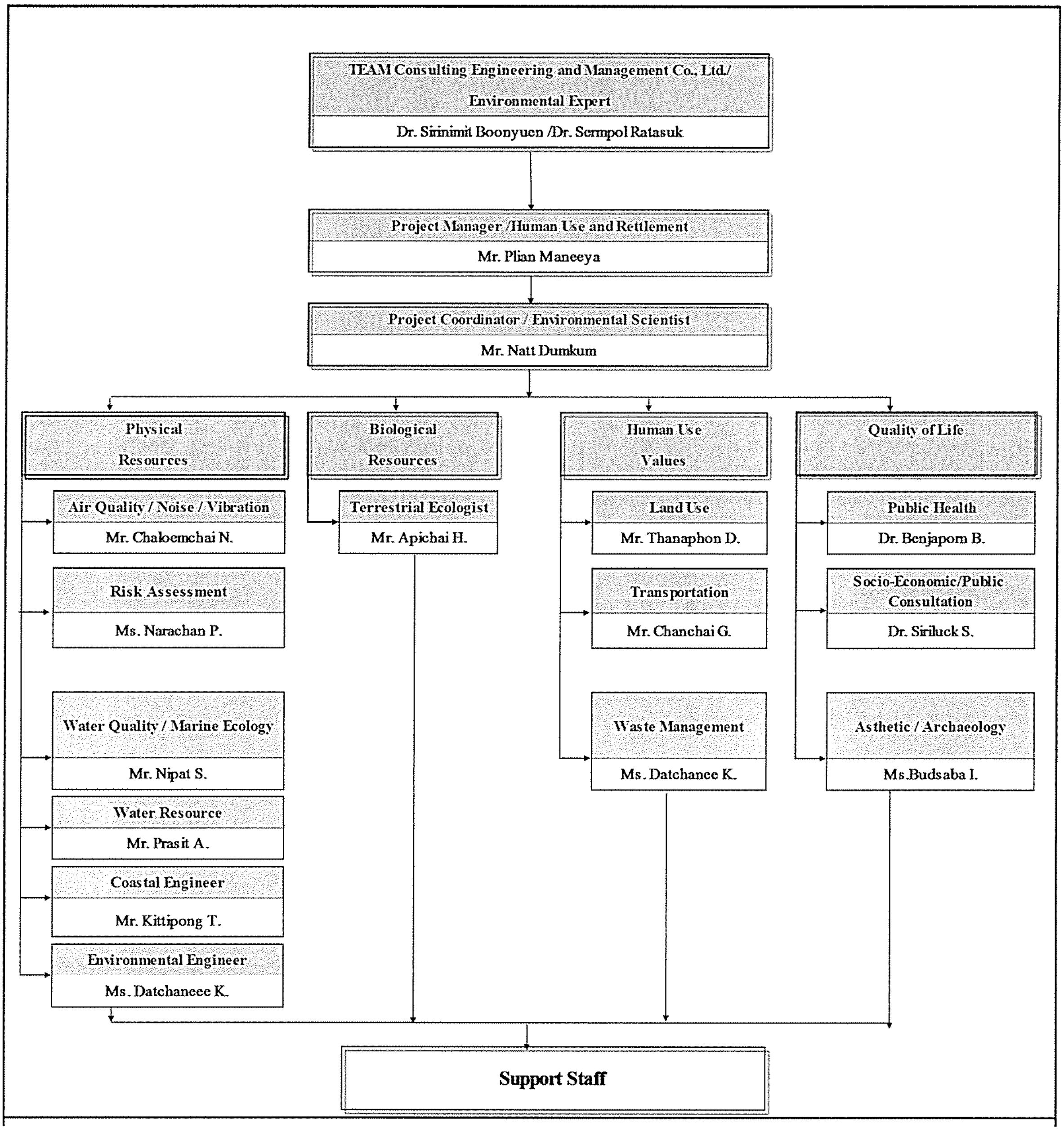


FIGURE 2-3 : ORGANIZATION CHART FOR THE ESIA DAWEI SEZ INITIAL PHASE DEVELOPMENT FROM TEAM

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

Being a newly established company, DPG, the Project Proponent, has not yet formulated its environmental and social policies. However, DPG's Management is committed to the sustainable development principle in implementing this Project. Therefore, the Project Proponent intends to formally state its environmental and social policies in due course to guide its environmental and social management during the construction phase and the operation phase of the Project. The policies will be in line with the policies adopted by the Myandawei Industrial Estate Company Limited in environmental and social management of its development activities in DSEZ. The policies can be briefly described as follows:

Environmental Policy

- Will comply with relevant environmental laws and regulations;
- Will manage our business with the goal to alleviate the adverse effects on the environment, undertake appropriate reviews and evaluations of our performance to measure and to ensure compliance with this environmental policy;
- Will encourage employees to have strong concern and be responsible for the clean environment; and
- Will educate the employees on the environment including exchanging the knowledge with other agencies in order to continuously and regularly maintain good environment and adopt working practices friendly to the environment.

Safety and Health Policy

- Will strive to prevent accident, injury and occupational illnesses through active participation of every employee.
- Commit to making consistent efforts to identify and eliminate or manage safety risks associated with our activities.
- Will strictly comply with all applicable laws and regulations. In case that no enforceable body of law exists, we will apply reliable standards of our own.
- Will arrange for the proper design of tool and equipment, regulations, training and the control tools in a manner that safeguards workers, property and the communities in which we operate from machine, working procedures and occupational illnesses.
- Employees who report to work with illegal drugs in their system or report with level of alcohol or other chemical substances that could impair performance are subject to strong disciplinary action.

The Project Proponent will establish and activate the EHS Management System starting from the commencement of construction. The detail of the Corporate Governance Policy, Italian-Thai, 2015 are described in ***Appendix 3A***.

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

Environmental management in Myanmar is founded on the National Environmental Policy (1994), the Environmental Conservation Law (2012), and the Environmental Conservation Rules (2014).

A. 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.

B. 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.

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, which are issued by said law, under section 29.

C. Environmental Conservation Rules (2014)

The Environmental Conservation Rules was prepared by MOECAF for implementing the Environmental Conservation Law. The available document in English is issued on 5 June 2014. The Environmental Conservation Rules contains 74 articles or sections in 14 chapters.

In essence, the Environmental Conservation Rules prescribes:

1) Functions, duties, activities, and authorities of MOECAF and the Environmental Conservation Department of MOECAF 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 MOECAF;

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.

According to this rules, the implementation of project development must follow:

- 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.

3.2.2 Regulations Governing the EIA Process

The EIA process is governed by Environmental Impact Assessment Procedure (2015). The documents is presented below:

EIA Procedure (2015)

To implement the Environmental Conservation Law, MONREC prepared an Environmental Impact Assessment Procedure (EIA) for guiding and supervising EIA of proposed development projects, on 29th December 2015. The Procedure is comprehensive and covers EIA documents, environmental management plans (EMP), implementation of EMPs, including monitoring and reporting of environmental performance of the Project. And corrective and punitive actions to be taken by MONREC if the performance deviates from the related standards.

This project falls into the category of EIA type project. All EIA type projects will undergo three stages of the EIA process that are scoping stage, EIA investigation stage and EMP implementation stage. Therefore, the Project Proponent has to follow the EIA Procedure by carefully.

According to this guideline, the implementation of project development must follow:

- 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 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.

National Environmental Quality (Emission) Guidelines (2015)

MONREC prepared the National Environmental Quality (Emission) Guidelines on 29 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.

According to this guideline, the implementation of project development must follow:

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

3.2.3 Laws and Regulations Related to Environmental Protection and Social Impact Management

Laws and regulations related to environmental protection and social impact management are referred to various laws and regulations specific to particular development sectors. Only the National Environmental Quality (Emission) Guidelines issued in 2015 govern emissions to the environment from development activities. The essence of various laws and regulations related to environmental protection and social impact management are briefly discussed below.

A. Law Related to Environmental Protection

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. According to this law, the implementation of project development must follow:

- 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, which are issued by said law, under section 29.

B. Laws Related to Social Impact Management

The need for development projects to safeguard community health and safety is indicated in the **Public Health Law (1972),** and the **Prevention and Control of Communicable Diseases Law (1995).**

Public Health Law (1972)

The purpose of this law is to promote and safeguard public health and to take necessary measures in respect of environmental health.

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

- The project owner has to cooperate with the authorized person or organization in line with the section 3 and 5 of said law.

  - 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

The Prevention and Control of Communicable Disease Law (1995)

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.

Occupational Health and Safety

Social Security Law (2012)

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. This law focuses as follows;

- 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.

Electricity Law (2014)

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. This law focuses as follows;

- 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.

Factories Act (1951)

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.

Myanmar Insurance Law (1993)

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.

Myanmar Investment Law (2016)

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 section51of 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 section 65 of 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.

Protection of National Races Law (2015)

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 and the project proponent has to cooperate with the residents national races.

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

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.

Myanmar Fire Force Law (2015)

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 focuses the following :

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

Myanmar Engineering Council Law (2013)

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

- 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.

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

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.

Export and Import Law (2012)

To ensure to abide by the conditions included in permit if it is needed to import the material for project and export products from the project. This law focuses as follow;

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

Leave and Holidays Act (1951) (No.58)

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 follow;

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

Labour Organization Law (2011)

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.

- Section 17: The project owner has 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 proponent has to allow the demand for the re-appointment of worker who is dismissed by the employer without the conformity with the labour laws.
- Section 19: The project proponent has to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker.
- Section 20: The project proponent 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 proponent 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 proponent has to allow the labour organization to carry out the holding the meetings, going on strike and other collective activities in line with the procedure, regulation, by-law and directive of relevant Chief Labour Organization.

Settlement of Labour Disputes Law (2012)

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.

Minimum Wages Law (2013)

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 followings;

- 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.

Payment of Wages Act (2016)

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.

The Development of Employment and Skill Development Law (2013)

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

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

The Workmen's Compensation Act (1923)

To ensure the compensations to injured employee while implementing in line with the above law. To pay 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.

Petroleum Act (1939)

The project will carry the oil in any phase and may import it. So, to ensure to take the license for importation and storage and 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.

Petroleum Rules (1937)

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.

C. Laws Related to Cultural Impacts

Three laws relevant to cultural impacts are: (i) Protection and Preservation of Cultural Heritage Regions Law (1988); (ii) Protection and Preservation of Antique Objective Law (2015), (iii) Protection and Preservation of Ancient Monument Law (2015). The essence of these laws is briefly described as follows:

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

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

- 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 promises not to build the building which is not in line with the stipulations prescribed by the Ministry of Culture in the cultural heritage area.

The Protection and Preservation of Antique Objects Law (2015)

To ensure the protection of ancient monument and information about it if it was in the project area. This law focus 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.

The Protection and Preservation of Ancient Monuments Law (2015)

To ensure the protection of ancient monument and information about it if it was in the project area. This law focus 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.

D. Law Related to Ecological Concerns

The Forest Law (1992)

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.

The Protection of Wildlife and Conservation of Natural Areas Law (1994)

The purposes of this law are 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.

The Freshwater Fisheries Law (1991)

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.

The Conservation of Water Resources and River Law (2006)

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.

E. Laws Related to Coastal and Marine Environments

Laws related to river, coastal and marine environments are described in different sectoral laws under two ministries, the Ministry of Livestock and Fisheries and MONREC. For instance, the Myanmar Marine Fisheries Law (1990), the Fishing Rights of Foreign Fishing Vessels Law (1989) and the Aquaculture Law (1989) prohibit causing water pollution, harassing fishes and other marine organism, and using explosive substances, poison chemicals and dangerous material in fishing. Myanmar Marine Fisheries Law (1990) states clearly that no person shall dispose of living aquatic creatures or any material into the Myanmar Marine Fisheries Waters to cause pollution of water or to harass fishes and other marine organisms. In addition, the Territorial Sea and Maritime Zone Law (1977) provides measures for protection of marine environment prevention and control of marine pollution. It also endorses conducting scientific research and management of the marine environment. The detail of law can described as follow:

The Fishing Rights of Foreign Fishing Vessels (1989)

The project proponent has to ensure that no foreign fishing vessel shall without a permit or a license, enter the Myanmar fisheries waters engaging in the fishery, under **section 31** of said law.

The project proponent has to ensure that no person dispose of from aboard the fishing vessel living creatures or any material to cause pollution of the water media or to harass the fishes and other marine organisms, under **section 36** of said law.

The Aquaculture Law (1989)

The project proponent has to ensure that no person do any activities of aquaculture without license such as obstructing navigation and flowing of water or polluting

the water within the fisheries water, importing live fish into the country and exporting live fish out of the country without the permission of the Department, under **section 29** of said law.

The project proponent has to follow, if a person convicted under section 31 or 32 again commits the same offence he shall be punishable with twice the quantum of punishment prescribed under **section 33** of said law.

Myanmar Marine Fisheries Law (1990)

According to the sub-section (f) of section 2 of said law, the Myanmar 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.

The Territorial Sea and Maritime Zones Law (1977)

The project proponent has to follow the exclusive economic zone of Myanmar where is an area beyond and adjacent to the territorial sea and extends to a distance of 200 nautical miles from the baselines, under **section 17** of said law.

The project proponent has to ensure that no one conduct any activity in the exclusive economic zone in relation to exploration, exploitation or research, without the prior express permission of the Council of Ministers. Nothing in this section shall apply to fishing in accordance with law by a citizen of Myanmar, under **section 20** 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:

(i) Myanmar Special Economic Zones 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 chin industries.

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 cannot be allowed to continue the project, under sub-section (e) of section 80 of said law.

(ii) 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 chin 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 follow the State shall encourage the investors in the Dawei Special Economic Zone 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 follow the developer or investor shall 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 follow the developer or investor shall 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 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	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 Constitution (2008). 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 a 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.

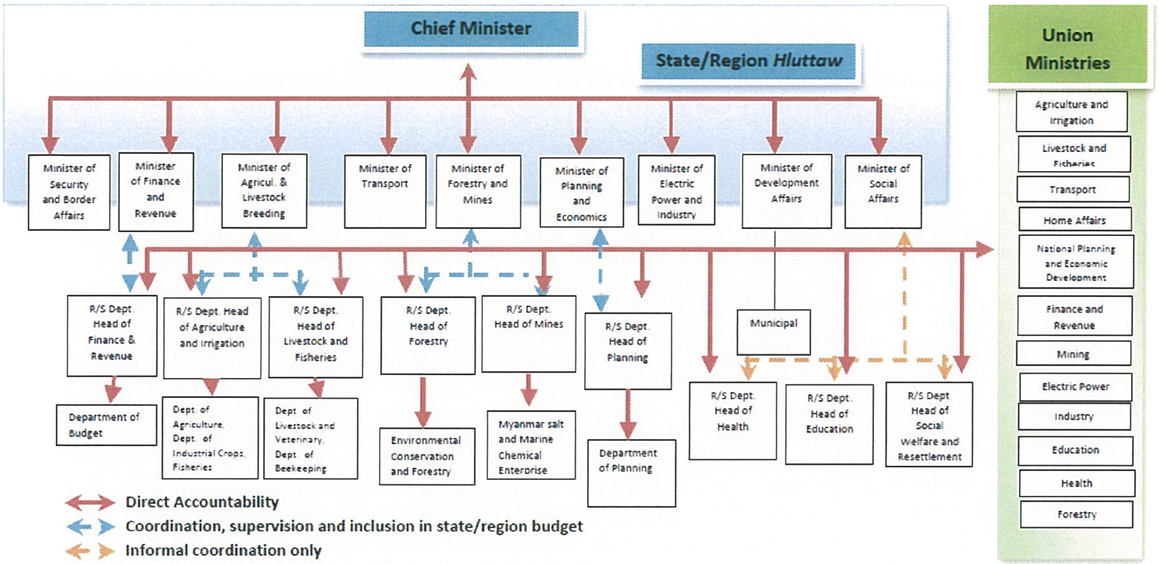


FIGURE 3.4-1 : ORGANIZATIONAL STRUCTURE OF STATE AND REGION GOVERNMENT

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.

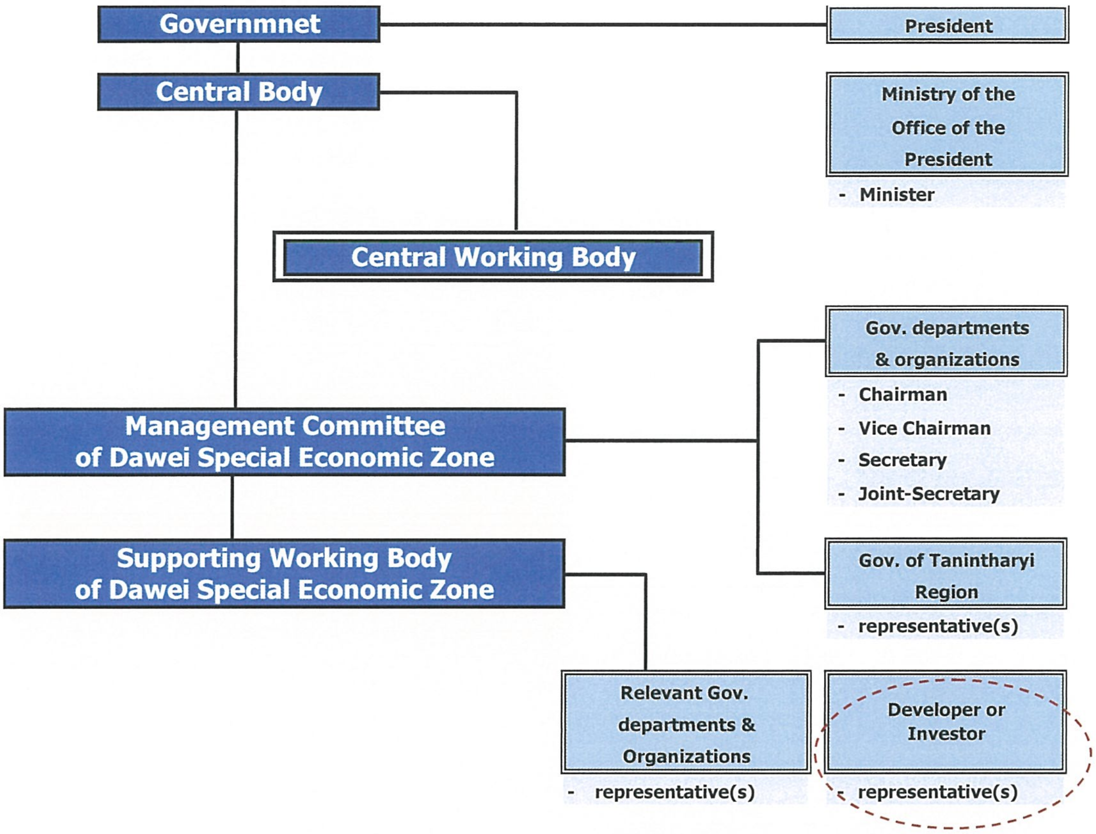


FIGURE 3.4-2 : ORGANIZATIONAL STRUCTURE OF DAWEI SPECIAL ECONOMIC ZONE (DSEZ)

B. 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***.

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 labor 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 to Table 3.6-3*** presents national environmental quality standard (ambient air and noise). ***Table 3.6-4*** presents national emission standard to be adopted for stack gas emission. ***Table 3.6-5*** presents national quality standards for effluents to be discharged into the coastal water through the internal storm water system.

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 µg/m³ 150 µg/m³ 200 µg/m³ 150 µg/m³ 125 µg/m³	- 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) Lmax	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, World Bank/IFC, 2007
Vibration - for industrial buildings and residential building	Peak Particle Velocity	5 mm/s	DIN4150
Coastal Water Quality	DO pH Nitrate Nitrogen Phosphates as P Lead Cadmium Mercury Temperature (incremental increase) SS	not less than 4 mg/L 5.0-9.0 ≤ 60 µg/l ≤ 15 µg/l for coastal ≤ 45 µg/l for estuarine water ≤ 8.5 µg/l ≤ 10 µg/l ≤ 0.16 µg/l < 2° C above the maximum Ambient water temperature < 50 mg/l	Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008 ASEAN proposed Marine Water Quality Criteria (Only Malaysia)
Sediment Quality	Total Chromium Total Arsenic Total Lead Total Nickel Total Zinc Total Copper Total Mercury	Maximum limits 81 mg/kg 8.2 mg/kg 46.7 mg/kg 20.9 mg/kg 150 mg/kg 34 mg/kg 0.15 mg/kg	International Association for Impact Assessment (IAIA) NOAA Screen Quick Reference Table, 2004
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/m² (1,600 Btu/hr ft²)	NFPA 59A (standards for the production facility)

TABLE 3.6-2
NATIONAL AMBIENT AIR QUALITY STANDARD

Parameter	Average Period	Guideline Value (μg/m^3)
Nitrogen Dioxide	1-year	40
	1-hour	200
PM-10	1-year	20
	24-hour	50
Sulfur Dioxide	24-hour	20
	10 minute	500

Source: National Environmental Quality (emission) Guidelines 2015, Myanmar

TABLE 3.6-3
NATIONAL NOISE LEVEL STANDARD

Receptor	One Hour LAeq (dBA)	
	Day Time (07:00-22:00)	Nighttime (22:00-7:00)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Source: National Environmental Quality (emission) Guidelines 2015, Myanmar

TABLE 3.6-4
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

TABLE 3.6-5
NATIONAL EFFLUENT STANDARDS

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

Note : [a] Standard unit

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

Sources : 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 NOx, as shown in ***Table 3.6-6***. The Project will adopt the national standard for NOx.

TABLE 3.6-6

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

3.7 APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR MANAGEMENT PLAN OF BOIL-OFF POWER PLANT PROJECT

According to related law, regulation, and guideline for using in ESIA study, ***Table 3.7-1*** described on the application of law, regulation, and guideline for study, analyze impact, and refer to management plan to control and minimize impact from Boil-off Power Plant Project.

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT

Main Concerned	Application of Law and Regulation
EIA Study	- The Environmental Conservation Law, 2012 - The Environmental Conservation Rules, 2014 - EIA Procedure, 2015
Management Plan	
1. General Construction	**Myanmar** - The Public Health Law (1972) - Factories Act (1951) - Social Security Law (2012) - Labour Organization Law (2012) - Settlement of Labour Dispute Law (2012) - Payment of Wages Law (2015) - The Development of Employees and Expertise (Skill) Law (2013) - Leave and Holidays Act (1951) - Workmen Compensation Act (1951) - Minimum Wage Law (2013) - Myanmar Insurance Law (1993) - Protection and Preservation of Cultural Heritage Regions Law (1988) - Protection and Preservation of Antique Objective Law (2015) - Protection and Preservation of Ancient Monument Law (2015) - The Protection of National Races Law (2015) - Prevention and Control of Communicable Law (1995) - The Control of Smoking and Consumption of Tobacco Product Law (2006) - Electricity Law (2015) - Myanmar Investment Law (2016) - Petroleum Act (1934) - Petroleum Rules (1937) - Motor Vehicle Law (2015) - Motor Vehicle Rule (1987) - Import and Export Law (2012) - Myanmar Engineering - Myanmar Fire Force Law (2015) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • Performance Standard 2: Labor and Working Conditions • Performance Standard 4: Community Health, Safety, and Security - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT (CONT'D)

Main Concerned	Application of Law and Regulation
2. Mangrove Management	**Myanmar** - National Environmental Policy (1994) - The Forestry Law (1992) - The Protection of Wildlife and Conservation of Natural Areas Law (1994) - Conservation of River, Creeks, and Water Resources Law (2006) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
3.Air Quality Management	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Environmental Conservation Law (2012) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008) **Standard Control** - National Ambient Air Quality Standard, National Environmental Quality (emission) Guidelines 2015, Myanmar - 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

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT (CONT'D)

Main Concerned	Application of Law and Regulation
4. Noise Management	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Environmental Conservation Law (2012) - Factories Act (1951) - Motor Vehicle Law (2015) - Motor Vehicle Rule (1987) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008) **Standard Control** - National Noise Level Quality Standard, National Environmental Quality (emission) Guidelines 2015, Myanmar - 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
5. Wastewater management	**Myanmar** - National Environmental Policy (1994) - Environmental Conservation Law (2012) - The Freshwater Fisheries Law (1991 - The Fishing Rights of Foreign Fishing Vessels Law (1989) - The Aquaculture Law (1989) - Myanmar Marine Fisheries Law (1996) - Conservation of River, Creeks, and Water Resources Law (2006) - Territorial Sea and Maritime Zone Law (1977) - Myanmar Special Economic Zones Law (2014) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts • Performance Standard 3: Resource Efficiency and Pollution Prevention • Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008) **Standard Control** - National Effluent Quality Standard, National Environmental Quality (emission) Guidelines 2015, Myanmar

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT (CONT'D)

Main Concerned	Application of Law and Regulation
	- Thermal Power: Guidelines for New Plant, Pollution Prevention and Abatement Handbook WORLD BANK GROUP, 1998
6. Waste management	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Factories Act (1951) - Public Health Law (1972) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts • PS3-Resource Efficiency and Pollution Prevention - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
7.Hazardous Waste Management	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Factories Act (1951) - Public Health Law (1972) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts • PS3-Resource Efficiency and Pollution Prevention - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
8. Land Traffic	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Motor Vehicle Law (2015) - Motor Vehicle Rule (1987) - Petroleum Act (1934) - Petroleum Rules (1937) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts - Environmental, Health, and Safety-General Guidelines, April 30, 2007
9. Social Environmental Management (Long-term Livelihood Management)	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Labour Organization Law (2012) - Settlement of Labour Dispute Law (2012) - Payment of Wages Law (2015)

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT (CONT'D)

Main Concerned	Application of Law and Regulation
	- Payment of Wages Law (2015) - Workmen Compensation Act (1951) - Social Security Law (2012) - Factories Act (1951) - The Development of Employees and Expertise (Skill) Law (2013) - Leave and Holidays Act (1951) - Minimum Wage Law (2013) - Myanmar Insurance Law (1993) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts • PS4-Community Health, Safety, and Security - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
10 Resource Use Management	**Myanmar** - Myanmar Special Economic Zones Law (2014) - Environmental Conservation Law (2012) - National Environmental Policy (1994) - The Forestry Law (1992) - The Protection of Wildlife and Conservation of Natural Areas Law (1994) - The Freshwater Fisheries Law (1991) - Myanmar Marine Fisheries Law (1996) - Conservation of River, Creeks, and Water Resources Law (2006) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts • PS3-Resource Efficiency and Pollution Prevention • PS6-Biodiversity Conservation and Sustainable Management of Living Natural Resources - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
11. OHS management	**Myanmar** - Public Health Law (1972) - Factories Act (1951) - Social Security Law (2012) - Myanmar Special Economic Zones Law (2014) - Labour Organization Law (2012) - Settlement of Labour Dispute Law (2012)

TABLE 3.7-1

THE APPLICATION OF LAW, REGULATION, AND GUIDELINE FOR STUDY, ANALYZE IMPACT, AND REFER TO MANAGEMENT PLAN TO CONTROL AND MINIMIZE IMPACT FROM BOIL-OFF POWER PLANT PROJECT (CONT'D)

Main Concerned	Application of Law and Regulation
	- Payment of Wages Law (2015) - The Development of Employees and Expertise (Skill) Law (2013) - Leave and Holidays Act (1951) - Workmen Compensation Act (1951) - Minimum Wage Law (2013) - Prevention and Control of Communicable Law (1995) - The Control of Smoking and Consumption of Tobacco Product Law (2006) - Petroleum Act (1939) - Petroleum Rules (1937) - Motor Vehicle Law (2015) - Motor Vehicle Rule (1987) - Myanmar Engineering - Myanmar Fire Force Law (2015) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • Performance Standard 2: Labor and Working Conditions • PS4-Community Health, Safety, and Security - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008)
12. Emergency Plan	**Myanmar** - National Environmental Policy (1994) - Environmental Conservation Law (2012) - Factories Act (1951) - Social Security Law (2012) - Myanmar Fire Force Law (2015) **World Bank** - Performance Standards on Environmental and Social Sustainability, January 1, 2012 • PS1-Asessment and Management of Environmental and Social Risks and Impacts - Environmental, Health, and Safety Guidelines for Thermal Power Plants (December 19, 2008) **Other** **Tsunami Emergency Planning in Australia 2010**

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

4.1 PRESENTATION OF THE PROJECT AND DESCRIPTION OF ALTERNATIVES

4.1.1 Project Description

A. Sector and Subsector

The Project falls under the Power Generation Sector, natural gas subsector. Power generation using reciprocating gas engine is considered as one category of thermal power plants.

Boil-off Gas Power Plant Project involves initial phase development in the electricity generation subsector.

The Project will install a boil-off gas power plant in DSEZ to additionally supply electricity for LNG terminal consumption. Technically, this power plant will be utilized to generate electricity supply through boil-off gas, which is the supplementary benefit from LNG terminal.

Wartsila Model: W16V34SG is a selected technology innovation, with a footprint of only 113 m^2, made it a perfect fit. The two units have one Wartsila 16V34SG Engine each. Beneficially, they run on locally supplied natural gas and have a total output of 15.488 MW. In addition, it illustrates a high electrical efficiency through minimization of the plant's own consumption, as well as easily maintenance, referring to the Wartsila's data.

Tentatively, at this stage of the ESIA, the boil-off gas power plant will use model Wartsila 16V34SG. In detail, further information about model selection is described in ***Article 4.2***.

B. Project Site

The proposed Boil-Off Gas Power Plant will be constructed on a 34 acre and plot, adjacent to the LNG Terminal, in the designated industrial estate area in DSEZ as indicated in ***Figures 4.1-1 and 4.1-2***. The coordinates of the project site are 1572050.46 N and 398256.35 E. This land plot has some patches of degraded mangrove forest and beach forest. The site is relatively flat with an average elevation at about 1 m above mean sea level (+1.0 m MSL). Three villages are located within 5 kilometer radius from the project site. One village is the fishing village of Nga Pitat. The remaining two villages, Nyaung Bin Siek and Mu Du, are located further inland and on the opposite side of the tidal creek.

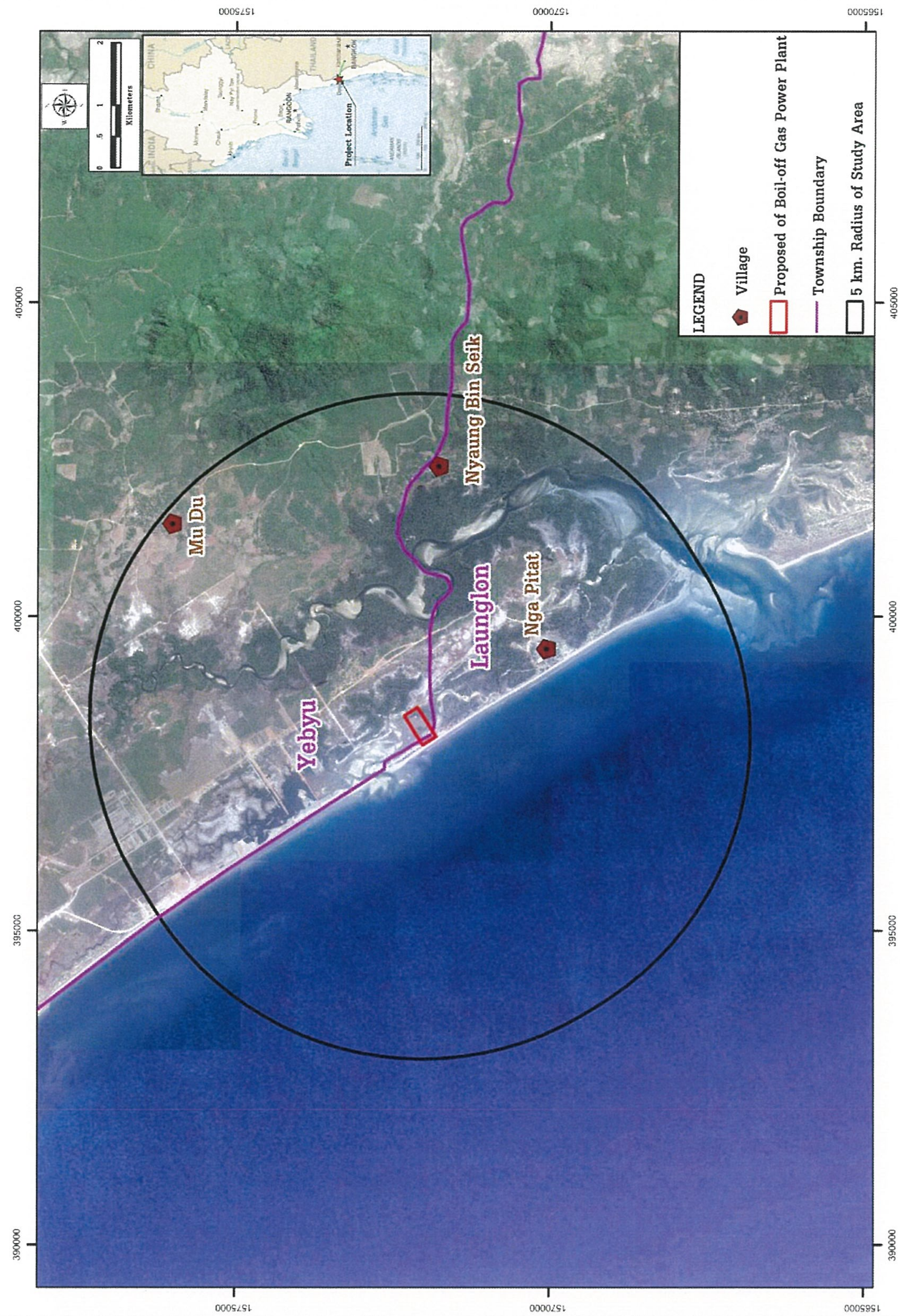


FIGURE 4.1-1 : LOCATION OF PROPOSED BOIL-OFF GAS POWER PLANT

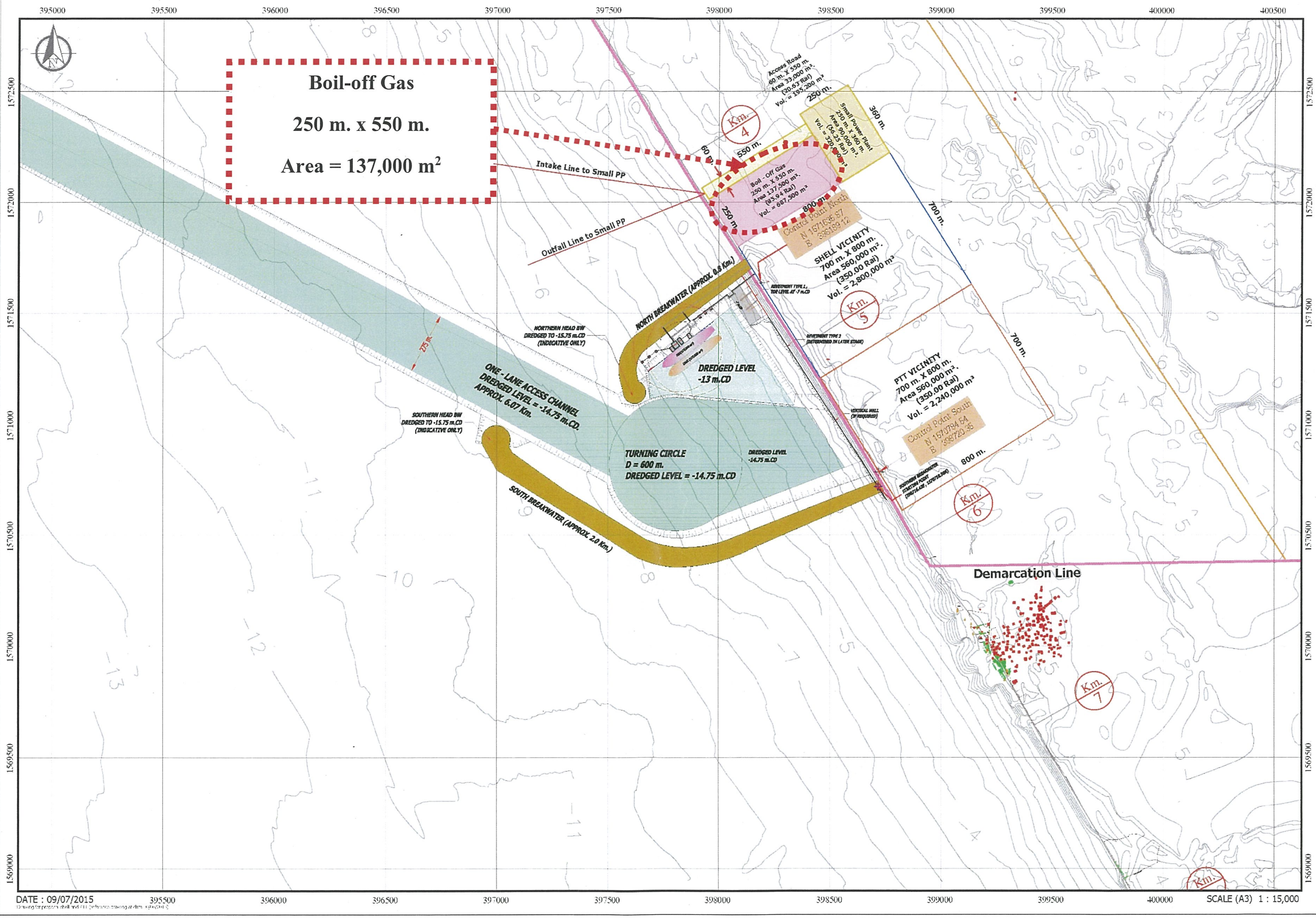


FIGURE 4.1-2 : LOCATION OF PROPOSED BOIL OFF GAS POWER PLANT AND RELATED COMPONENTS (LNG TERMINAL AND SMALL POWER PLANT PROJECT)

C. Project Components

The Boil-Off Gas Power Plant will cover an area of about 6,000 m^2 (1.5 Acres). Major and other related components include:

1) Engine hall
2) Electrical equipment Building
3) Tank yard and switch yard, and;
4) Support facilities including compact workshop and warehouse, administration and social facility building, guardhouse, etc. These support facilities will be shared by the LNG terminal project.

The proposed boil-off gas power plant, after completion, will look similar to a similar power plant shown in ***Figure 4.1-3***.

FIGURE 4.1-3 : BOIL-OFF GAS POWER PLANT (W16V34SG)

Source : WARTSILA, 2015.

Detailed components of the boil-off gas power plant is shown in ***Figure 4.1-4***.

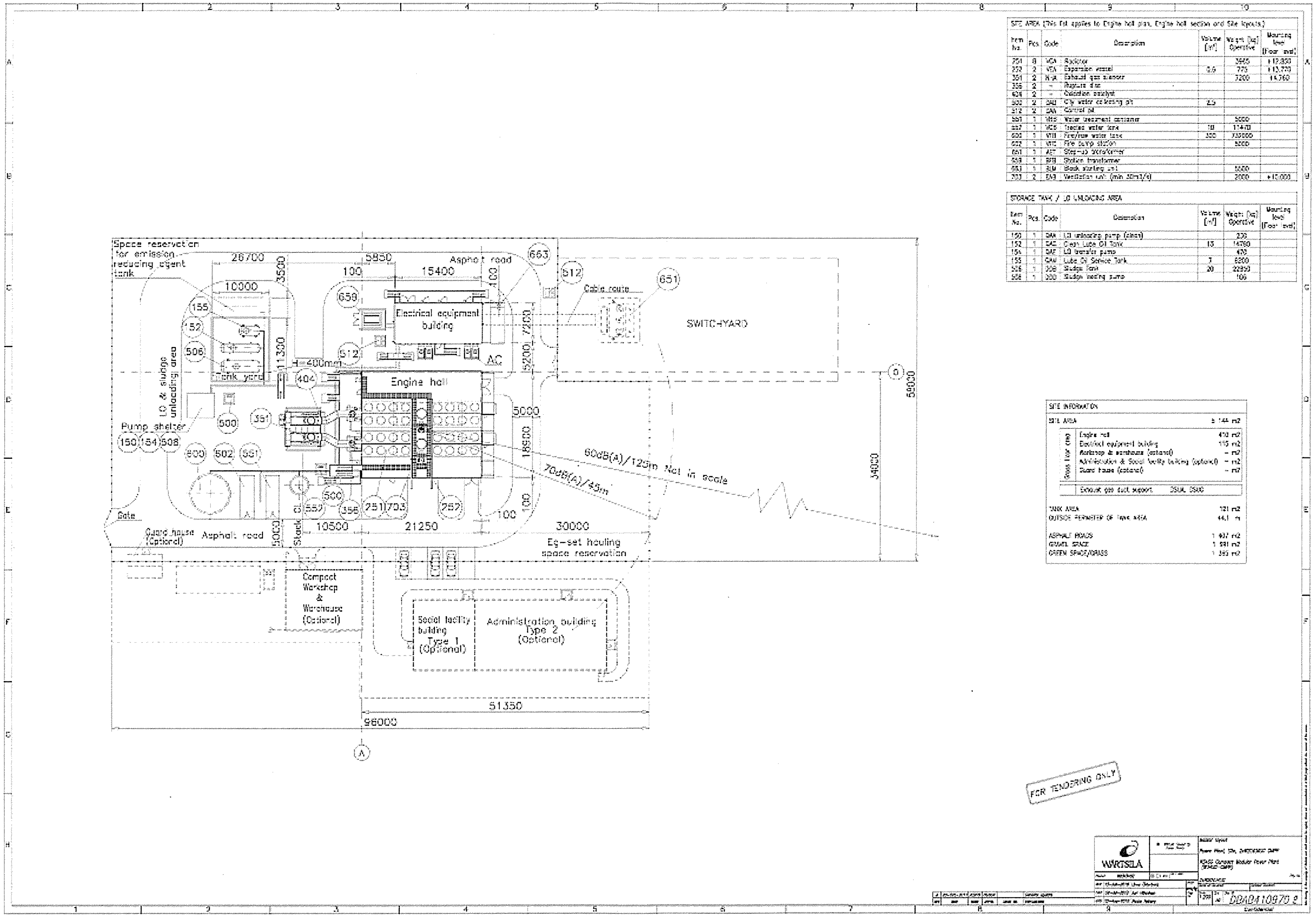


FIGURE 4.1-4 : COMPONENTS OF PROPOSED BOIL-OFF GAS POWER PLANT

D. Technical Features of the Boil-off Power Plant:

Technical details of gas engine:

Number of gas engines:	two units
Manufacturer:	Wärtsilä
Model:	W16V34SG Gas Cubes
Fuel:	BOG from the LNG terminal
Net Heat Rate (80%)	8,386 kJ/kWh (approx., incl. auxiliary load)
Nominal output:	7,200 kW
Nominal speed:	750 rpm
Stack height:	27.5 m.
Fuel consumption:	Approx. 8,000 btu/kWh

Technical details of generator:

Number of generator:	two units
Manufacturer:	AVK
Model:	DIG167 E/8
Power:	8,712 kVA
Rated power factor:	0.8
Current:	457 A
Nominal voltage:	11,000 V
Frequency:	50 Hz
Total Plant Gross Output:	15.488 MW
Net Plant Output:	15.488 MW
Net Heat Rate (80%):	8,386 kJ/kWh (approx., incl. auxiliary load)

E. Characteristics of Natural Gas

Characteristics of the BOG would be similar to those of the LNG to be imported by the LNG terminal project. ***Table 4.1-1*** presents characteristics of the average gas sample provided by the LNG supplier.

TABLE 4.1-1

CHARACTERISTICS OF THE LNG TO BE IMPORTED

Component	Unit	Concentration
CO_2	% mol	0
N_2	% mol	0.25
C_1	% mol	92.20
C_2	% mol	5.95
C_3	% mol	1.40
IC_4	% mol	0.10
NC_4	% mol	0.10
IC_5	% mol	0
NC_5	% mol	0
C_6	% mol	0
C_7	% mol	0
C_{8+}	% mol	0
C_6	% mol	0
C_8	% mol	0
N_2	% mol	0
HHv^{real}, sat.gas	Btu/scf.	1,083
HHv^{real}, dry.gas	Btu/scf.	1,083

F. BOG Handling and Storage

The BOG will be transported from the LNG terminal through a gas pipeline to the gas metering and regulating station of the power plant. The gas supply pipeline will be laid underground.

4.1.2 Project Construction

A. Land Acquisition:

The Project will locate on a 34 acre land plot. This land plot is shared with LNG Terminal's purposes. The area required will be provided by DSEZMC to the Project.

B. Preparing Temporary Facilities and Utilities for Construction:

Site Preparation

Site clearing, land leveling and other site preparation works will be carried out by an ITD construction team for the Project.

Source of Electricity

During construction, electricity will be supplied from a temporary power plant to be set up by the same developer (DPG)

Water Requirement (Quantity and Source of Water)

During construction, not more than 100 m^3 per day would be required for civil works construction. The water will be supplied by the ITD construction team from the existing reservoir in DSEZ.

Types and Number of Construction Equipment

As all elements of the power plant including the power house will be imported as pre-fabricated or ready- to-install forms, construction equipment for this Project will be mainly transport equipment (trucks and cranes) and welding equipment and tools.

Types and Source of Construction Material and Storage Area.

All civil works will be constructed by the ITD construction team. Construction materials will therefore be stored in the existing ITD camp. Mechanical and electrical works related to the power plant will be handled separately by the gas engine supplier. All equipment and tools for mechanical and electrical works will be stored in a worker camp at the power plant construction site.

Location of Worker Camp Site.

The worker camp will be on a temporary site to be located adjacent to the Boil-off Gas Power Plant.

Number of Man Power

The civil works construction would require about 50 workers. The installation and erection of all mechanical and electrical works would require about 17 persons including two supervisors.

4.1.3 Project Schedule

The construction would commence in the last quarter of 2017 and would be completed by the end of 2018, a total construction period of 15 months. ***Table 4.1-2*** shows a tentative project implementation schedule in bar chart.

TABLE 4.1-2

TENTATIVE PROJECT SCHEDULE

BOIL-OFF GAS POWER PLANT

Description	Duration (days)	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2
Earth and Foundation works	45														
Building Structures (Concrete and Steel Structures)	120														
Fence and Gates	30														
Generator (Gas Engine) Installation	60														
Associated Equipment Installation	30														
Individual Inspection and Testing	30														
Load Test and Trial Energised Date	30														
Commission Test	30														
Completion Stage with the DSEZ MC	120														
Commencement of Power Plant															

4.1.4 Description of Project Operation

The power plant will be routinely operated as base load power plant by about 8 operators. Information on scheduled maintenance of the power plant is summarized below:

A. Maintenance Every 3 Months

The activities are listed below:

Description	Activities
Engine Block, Cylinder Liner	Check
Crankshaft, Connecting Rod, Piston	Check
Cylinder Head with Valve	-
Valve Mechanism and Camshaft	Check
Turbo-charging, Charge Air Cooling and Waste Gate	Check/ Overhaul/maintain
Ignition System	Replace/Clean/Adjust/Lubricate/Calibrate
Fuel System	Check/ Overhaul/maintain/Replace
Lubricating Oil System	Check/Overhaul/maintain/Replace/ Clean/Adjust/Lubricate/Calibrate
Cooling Water System	Check
Exhaust System	Check
Automation and WECS 800 and UNIC	Check
Engine and Fixing	-

Remark: The estimated downtime of maintenance works will take 1-4 days, depending on types of maintenance activities.

B. Maintenance Every Two Years

The activities are listed in the table below:

Description	Activities
Engine Block, Cylinder Liner	Check/ Clean/Adjust/ Lubricate/ Calibrate/ Overhaul/ maintain
Crankshaft, Connecting Rod, Piston	Check/ Clean/Adjust/Lubricate/Calibrate/Replace
Cylinder Head with Valve	Overhaul/maintain/Replace
Valve Mechanism and Camshaft	Check/ Replace
Turbo-charging, Charge Air Cooling and Waste Gate	Check/Overhaul/maintain/Replace
Ignition System	Replace/Clean/Adjust/Lubricate/Calibrate
Fuel System	Check/ Overhaul/maintain/Replace
Lubricating Oil System	Check/Overhaul/maintain/Replace/ Clean/Adjust/Lubricate/Calibrate
Cooling Water System	Check
Exhaust System	Check
Automation and WECS 800 and UNIC	Check
Engine and Fixing	Check

Remark: The estimated downtime of maintenance works will take 7-8 days.

C. Number of Man Power

The project staff during operation phase about 8 staffs

4.1.5 Environmental Performance of the Gas Engines

Emissions

Normally, natural gas has very low sulfur and particulate contents. Therefore, emissions of natural gas engines have negligible amount of SO_2 and particulate matters. The table below quotes typical emissions of Wartsila gas engines:

SO_x	Less than 20 ppm
NO_x	Less than 120 ppm at O_2 : 7%
Particulate	Less than 60 mg/m^3

Source : WARTSILA, 2015.

Noise

According to ***Figure 4.1-3***, it illustrates that at 45 m. from the noise source (within the project site), the noise level is 70 dB (A); and at 125 m. (outside the guard house), the noise level is about 60 dB (A).

Engine noise at 1 meter: ~ 115 dB(A)

Power House interior: ~ 110 dB(A)

Outside: typical design is 65 dB(A) @ 600 ft

Wastewater

Approximately 3,000 liters of waste lube oil and 2,500 liters of coolant water every 2,000 hours (3 months).

4.2 COMPARISON AND SELECTION OF THE PROJECT ALTERNATIVES

The Project has to use BOG for power generation for obvious reasons. BOG is the only fuel available in the project site and, if it is not used, it will have to be flared, i.e. destroyed by burning out, or returned to the LNG terminal. Therefore, there is no other fuel alternatives. The project alternatives are therefore between reciprocating gas engines and gas turbines.

The two types of engines can be generally compared as shown in ***Table 4.2-1*** below:

TABLE 4.2-1

GENERAL COMPARISON OF THE TWO ALTERNATIVES

Description	Gas Turbine Engine	Reciprocating Engine
Mechanism	Rotary	Reciprocating
Flow	Continuously	Intermittent
Power/Weight Ratio	Higher	Lower
Design and Manufacture	Sophisticated	Simple/easy
Maintenance	Complex/longer intervals	Simple/frequent intervals
Cost (engine)	Expensive	Inexpensive

In term of prime mover for power generation, the two engine alternatives have their advantages and disadvantages, illustrated as follows:

A. Gas Turbine Engine:

Advantages

- Long maintenance intervals
- Low emission rate
- Low cost (high horsepower applications)

Disadvantages

- High fuel consumption rate (low efficiency)
- High maintenance costs
- Minimal turndown/load reduction
- Starting and stopping takes hours off life cycle
- Altitude and ambient temperature quickly affect its power and heat rate

B. Reciprocating Engine:

Advantages

- Low fuel consumption rate (high efficiency)
- Operational function (variable loads and pressure ratios)
- A well known technology

Disadvantages

- NO_x High emission rate
- High maintenance intervals and costs
- Complex package
- Low compressor efficiency at lower pressure ratios

(**Source:** http://www.ettdualdrive.com/docs/CaterpillarDriverComparisons03022012.pdf):

Some of the above comparisons are supported by data as follows:

Cost Aspect

Table 4.2-2 compares cost advantage of the two alternatives. The reciprocating as engine alternative is more cost effective as indicated by its cost per hp-hour output.

TABLE 4.2-2

COSTS AND EFFICIENCY OF THE TWO ALTERNATIVES

Alternative		Efficiency	kW	USD/Horse Power-Hour
Reciprocating Engine	**G16CM34**	42.7%	5,959	1,559,827 USD (.0238)
	Wartsila (16V34SG)	44.3%	5,793	1,735,119 USD (.0232)
Gas Turbine Engine	**Gas Turbine**	32%	7,960	1,961,344 USD (.0318)
	Gas Turbine	34%	7,484	2,469,121 USD (.02993)

Remark: * Ratings based on companies published ISO conditions @70F – Turbines de-rate as temp increase.

* Demand charges not included and could substantially increase yearly electric costs.

Source: http://www.ettdualdrive.com/docs/CaterpillarDriverComparisons03022012.pdf

Emissions

Table 4.2-3 compares emission rates (NOx), Carbon Monoxide (CO) and Total Hydro Carbon (THC) of the two alternatives. The data show that gas turbine engines generate fewer amounts of NO_x and THC, while the reciprocating engines generate higher amount of NO_x and THC; but less CO.

TABLE 4.2-3

EMISSION RATES OF THE TWO ALTERNATIVES

Alternative	Gram/BrakR Horse Power-Hour (without after treatment)	Oxidation Catalyst 90% reduction	
	NO_x	Carbon Monoxide (CO)	Total Hydro Carbon (THC)
Reciprocating Engine	0.9	2.0	6.0
Gas Turbine Engine	0.2-0.6	0.6	0.2

Source: http://www.ettdualdrive.com/docs/CaterpillarDriverComparisons03022012.pdf

Other Considerations

In addition, the gas engine alternative is more suitable for base load operation than the gas turbine alternative due to its shorter time in stopping and starting. The use of Wartsila package plant or Gas Cube also provides more operational flexibility due to its modular configuration.

In conclusion, the gas engine alternative is more preferable to the gas turbine alternative for the Project.

CHAPTER 5

DESCRIPTION OF ENVIRONMENT

CHAPTER 5

DESCRIPTION OF ENVIRONMENT

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 Scoping 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.

As the project site is on the coastal area, the study area covers coastal waters and land area.

5.1.2 Contextual Study Limit

The EIA 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
- Topography
- Geology
- Seismology
- Soils
- Hydrology
- Oceanographic Condition
- Erosion and Sedimentation
- Air Quality
- Noise and Vibration
- Seawater Quality
- Groundwater Quality
- Sediment Quality

(2) Biological Components
- Terrestrial Ecology (Forestry and Wildlife)
- Marine Ecology
- Endangered Marine Species
- Fisheries

(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
- Scenic Areas and Locations
- Landscape

The following sections briefly describe each component with details in appendices as appropriate. The methods of information collection are also described as deemed necessary.

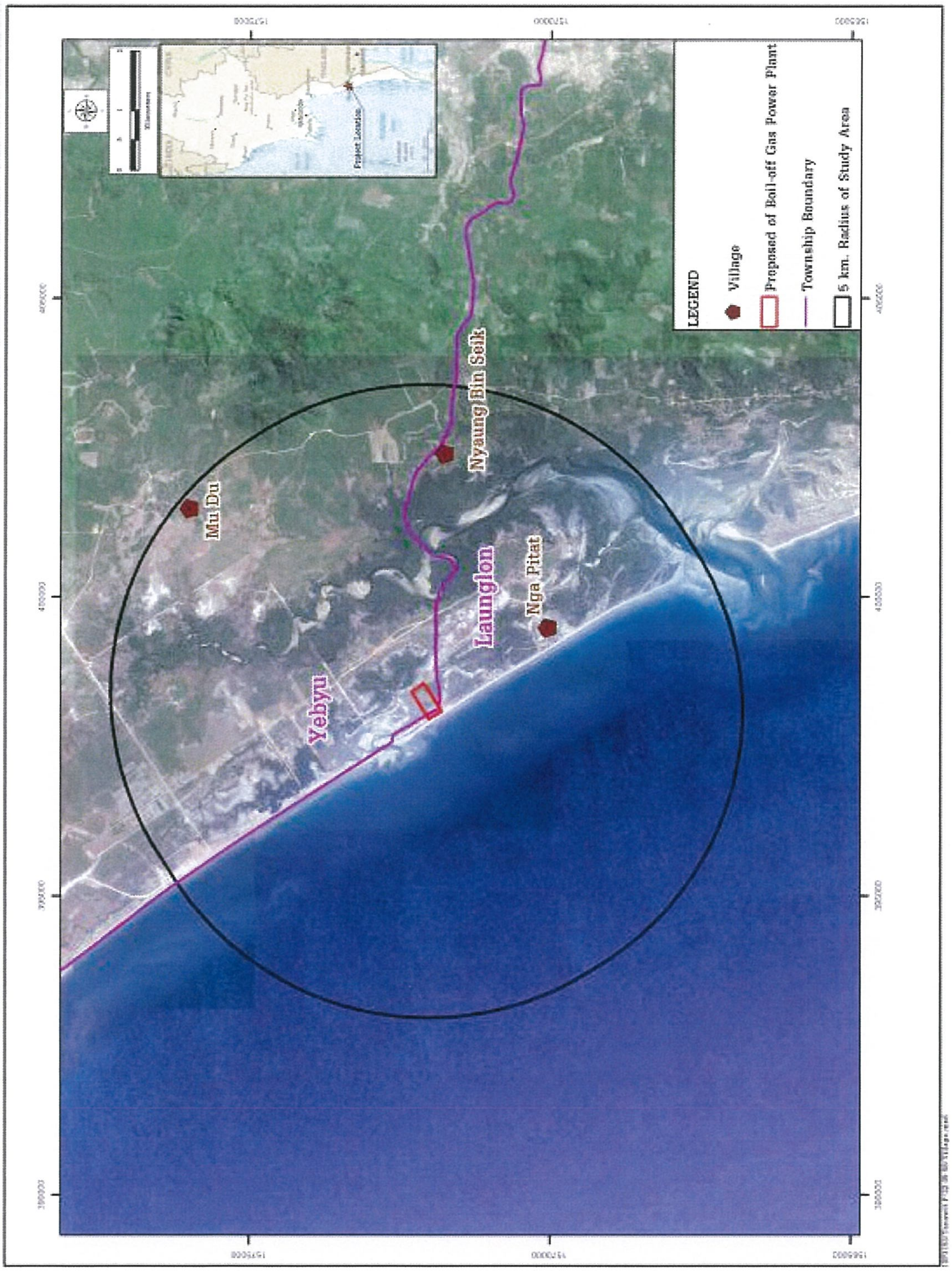


FIGURE 5.1.1-1 : PROJECT STUDY AREA OF ESIA FOR BOIL-OFF GAS POWER PLANT PROJECT

5.2 PHYSICAL COMPONENTS

5.2.1 Overview of the Study Area

A. Tanintharyi Region in a Nutshell

The study area is in the Dawei Special Economic Zone (DSEZ) located in the coastal area 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 / sub-townships	16
Number of Population	1,408,401
Area	43,344.91 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
Population Density (per km^2)	32.5
Median age	24.0
Number of Private Household	283,099
Mean household size	4.8
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 Report, Census Report Volume 3-F, Department of Population, Ministry of Immigration and Population, May 2015

The districts, townships, and sub-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 32.5 persons/km^2.

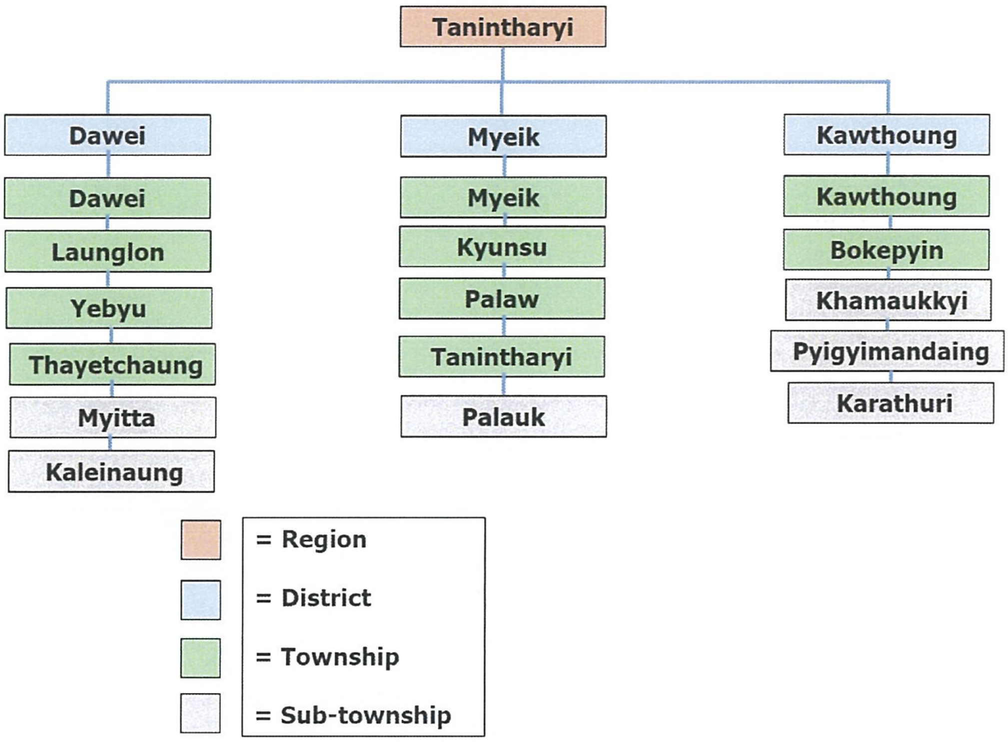


FIGURE 5.2.1-1 : DISTRICTS,TOWNSHIPS, AND SUB-TOWNSHIP OF TANINTHARYI REGION

Source: Tanintharyi Region Report, Census Report Volume 3-F, Department of Population, Ministry of Immigration and Population, May 2015

The DSEZ is in Dawei District which has four townships and two sub-townships. The total population of Dawei District[1] was estimated at 493,576, consisting of 125,605 in Dawei Township, 118,317 in Launglon Township, 105,662 in Thayetchaung Township, 100,768 in Yebyu Township, 21,359 in Myitta Sub-township, and 21,865 in Kaleinaung Sub-township.

B. The Study Area

The study area as defined in **Section 5.1** has a total area of about 7,854 ha, of which about 4,015 ha is coastal water area, and the remaining 3,839 ha covers three villages in two townships; namely Yebyu (1 village) and Launglon (2 villages) as shown in ***Figure 5.1.1-1***. Most of the study area lies within Launglon Township. ***Table 5.2.1-2*** provides names of the villages and their approximate distance from the Project site which is located in the administrative area of Nga Pitat Village, Launglon Township.

[1]Source: Tanintharyi Region Report, Census Report Volume 3-F, Department of Population, Ministry of Immigration and Population, May 2015

TABLE 5.2.1-2

VILLAGES IN THE STUDY AREA

Township	Village	Approx. km from the Project Site
Launglon	Nga Pitat	2.22 km.
	Nyaung Bin Seik	3.86 km.
Yebyu	Mudu	4.80 km.
Total 2 townships	3 villages	

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

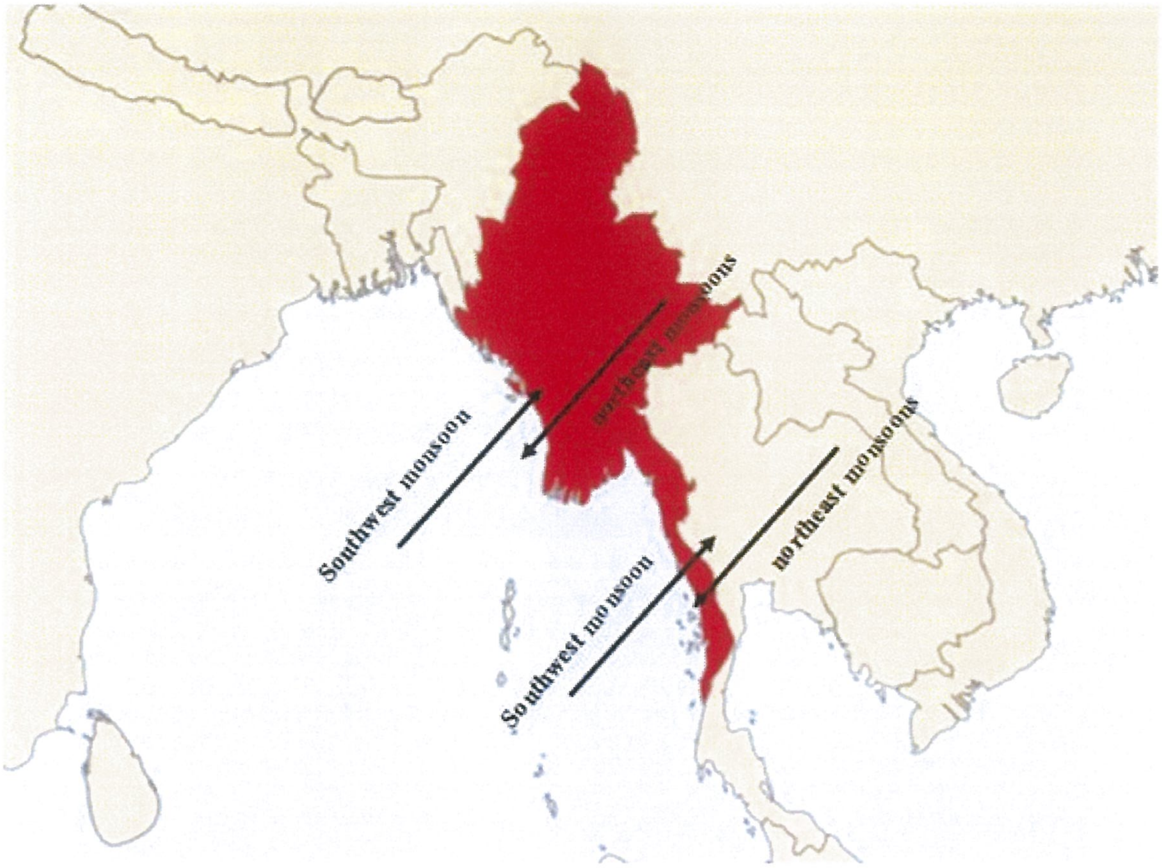


FIGURE 5.2.2-1: MONSOON WIND DIRECTION PASSING THROUGH MYANMAR

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 at three stations at which air quality, noise and vibration data were also collected. ***Figure 5.2.2-2*** is a map showing the locations. ***Photo 5.2.2-1*** shows photographs of the three sampling stations. The locations of the three stations are:

Station A1: Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region (UTM 402425E, 1576727N)

Station A2: Nga Pitat Village, Launglon Township, Dawei District, Thanintharyi Region (UTM 399344E, 1569815N)

Station A3: Existing Small Port, Launglon Township, Dawei District, Thanintharyi Region (UTM 400846E, 1567838N)

The measurement of wind speeds and directions was made at 10 meters above ground level. The sampling and analytical methods used were those recommended by US.EPA as shown in ***Table 5.2.2-3***.

TABLE 5.2.2-3

SAMPLING AND ANALYTICAL METHOD FOR WIND SPEED AND WIND DIRECTION

Pollutant	Sampling/ Analysis Method	Sampling Period
Wind Speed and Wind Direction	Cup Anemometer and Wind Vane	72-hour

The results of measurements are summarized in ***Table 5.2.2-4***. The wind rose profiles of the three stations are shown in ***Figure 5.2.2-3***.

TABLE 5.2.2-4

RESULTS OF WIND SPEED AND DIRECTION MEASUREMENTS

Station	Measurement Date	Distance from Project Site (km)	Wind Speed (m/s)	Prevailing Winds Direction	% Calm Wind
Station A1: Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region	January 21-24, 2015	4.64	0.0-2.2	WNW	50.0
Station A2: Nga Pitat Village, Launglon Township, Dawei District, Thanintharyi Region	January 21-24, 2015	2.45	0.8-4.5	NE	0.0
Station A3: Existing Small Port, Launglon Township, Dawei District, Thanintharyi Region	January 25-28, 2015	4.68	0.5-5.4	NNE	0.0

Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., January 2015.

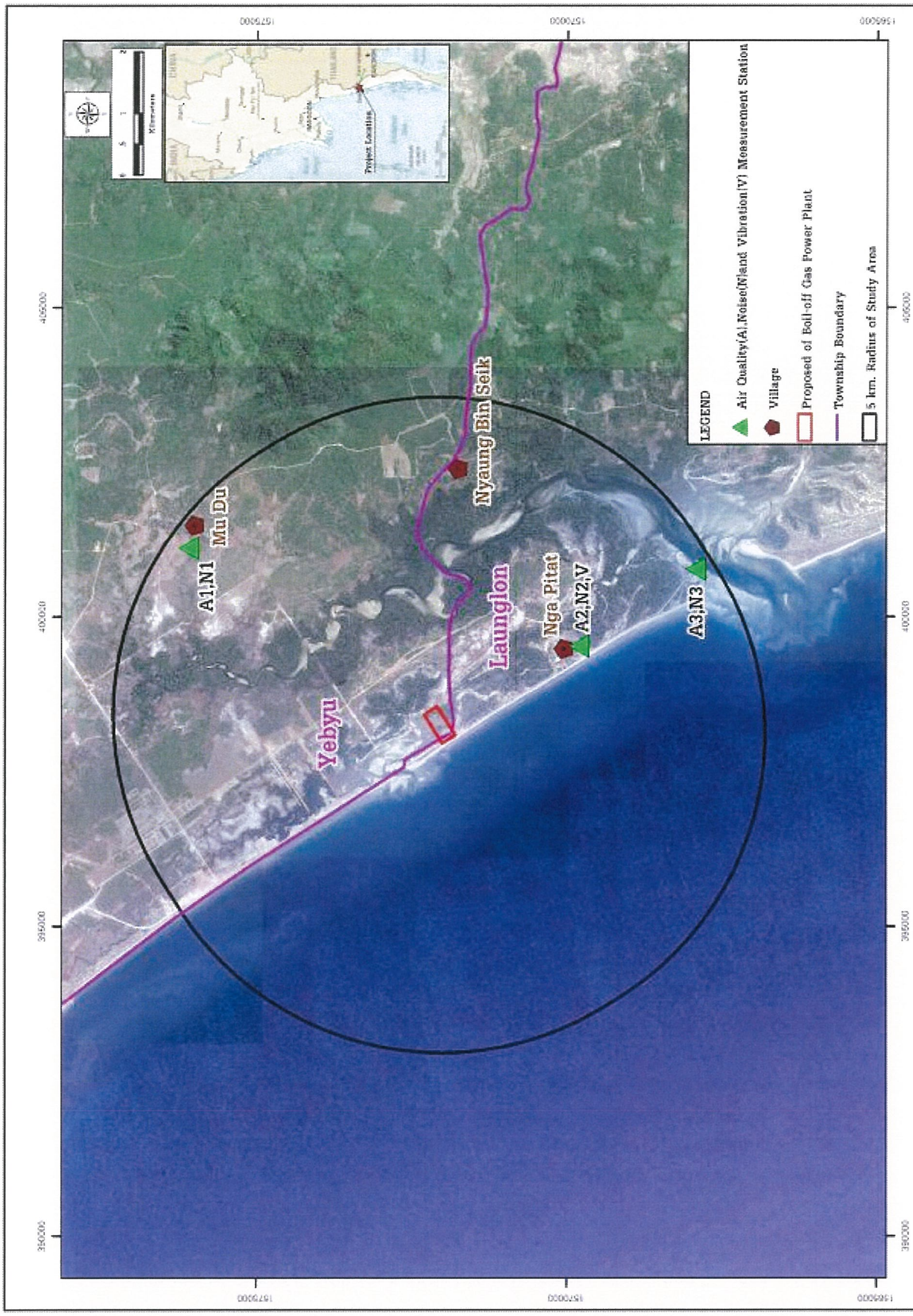


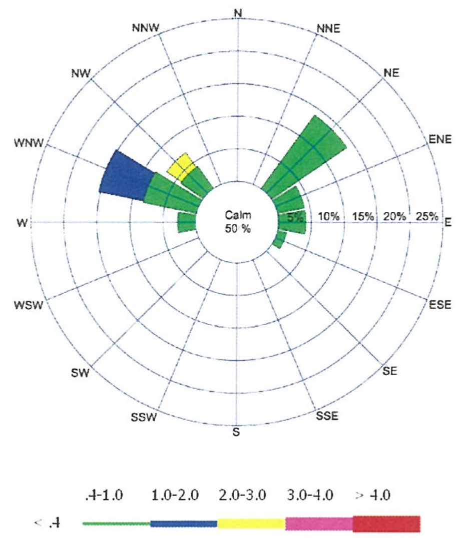
FIGURE 5.2.2-2 : AIR QUALITY , NOISE AND VIBRATION MEASUREMENT STATIONS FOR PROJECT STUDY

Station A1 : Mudu Village

Station A2 : Nga Pitat Village

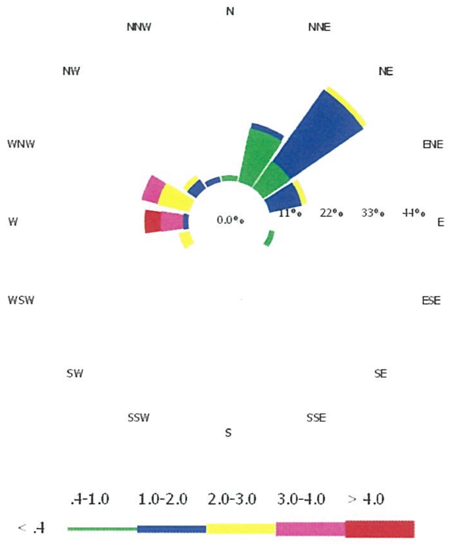
Station A3 : Existing Small Port

PHOTO 5.2.2-1 : WIND SPEED AND WIND DIRECTION STATION



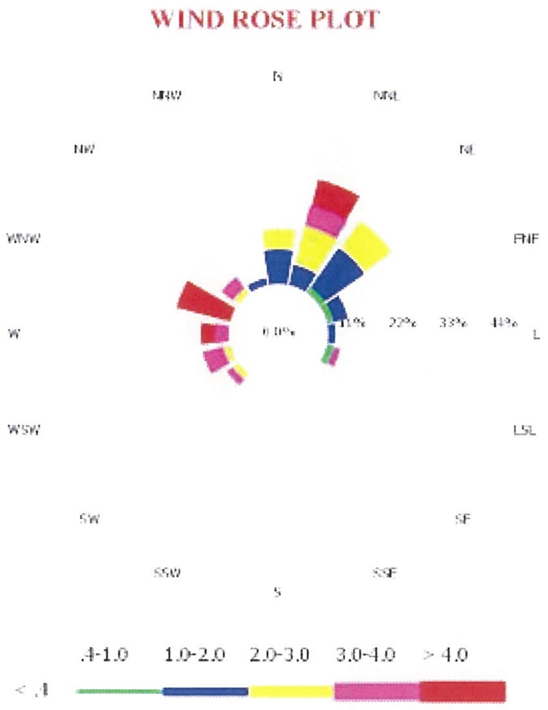
Station A1:

Wind Speed/Direction Measurement at Mudu Village during January 21-24, 2015



Station A2:

Wind Speed/Direction Measurement at Nga Pitat Village during January 21-24, 2015



Station A3:

Wind Speed/Direction Measurement at Existing Small Port during January 25-28, 2015

FIGURE 5.2.2-3: WIND ROSE FROM WIND SPEED AND WIND DIRECTION MEASUREMENT OF THE PROJECT

As can be seen in the ***Table 5.2.2-4***, the results of wind speed and prevailing winds direction measurements were

West-northwest (WNW) at Station A1, Northeast (NE) at Station A2 and North-northeast (NNE) at Station A3. 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 0.0-2.2, 0.8-4.5 and 0.5-5.4 m/s while the percentage of calm wind (wind speeds < 1 knot) were around 50.0, 0.0 and 0.0 % at Station A1, A2 and A3, respectively.

5.2.3 Geography/Topography

In general, the study area is relatively flat with an average level of about 1 m above mean sea level (+1 m MSL), whereas, the eastern part is varied with mountain ranges (with height ranges of 100-200 m above MSL, extends from the north to south direction). The western part of study area is surrounded by the Andaman Sea (see ***Figure 5.2.3-1***). The Na Bule Chaung Creek, is a major, naturally runs pass through, from the northern part to the centre. Its topography can be mainly characterized into 5 categories (***Photo 5.2.3-1***), as follows.

A. Sea Water Area

On the western part of study area, there is the Andaman Sea. The depth range of the sea is between 0-12 km. Principally, from the shoreline, the water depth increases to about 7 m within 1 km. From thereon, the sea bed gently slope down to a depth of about 7-12 m at about 2-3 km from the shoreline.

B. Coastal Zone

On the western part of study area, there are beach sand dunes and back swamps, scattering along the coastline, approximately 10 km.

C. River

There is the Na Bule Chaung River, 26 km long; runs pass the study area. The origin of up-stream water comes from the northern and eastern mountain ranges. An approximate width of the Na Bule Chaung River is 550 m. The width of the estuary is about 1.2 km. The depth range of the river is between 2-5 m.

D. Swamps and Flood Plains

Swamps: Due to characteristics of mineral soils with a poor drainage within the basin, by naturally creation, there are various back swamps scattering around basin area.

Flood Plains: According to the nature of location, the study area situates within the Na Bule Chaung Basin, where the river periodically overflows (semi-diurnal), as a result of flood plains around the Na Bule Chaung Basin. These plains are appropriate for agricultural activities, such as cashew nut and coconut plantations.

E. Mountain Range

There is the eastern mountain range, namely Taninthary Yoma, extends from the north to south direction. The range of its height is between 100-200 m above mean sea level. The highest peak is about 2,000 m about MSL.

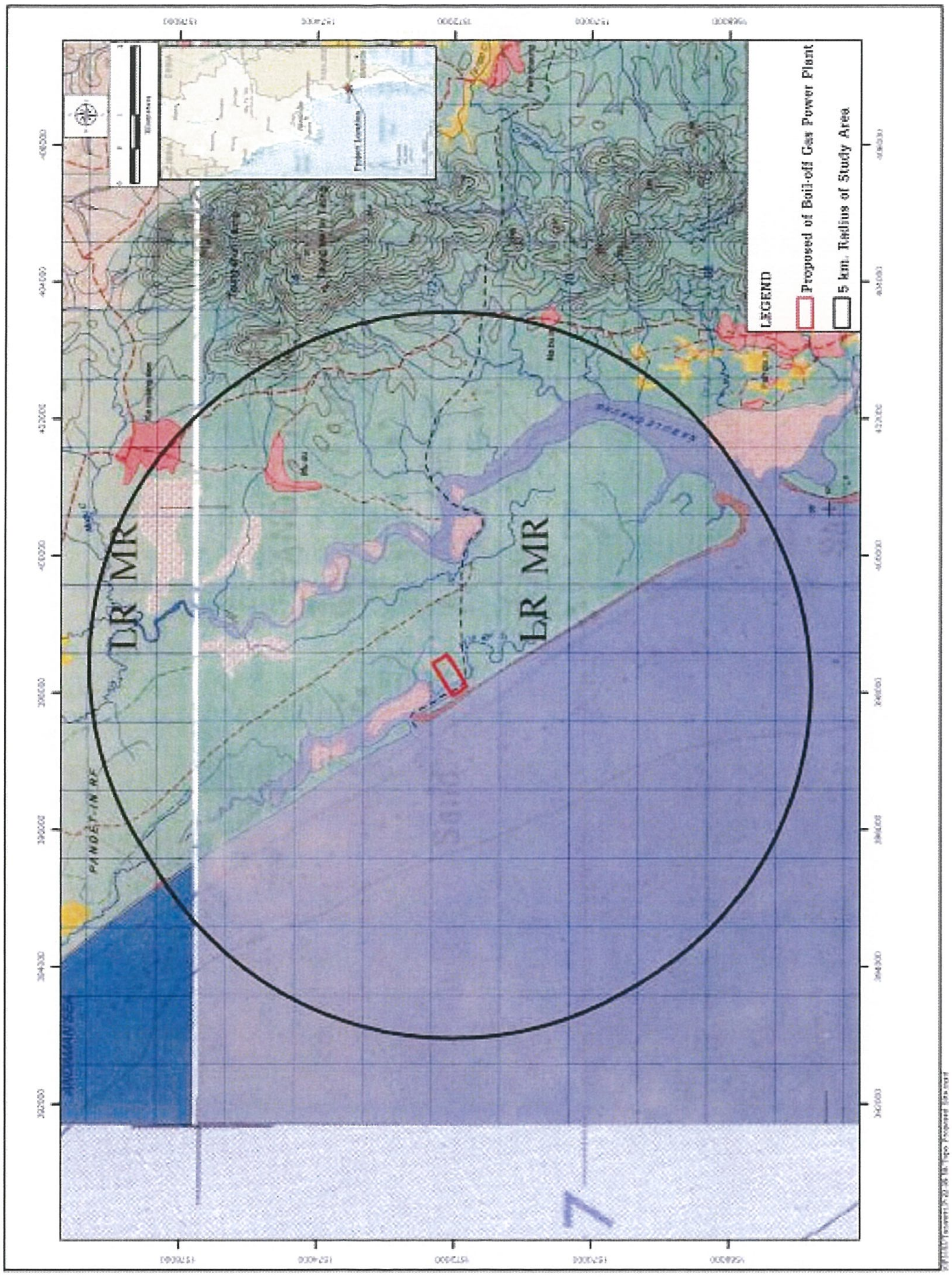


FIGURE 5.2.3-1: TOPOGRAPHIC CONDITION OF THE PROPOSED PROJECT SITE

Sea water Area	**Coastal Zone**
River	**Flood Plain**
Back Swamp	**Mountain Range**

PHOTO 5.2.3-1 : LANDFORMS IN THE STUDY AREA

5.2.4 Geology

The Tanintharyi region 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 1:2,250,000 by Myanmar Sciences Society, 2014) 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 turbidity deposit on the continental shelf.

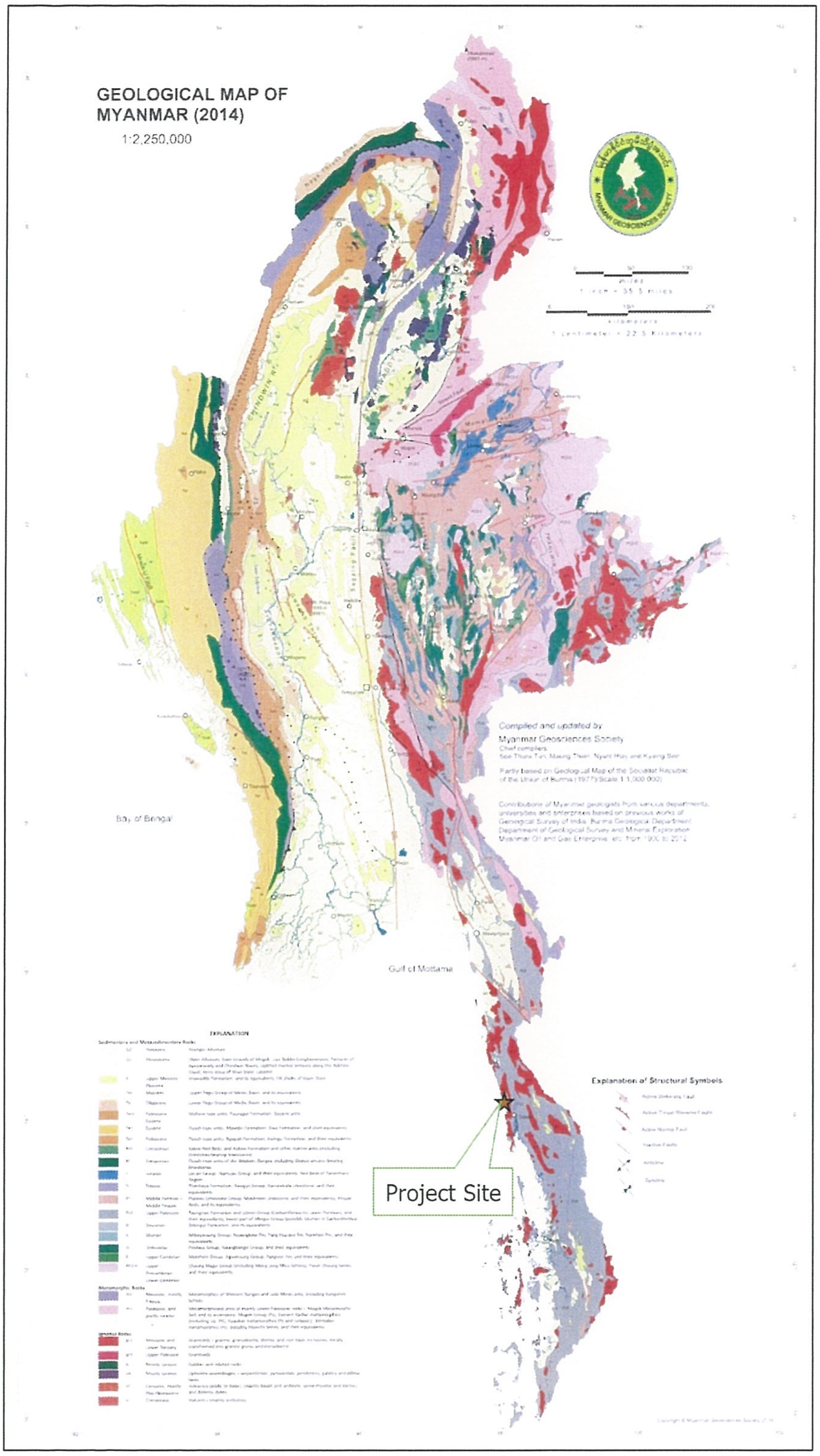
The predominant rock type of the Mergui Series in Dawei District is argillite, fine-grained rock of blue gray to black color at fresh, with obscure bedding and only incipient cleavage. The Carboniferous argillite composes of small crystals of andalusite and sillimanite, with finely divided graphite.

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

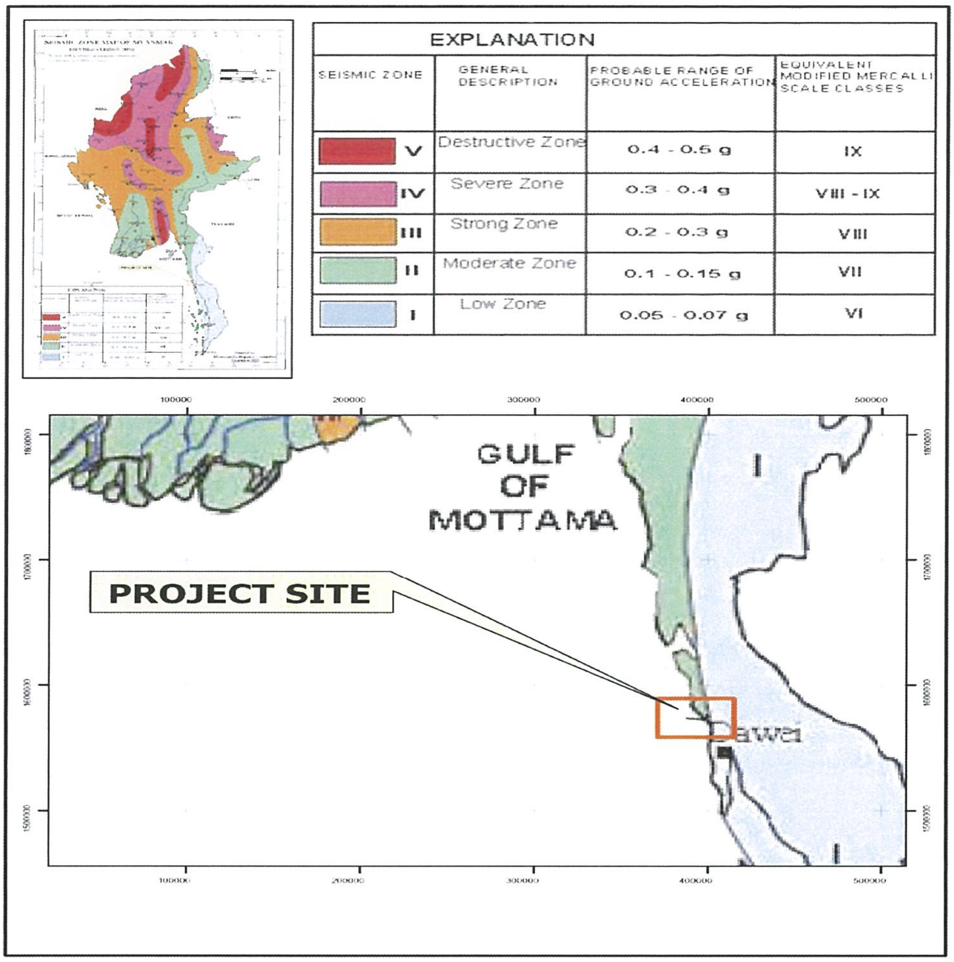
The seismic zone map of Myanmar is presented in ***Figure 5.2.5-1***. The five seismic zones are demarcated and named (from low to high). A probable maximum range of ground acceleration in g values and equivalent Modified Mercalli Scale classes are given for each zone.

Tanintharyi Region is located in the lowest seismic hazard zone in Myanmar. No major earthquakes have been recorded in the study area. 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: Myanmar Geosciences Society,Geological Map of Myanmar (2014), Scale 1:2,250,000

FIGURE 5.2.4-1 : GEOLOGICAL MAP OF TANINTHARYI REGION



Source: Meteorological and Hydrological Department, Yangon, Myanmar.

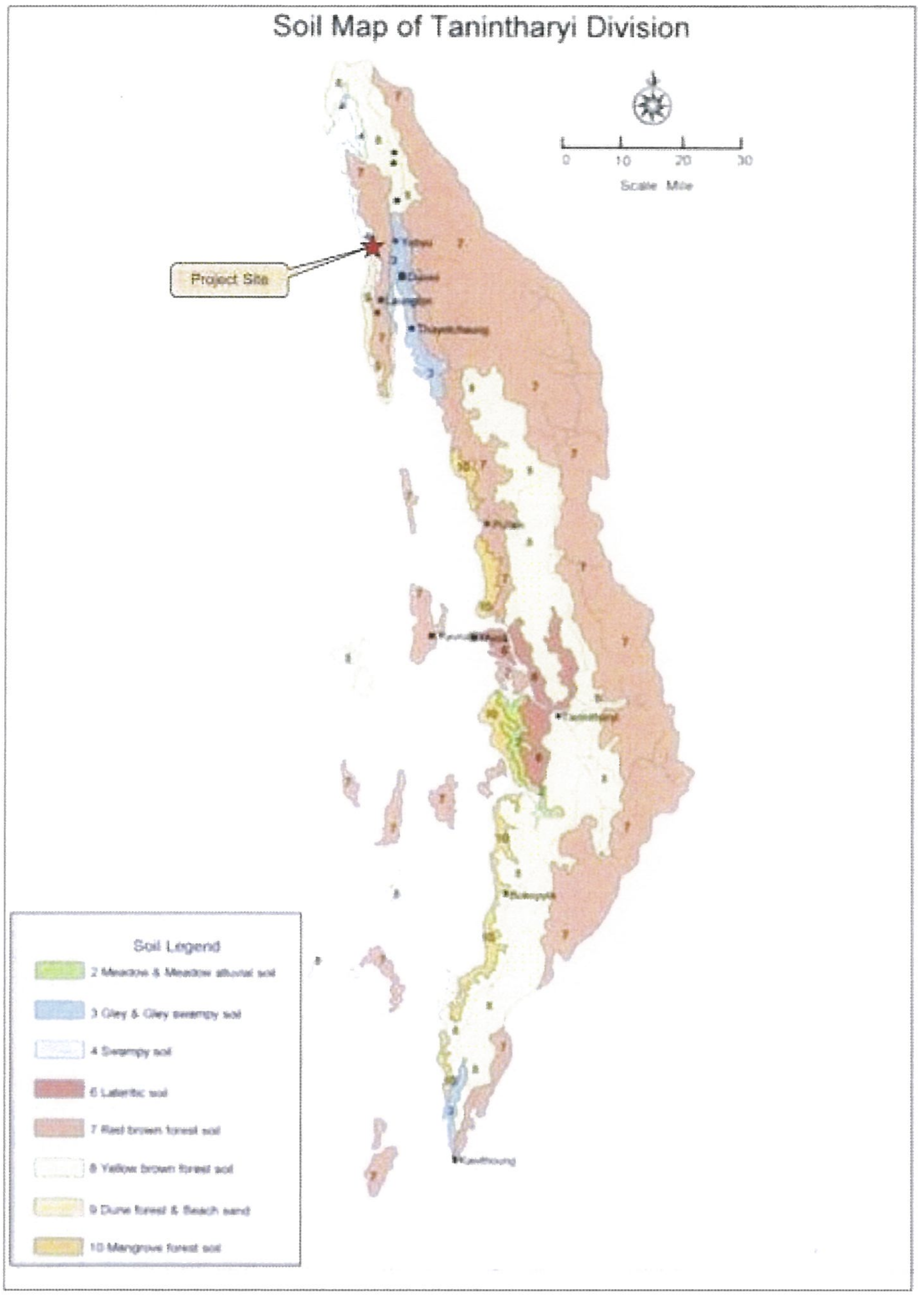
FIGURE 5.2.5-1 : SEISMIC HAZARD MAP OF TANINTHARYI REGION

5.2.6 Soils

Figure 5.2.6-1 is a soil map of Taninthayi Division, soils in the study area are classified into Gley/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). Gleysols 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 seawater where salinity limits its use for plantation.

To supplement the regional soil data, the Consultant conducted soil sampling on January 27, 2015 at 2 stations, one in Nga Pitat Village and another in Mudu Villages (See ***Figure 5.2.6-2***. Soil sampling at each location was performed by digging a 30 cm. of depth in totally 2 stations at Nga Pitat Village and Mudu Village. Begin collecting the sample and transfer the soil from each station to be composited homogenized with a stainless steel spoon prior to filling a sample bottles. The collected soil samples were preserved in a storage box and were sent to the assigned laboratory in Thailand for analysis of various quality parameters. The results of soil sampling within project study area are shown in ***Table 5.2.6-1***.

Information on soil quality in the study area has to be collected. Visually, the sand and clay loam top soil is evident in Nga Pitat Village. The Consultant also conducted soil sampling with 2 stations in Nga Pitat Village and Mudu Village. The results of soil sampling within project study area are shown in ***Table 5.2.6-1*** and ***Appendix 5A***.



Source:http://www.apipnm.org/swlwpnr/reports/y_ta/z_mm/mmmp222.htm#506

FIGURE 5.2.6-1: SOIL MAP IN TANINTHARYI REGION

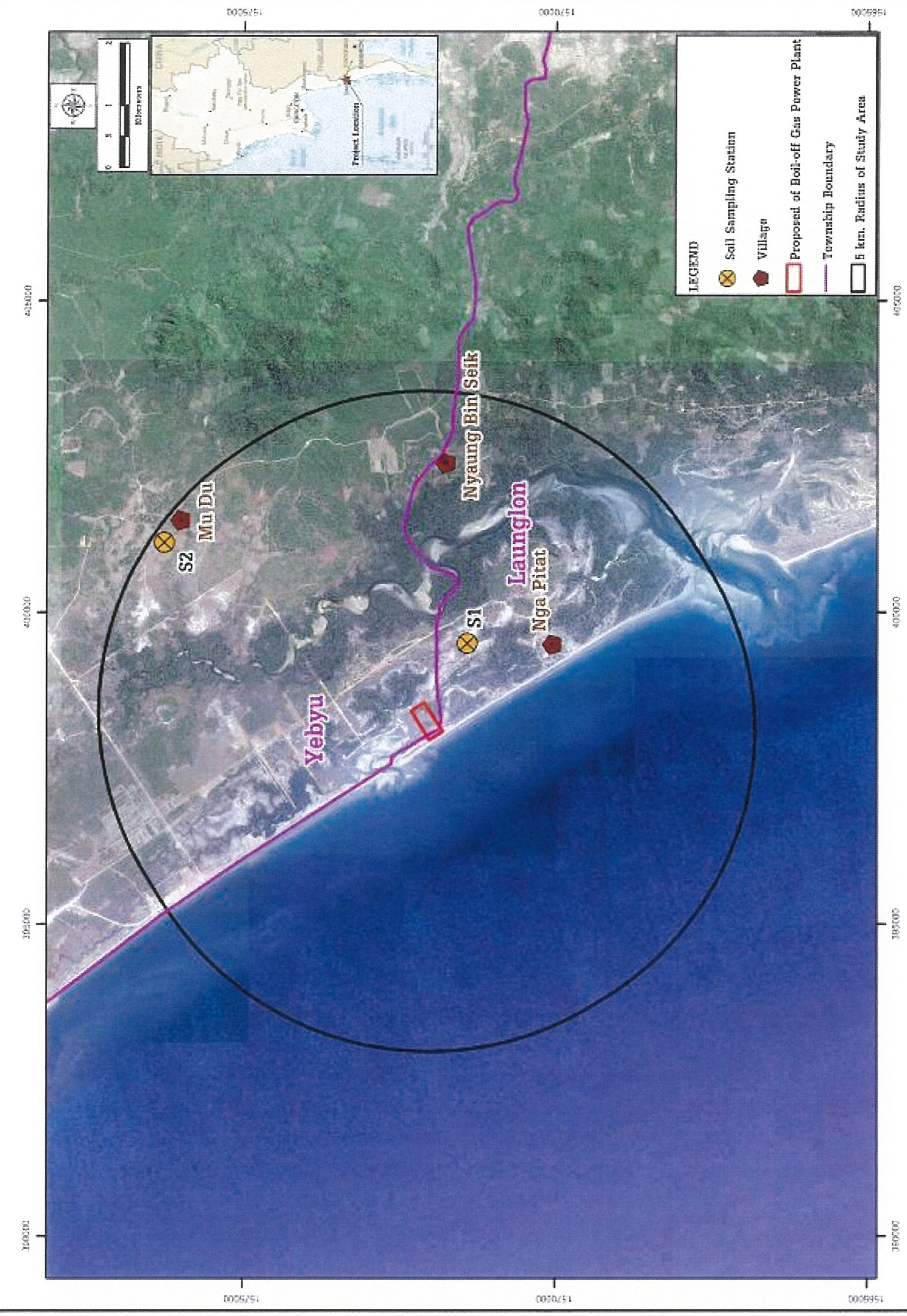


FIGURE 5.2.6-2 : SOIL SAMPLING STATION IN THE STUDY AREA

TABLE 5.2.6-1
ANALYTICAL RESULT OF SOIL SAMPLING WITHIN PROJECT STUDY AREA

Parameter	Method	Unit	Result		Standard[1]
			Station 1	Station 2	
Physical Parameters					
Sand	Hydrometer	%	94.1	40.2	-
Silt	Hydrometer	%	4.0	21.9	-
Clay	Hydrometer	%	1.9	37.9	-
Chemical Parameters					
Chloride	ISE Application	mg/kg	305	32.4	-
Conductivity	APHA (2012), 2510B	micromhos/cm	248	20.5	-
Nitrate	APHA (2012), 4500-NO3 E	mg/kg	<1.0	6.1	-
Ph	US EPA, Method 9040 B		5.2	5.2	-
Phosphate	APHA (2012), 4500-P	mg/kg	<1.0	<1.0	-
Salinity	APHA (2012), 5210 B	ppt	0.12	0.02	-
Sulfate	APHA (2012), 4110 B	mg/kg	101	11.0	-
Total Organic Carbon	US EPA, Method 9060	%	0.19	2.08	-
Metals					
Arsenic	US EPA, Method 3050B and 6010B	mg/kg	<0.05	1.04	<3.9
Cadmium	US EPA, Method 3050B and 6010B	mg/kg	<0.05	<0.05	<37

Note: Station 1 = Nga Pitat Village (UTM 399518E, 1571408N)
Station 2 = Mudu Village (UTM 401429E, 1576778N)

Remark: [1]Soil Quality Standards for Habitat and Agriculture, Pollution Control Department (PCD), Ministry of Natural Resources and Environment, Thailand

5.2.7 Hydrology

The study area is mainly coastal area characterized by low elevations and tidal rivers. The area is drained by Nabule River. Sections of the two rivers in the study area are estuarine, i.e. they are subjected to tidal translation in the Andaman Sea. The water is brackish most time of the year and the river mouths are wide with mud flat and mangrove.

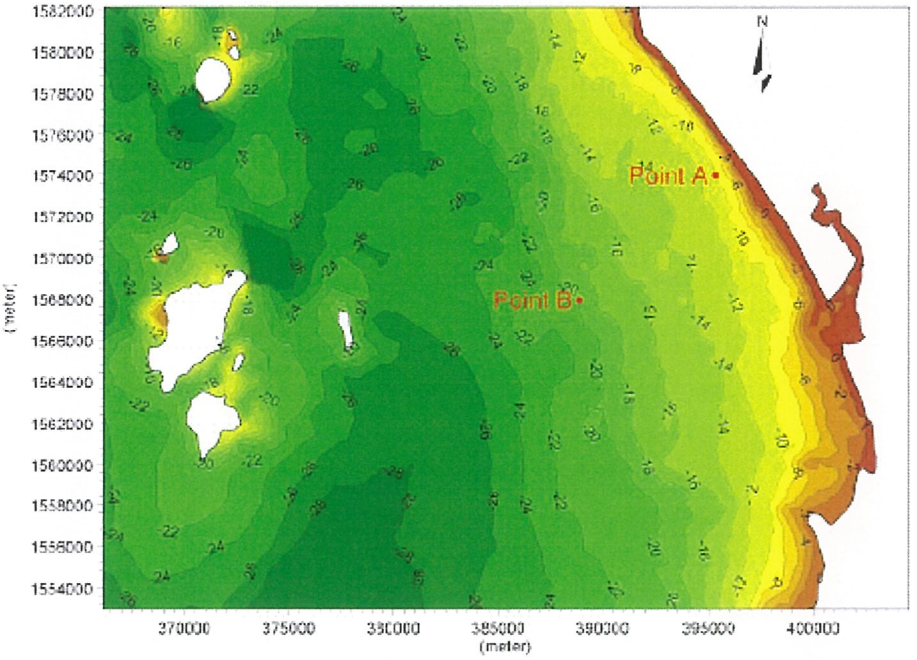
Nabule River is main river in the study area. This river originates at about 3.2 km south of Htain Gyi Village and drains into the Andaman Sea south of Nga Pitat Village. Nabule River in the study area are mostly brackish, especially in sections close to the sea. The banks near the river mouths are inhabited by mangrove and mud flat emerges during low tides. These areas thus form an important link between the freshwater and marine ecosystems.

5.2.8 Oceanographic Condition

Information on this subject was taken from the oceanographic and coastal condition surveys conducted by Halcrow-Aurecon for ITD's Deep Sea Port Project (2012)[2] and secondary information collected from the U.S. National Oceanographic and Atmosphere Administration (NOAA) and Ocean Weather, Inc. (OWI).

Two tide gauges were deployed during the Metocean data acquisition campaign by Halcrow-Aurecon. ***Figure 5.2.8-1*** is a coastal map showing the locations of the two tide gauges consisting of one offshore gauge and one near shore gauge. The offshore tide gauge was deployed at Point B (E388873, N1567935) at a water depth of approximately -20 m LAT. The near shore gauge was deployed at Point A (E395296, N1573959) at a water depth of about -10 m LAT. Water level data from the first deployment (July 23 – August 09, 2011) and the second deployment (August 12 – September 02, 2011) were analyzed.

The following sections summarize general coastal conditions of the sea fronting the project site. Further information regarding the coastal conditions is available in the "Final Modeling and Downtime Analysis Report" (Halcrow-Aurecon, 2012), "Hydrographic Survey Report" (Halcrow-Aurecon 2011), and "Preliminary Design Report" (Halcrow-Aurecon, 2011).



Source : Halcrow-Aurecon, 2011

FIGURE 5.2.8-1: LOCATIONS OF DEPLOYED TIDE GAUGES

[2]The EHIA of the Deep Sea Port Project was conducted by TEAM.

Bathymetry

From the shoreline, the water depth increases to about 18 m (10 fathoms) within 7 to 8 km from the shoreline. From thereon, the seabed gently slopes down to a depth of about 27 m (15 fathoms) at about 15 km from the shoreline. Several clusters of rocky islands exist approximately 25 km from the coast. These consist of four islands on the west, three islands on the southwest, and several small islands on the northwest. The passages between the islands in general show water depths in excess of 25 m (***Figure 5.2.8-2***).

Tidal Levels

Measurements of tidal levels were carried out by ITD at the existing small port over a 20 months period from January 2013 until September 2014. The monthly data is given in ***Table 5.2.8-1***. The data indicate that the water levels did not vary significantly over the months. The tidal range varied between 3 to 4 m.

TABLE 5.2.8-1

THE DATA OF MONTHLY WATER LEVEL IN SMALL PORT AREA IN YEAR 2013 AND 2014 (JANUARY 2013 –SEPTEMBER 2014)

Month	Water Level (m.)					
	2013			2014		
	Average	Max	Min	Average	Max	Min
January	1.01	3.76	0.01	1.29	3.75	0.01
February	0.99	3.79	0.01	1.29	3.68	0.02
March	1.01	3.69	0.01	1.21	3.79	0.03
April	1.13	3.75	0.01	1.16	3.89	0.02
May	0.95	3.74	0.03	2.09	3.59	0.52
June	1.99	3.79	0.09	1.99	3.79	0.09
July	1.91	3.89	0.09	1.91	3.89	0.09
August	1.11	3.79	0.03	1.99	3.79	0.09
September	1.03	3.68	0.02	1.67	3.89	-0.22
October	1.06	3.67	0.02			
November	1.10	3.78	0.02			
December	1.01	4.01	0.02			

Source: Italian-Thai Development Public Co., Ltd., 2014.

5.2.9 Erosion and Sedimentation

Information on erosion in the study area and sedimentation in Dawei and Nabule Rivers are not available. The Consultant therefore made no attempt to collect information on the subject.

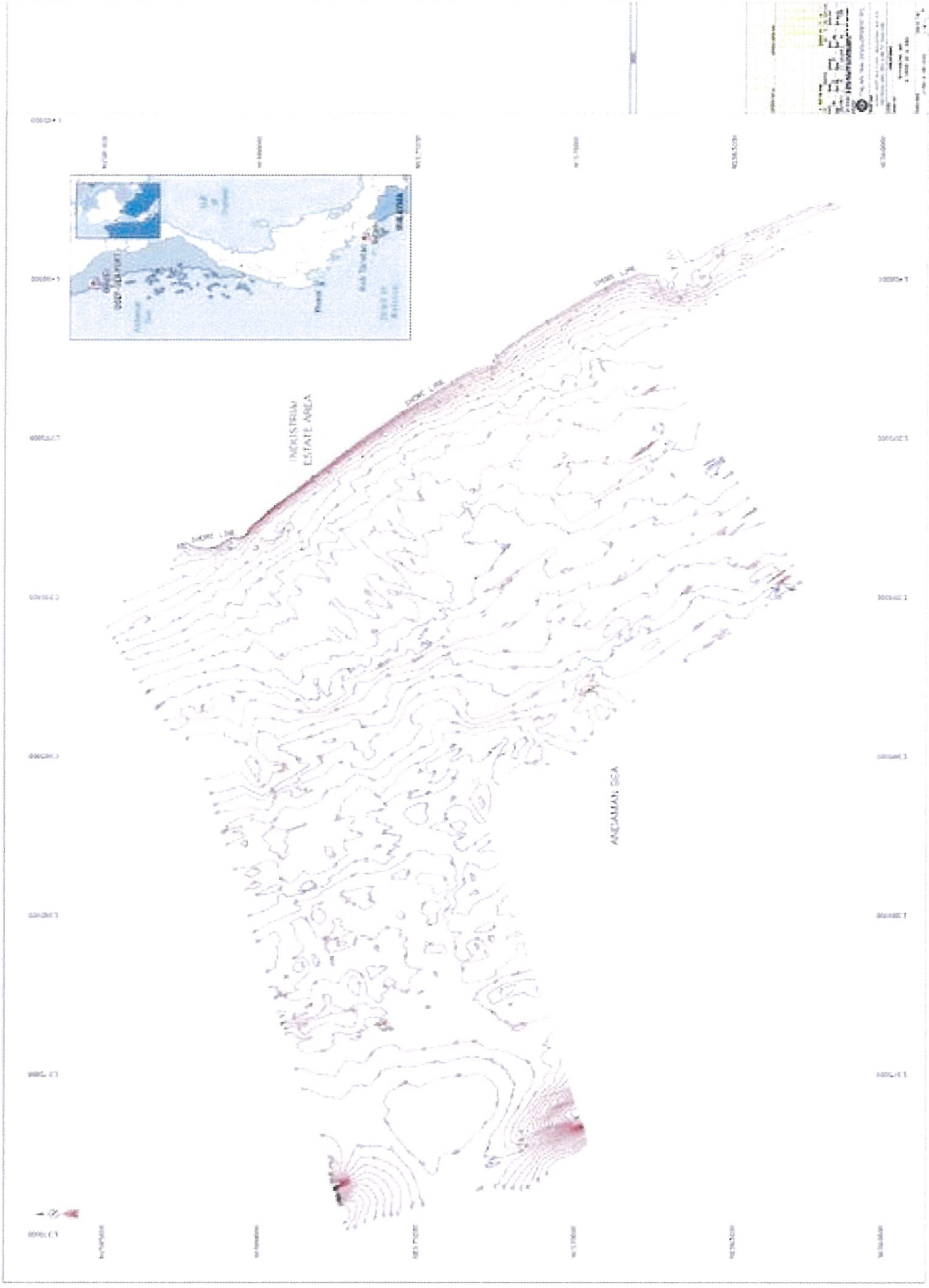


FIGURE 5.2.8-2: BATHYMETRY OF ANDAMAN SEA NEAR PROPOSED PROJECT SITE

5.2.10 Air Quality

Air quality surveys were carried out during the dry season at the same stations that the wind data were collected. The dry season surveys covered the period 21-24 January 2015 at Nga Pitat Village and Mudu Village, and the period 25-28 January 2015 at the existing small port. ***Figure 5.2.2-2*** show the locations of the air quality sampling stations.

Air quality surveys were conducted in January 2015 at three stations (A1, A2 and A3) that the wind data was collected.

The field measurements were carried out in parallel for 3 consecutive days at each station. 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 U.S. EPA as shown in ***Table 5.2.10-1***.

TABLE 5.2.10-1

SAMPLING AND ANALYTICAL METHODS FOR AIR QUALITY

Pollutant	Sampling/ Analysis Method	Sampling Period
TSP (Average 24 -Hour)	High-Volume Air Sampler/ Gravimetric method	72-hour
PM-10 (Average 24 -Hour)	High-Volume Air Sampler (PM-10) / Gravimetric method	72-hour
SO_2 (Average 24 -Hour)	Pararosaniline (ASTM D2914-78)	72-hour
NO_x (Average 24 -Hour)	Sodium Arsenite (US.EPA EQN-1277-026)	72-hour

Results of the air quality surveys at the three stations are summarized in ***Table 5.2.10-2*** and details are given in ***Appendix 5B.*** It can be seen that the values of all air quality parameters were much below the permissible maximum values prescribed in the Ambient Air Quality Standards of World Bank Group (1998 and 2007). For example, the concentrations of PM-10 at the three stations ranged from 17.91 to 40.82 $\mu g/m^3$compared to the standard value of not greater than 150 $\mu g/m^3$. Therefore, the ambient air in the study area was clean. This condition of air quality would be expected considering low industrial and traffic activities in the study area. As the gaps between the existing concentrations of the four key pollutants and the permissible maximum concentrations are positively large, the air-shed of the study area still has a large assimilative capacity. This indicates low sensitivity of air quality issues of the Project.

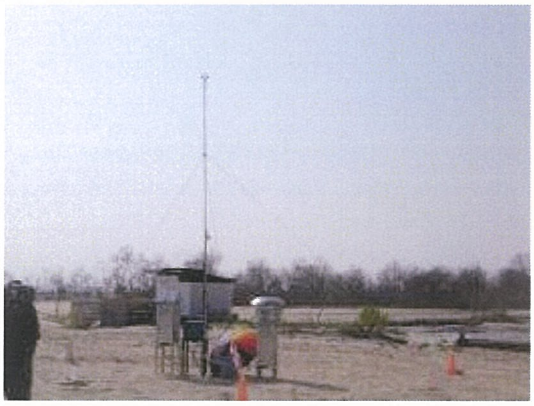
<table>
<tr><td> </td><td> </td></tr>
<tr><td>**A1 Sampling Station**</td><td>**N1 Sampling Station**</td></tr>
<tr><td colspan="2">**Air Quality and Noise Measurement at Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region (A1 & N1) during January 21-24, 2015**</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>**A2 Sampling Station**</td><td>**N2 Sampling Station**</td></tr>
<tr><td colspan="2">**Air Quality and Noise Measurement at Nga Pitat Village, Launglon Township, Dawei District, Tanintharyi Region (A2 & N2) during January 21-24, 2015**</td></tr>
<tr><td></td><td> </td></tr>
<tr><td>**A3 Sampling Station**</td><td>**N3 Sampling Station**</td></tr>
<tr><td colspan="2">**Air Quality and Noise Measurement at Existing Small Port, Launglon Township, Dawei District, Tanintharyi Region (A3 & N3) during January 25-28, 2015**</td></tr>
</table>

PHOTO 5.2.10-1: AIR QUALITY AND NOISE MEASUREMENT STATIONS WITHIN 5 KM RADIUS OF POWER PLANT

TABLE 5.2.10-2
RESULTS OF THE AIR QUALITY MEASUREMENTS

Station	Sampling Date	Results of Measurement (μg/m³)			
		TSP	PM-10	NO_2	SO_2
		Average 24 Hour	Average 24 Hour	Average 24 Hour	Average 24 Hour
A1:Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region	21-22 January 2015	86.51	17.91	<18	<50
	22-23 January 2015	94.86	34.73	<18	<50
	23-24January 2015	103.46	29.46	<18	<50
	Min-Max	**86.51-103.46**	**17.91-34.73**	**<18**	**<50**
A2 : Nga Pitat Village, Launglon Township, Dawei District, Tanintharyi Region	21-22 January 2015	102.58	38.31	<18	<50
	22-23 January 2015	110.81	40.82	<18	<50
	23-24 January 2015	93.55	33.94	<18	<50
	Min-Max	**93.55-110.81**	**33.94-40.82**	**<18**	**<50**
A3 : Existing Small Port, Launglon Township, Dawei District, Tanintharyi Region	25-26 January 2015	52.61	22.91	<18	<50
	26-27 January 2015	58.86	25.57	<18	<50
	27-28 January 2015	59.90	29.06	<18	<50
	Min-Max	**52.61-59.90**	**22.91-29.06**	**<18**	**<50**
Ambient Air Quality Standards of World Bank Group (1998)1/		**230**	**150**	**150**	**125**
Ambient Air Quality Standards of World Bank (2007)2/		**-**	**50**	**-**	**20**

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 by TEAM Consulting Engineering and Management Co., Ltd., January, 2015

5.2.11 Noise and Vibration

(1) Noise

The Project construction will invariably create noise which could disturb nearby sensitive receptors. As the Project area is sparsely populated and still largely undeveloped, 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 21-24, 2015 (Station N1 and Station N2) and January 25-28, 2015 (Station N3). The three stations were set in the same location for air quality sampling as shown in ***Figure 5.2.2-2*** and ***Photo 5.2.10-1***. Information on the three stations is summarized in ***Table 5.2.11-1***.

TABLE 5.2.11-1

INFORMATION ON NOISE SAMPLING STATIONS

Particulars	Station N1: Mudu Village	Station N2: Nga Pitat Village	Station N3: Existing Small Port
Reference Coordinates	UTM 402425E, 1576727N	UTM 399344E, 1569815N	UTM 400771E, 1567921N
District	Dawei	Dawei	Dawei
Nearest village	Nyaung Bin Seik	Sakhanthit	Sakhanthit
Nearest noise sources	village activities	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 5.2.11-2*** and details of the measurements are presented in ***Appendix 5C***. IFC noise standards are also compared with the background noise levels in ***Table 5.2.11-2***. Major finding are:

- The background noise level expressed in LAeq-1 hr. exceeded the limit set by the IFC Standard during both daytime and nighttime.
- The average background noise levels expressed in Leq (24 hr.) were significantly below the maximum limit set by U.S. EPA noise standard.

(2) Vibration

The background vibration measurement was carried out at Nga Pitat Village. In the vibration measurement, frequency and peak particle velocity were measured and recorded continuously for 72 hr using the methods recommended by DIN 4150. The measurements were conducted during 21-24 January, 2015 (***Figure 5.2.2-2*** and ***Photo 5.2.11-1***). Primary vibration sources in this village were vehicles such as motorcycles, farm trucks, and pick-up trucks. Results of the vibration measurements are summarized in ***Table 5.2.11-3*** and details of the measurements are presented in ***Appendix 5C***.

PHOTO 5.2.11-1 : VIBRATION STATION

TABLE 5.2.11-2

NOISE LEVEL MEASUREMENT AT 3 SAMPLING STATIONS DURING JANUARY 21-24 AND 26-28, 2015

Sampling Location	Sampling Date	Noise Level (dB(A))					
		LAeq 1 hr (Daytime)	LAeq 1 hr (Nighttime)	Leq 24 hr	Lmax	Ldn	L90
N1: Mudu Village, Yebyu Township, Dawei District, Tanintharyi Region	January 21-22, 2015	43.9-56.6	33.5-53.8	62.5	96.6	69.2	42.2
	January 22-23, 2015	41.0-60.3	41.6-54.0	51.4	91.3	54.8	47.7
	January 23-24, 2015	46.3-60.1	45.7-60.0	54.0	97.1	60.4	49.8
Min-Max		**41.0-60.3**	**33.5-60.0**	**51.4-62.5**	**91.3-97.1**	**54.8-69.2**	**42.2-49.8**
N2: Nga Pitat Village, Launglon Township, Dawei District, Tanintharyi Region	January 21-22, 2015	50.8-60.5	50.5-60.5	55.5	90.7	61.5	49.1
	January 22-23, 2015	52.3-60.9	50.5-57.9	55.7	87.6	60.9	49.5
	January 23-24, 2015	53.7-59.3	53.1-57.2	55.7	86.8	61.5	51.0
Min-Max		**50.8-60.9**	**50.5-60.5**	**55.5-55.7**	**86.8-90.7**	**60.9-61.5**	**49.1-51.0**
N3: Existing Small Port , Launglon Township, Dawei District, Tanintharyi Region	January 25-26, 2015	46.2-72.5	48.3-78.9	69.0	93.6	69.3	54.9
	January 26-27, 2015	44.8-61.4	48.4-74.9	66.4	95.1	66.7	53.3
	January 27-28, 2015	48.1-68.1	48.3-74.0	64.6	91.4	68.7	50.9
Min-Max		**44.8-72.5**	**48.3-78.9**	**64.6-69.0**	**91.4-95.1**	**66.7-69.3**	**50.9-54.9**
IFC Standard, 2007* **		**55.0***	**45.0****	-	-	-	-
U.S. EPA Standard		-	-	**70.0**	-	-	-

Remark: * for residential, institutional and educational area during daytime (7 a.m.-10 p.m.)

** for residential, institutional and educational area during daytime (10 p.m. – 7 a.m.)

*** Environmental, Health, and Safety (EHS) Guidelines, International Finance Corporation, April 2007

Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., January, 2015

TABLE 5.2.11-3

VIBRATION MEASUREMENT AT NGA PITAT VILLAGE DURING JANUARY 21-24, 2015

Sampling Location	Sampling Date	Peak Particle Velocity (mm/s)	Frequency (Hz)	Possible Vibration Sources
Nga Pitat Village, Launglon Township, Dawei District, Tanintharyi Region	January 21-22, 2015	0.83 (Long)	14.0	vehicle passing
	January 22-23, 2015	0.59 (Tran)	73.0	vehicle passing
	January 23-24, 2015	0.65 (Vert)	18.0	vehicle passing

Remark: Tran = Transverse Geophone, Long = Longitudinal Geophone, Vert = Vertical Geophone

Source: Field Survey by TEAM Consulting Engineering and Management Co., Ltd., October, 2014 and January, 2015

When comparing the results of vibration measurements with guidelines on maximum peak particle velocity for various kinds of buildings (DIN 4150-3, 1999) in ***Table 5.2.11-4,*** it is clean clear that the background vibration levels at the two villages were very low with no effects on buildings.

TABLE 5.2.11-4

DIN 4150 REGULATION OF VIBRATION TO BUILDING STRUCTURES

Peak Particle Velocity	Impact to Building
2 mm/sec (0.079 inch /sec)	Not danger to ancient building
5 mm/sec (0.197 inch /sec)	Initiation of damage on architectural structure
10 mm/sec (0.394 inch /sec)	Acceptable level for good residential building
20-40 mm/sec (0787-1.575 inch /sec)	Acceptable level for industrial factory

Source: Deutsches Institut fuer Normung, Berin, Germany, DIN 4150-3, Structural Vibration Part 3: Effects of Vibration on Structures, 1999.

5.2.12 Seawater Quality

The study of coastal water quality was conducted on January 21, 2015. Seawater sample were collected at four selected stations within 5 km of the project site as indicated in a map in ***Figure 5.2.12-1***.

Seawater of the Andaman Sea at the study area is open sea. The water masses of the study area are well mixed and are stratified at a depth of about 40 m. (M.J. Varkey et.al., 1996). Therefore, water samples at each station were collected from 1 meter below surface as water depth at the sampling time of each station is in a range of 7.2-16.6 meters. In situ measurement was made for conductivity, dissolved oxygen (DO), pH, temperature, salinity and transparency (***Photo 5.2.12-1***). All collected water sample bottles were labeled and their information was recorded and kept for tracing. The collected water samples were preserved at 4°C in a storage box and were sent to the assigned laboratory in Thailand for analysis of various quality parameters. The water quality data was presented in ***Table 5.2.12-1*** and compared with marine water quality criteria for the ASEAN REGION for Aquatic Life Protection. Details of the measurements are presented in ***Appendix 5D***.

The data clearly indicates that seawater quality at all 4 stations was good with high level of dissolved oxygen and very low heavy metal together with organic contamination. In summary, the results at four sampling stations indicate seawater to be of good quality suitable for marine ecosystem.

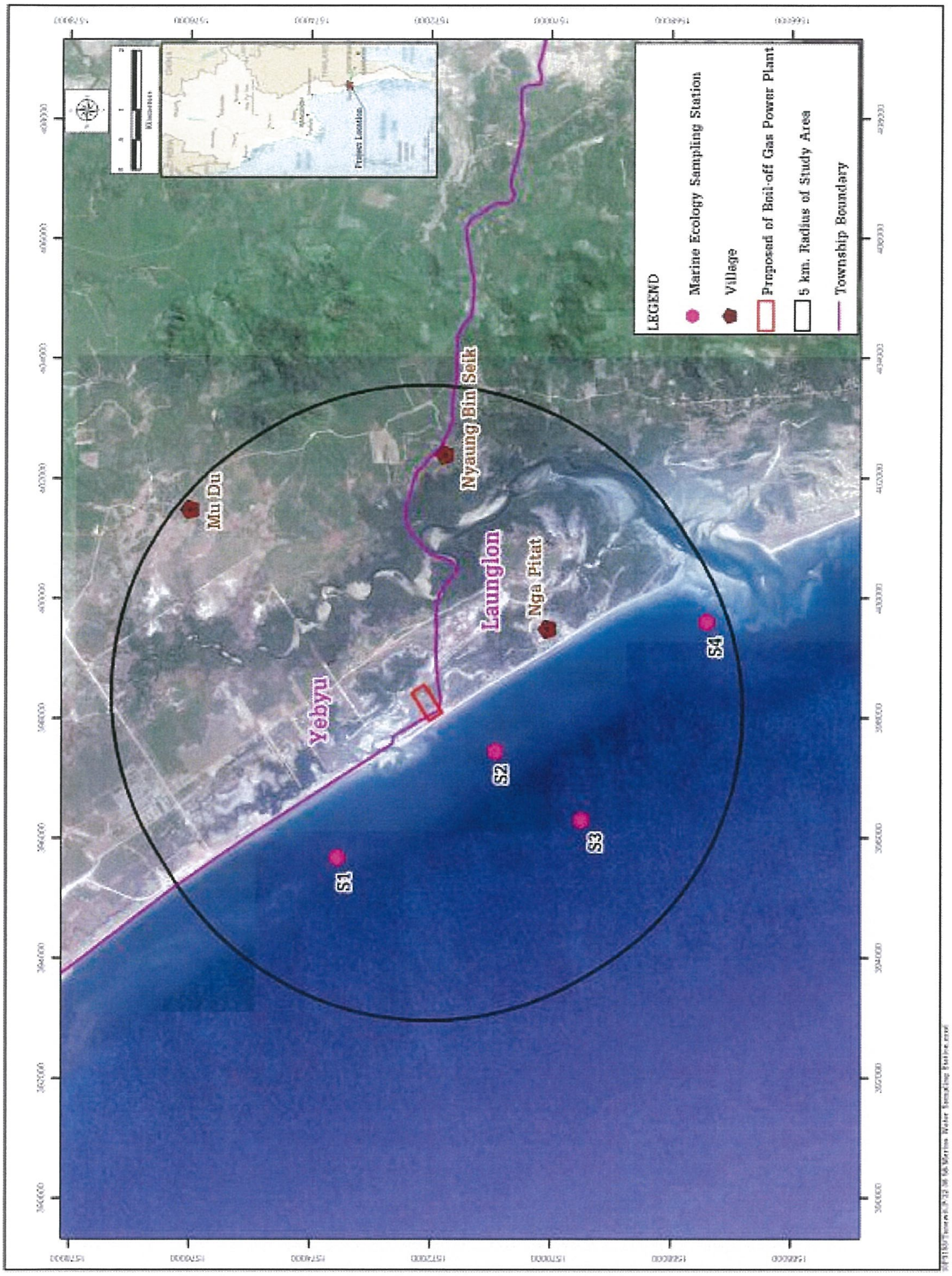


FIGURE 5.2.12-1 : LOCATION OF SEAWATER AND MARINE ECOLOGY SAMPLING

PHOTO 5.2.12-1 : SEAWATER SAMPLING ACTIVITIES

TABLE 5.2.12-1

RESULTS OF SEAWATER QUALITY SAMPLING, 21 JANUARY 2015

Characteristic	Parameter	Unit	Limit of Detection	SW1	SW2	SW3	SW4	Standard*
1. Physical	Depth	m.	-	11.0	11.5	16.6	7.2	-
	Temperature	°C	-	26.5	27.0	27.4	27.1	Increase not more than 2°C above the maximum ambient temperature
	Transparency	m.	-	5.5	5.0	7.8	3.4	-
	Conductivity	mS/cm	-	48.11	42.92	49.48	49.02	-
2. Chemical	pH	-	-	8.16	8.19	8.18	8.16	-
	DO	mg/l	-	7.26	6.68	5.99	6.85	≥ 4.0
	Salinity	ppt	-	30.5	30.6	30.9	30.6	-
	Turbidity	NTU	-	1.2	1.1	1.1	1.0	-
	COD	mg/l	1.5	44	53	61	44	-
	BOD	mg/l	-	<2	<2	<2	<2	-
	Total Dissolved Solids	mg/l	-	63653.8	54587.8	56317.5	47080.0	-
	Suspended Solids	mg/l	-	<5.0	<5.0	<5.0	<5.0	-
	Oil & Grease	mg/l	-	<5.0	<5.0	<5.0	<5.0	0.14
	Iron	mg/l	0.001	0.21	0.16	0.08	0.15	-
	Lead	mg/l	0.001	Not detected	Not detected	Not detected	Not detected	0.0085
	Cyanide	mg/l	0.002	Not detected	Not detected	Not detected	Not detected	0.007
	Arsenic	mg/l	0.002	<0.005	<0.005	<0.005	<0.005	0.12

Remark: SW1 :UTM 395675E 1573545N Zone 47P
SW2 :UTM 397446E 1570914N Zone 47P
SW3 :UTM 396298E 1569482N Zone 47P
SW4 :UTM 399599E 1567402N Zone 47P
*ASEANMARINE WATER QUALITY Management Guidelines and Monitoring Manual, 2008

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015

5.2.13 Groundwater Quality

Groundwater bored wells are found in villages nearby the Project site. Two wells, one in Nga Pitat School (GW1) and another in Mudu School (GW2), were selected for groundwater quality surveys. Nga Pitat School is about 2.57 km from the Project site while Mudu School is about 4.86 km. The locations of the two villages are indicated on a map in ***Figure 5.2.13-1***and ***Photo 5.2.13-1***.

Groundwater sampling was conducted in Mudu Village on January 23, 2015 and Nga Pitat Village on January 27, 2015. In each sampling, a grab sample of about 5 liters was collected at about 0.3 m from the surface for in-situ and laboratory analyses. ***Table 5.2.13-1*** shows the groundwater quality data compared with WHO Guidelines for Drinking-water. The data on conductivity and salinity clearly indicate that the groundwater samples from both wells were freshwater. The groundwater quality was met the WHO standards for drinking purpose. Details of the measurements are presented in ***Appendix 5E.***

TABLE 5.2.13-1

RESULTS OF GROUND WATER QUALITY ANALYSIS AT EACH STATION

Characteristic	Parameter	Unit	GW1	GW2	WHO Drinking Water Standard1
Sampling Date			27/1/2015	23/1/2015	
1. Physical	Odour	-	None	None	-
	Water temperature	°C	26.6	25.7	-
	Conductivity	µs/cm	132.2	25.5	250
	Oil & Grease	mg/l	<5.0	<5.0	-
2. Chemical	pH	-	6.92	6.92	6.5 – 8.5
	Turbidity	NTU	0.10	0.10	-
	DO	mg/l	4.69	5.33	-
	Salinity	ppt	0.10	0.10	-
	Total Dissolved Solids	mg/l	36.8	947.5	-
	Suspended Solids	mg/l	<5.0	<5.0	-
	Total Hardness	mg/l	45.10	109.8	-
	Chloride	mg/l	11.00	13.0	250
	Arsenic	mg/l	Not detected	0.0006	0.01
	Iron	mg/l	0.04	0.21	-
	Lead	mg/l	0.001	0.0004	0.01
	Nitrite	mg/l	Not detected	Not detected	-
	Nitrate	mg/l	Not detected	2.2	50
	Cyanide	mg/l	Not detected	<0.005	-

Remark : GW1 : Nga Pitat School (UTM 399504E, 1570128N)
GW2 : Mudu School (UTM 401599E, 1575318N)
[1]WHO Guidelines for drinking water quality 4th Edition

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015.

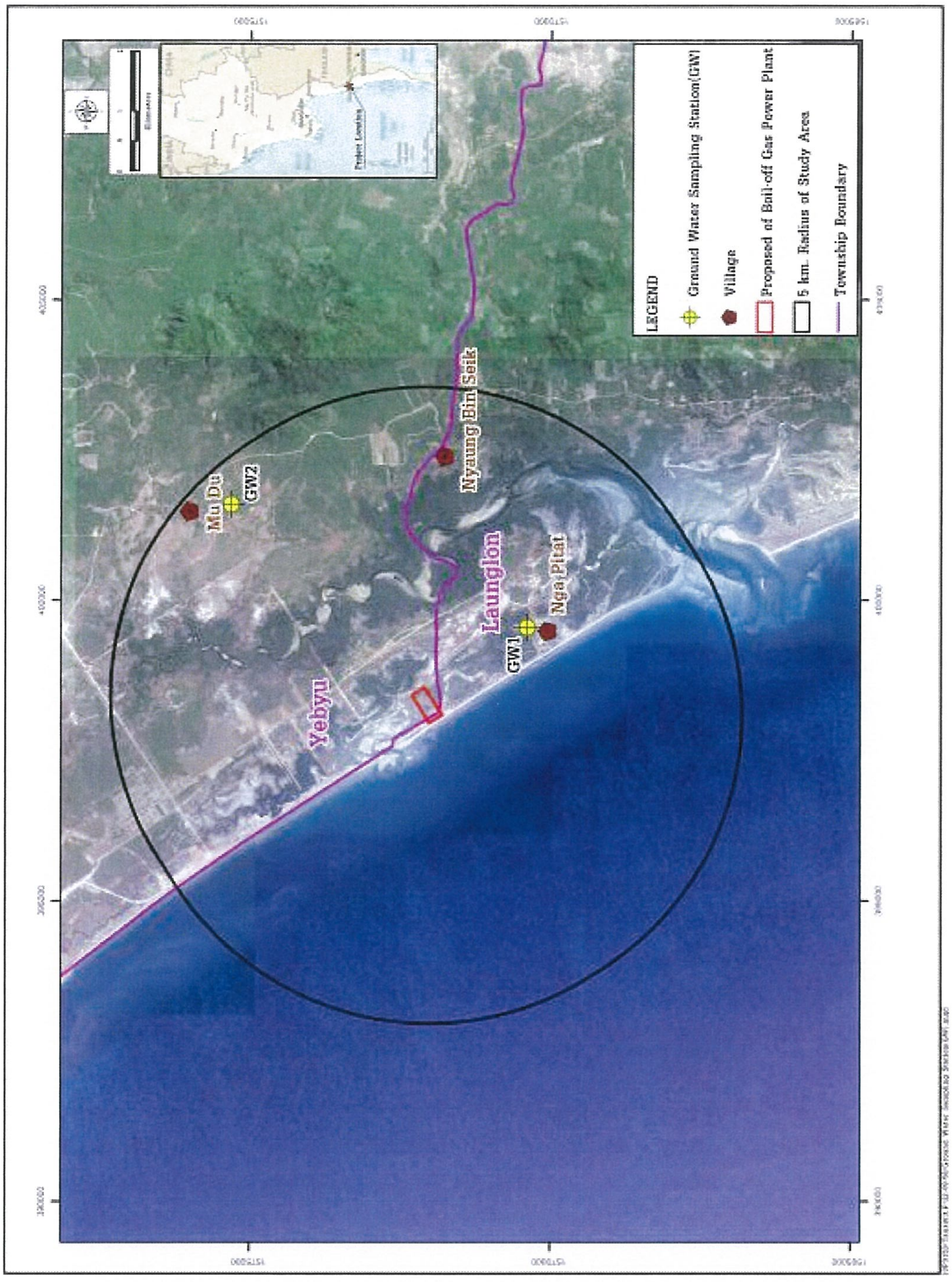
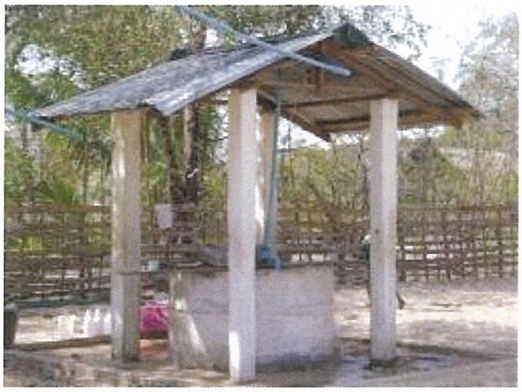
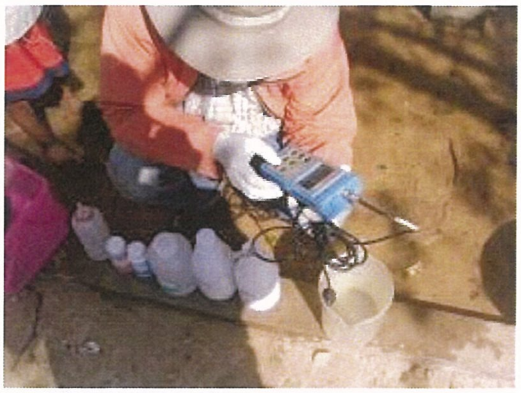


FIGURE 5.2.13-1 : LOCATION OF GROUNDWATER SAMPLING

GW1: Nga Pitat School

GW2: Mudu School

PHOTO 5.2.13-1: GROUNDWATER SAMPLING ACTIVITIES AT EACH STATION

5.2.14 Sediment Quality

The study of sediment quality was conducted on January 21, 2015 at the same station as seawater quality (***Figure 5.2.12-1***). Collection of sediment was carried out along with sampling of seawater, by using Ekman Grab as shown in ***Photo 5.2.14-1***. All collected sediments were kept in sample bottles and labeled. Related information on the samples was recorded in a chain of custody. The collected sediment samples were preserved in a storage box and were sent to the assigned laboratory in Thailand for analysis of various quality parameters.

The sediment quality data was presented and compared with NOAA standard in ***Table 5.2.14-1***. Based on the analysis results, the major composition of sediment in all collected samples was coarse sand and medium sand which accounted for 39.27-48.59% and 16.75-34.20% respectively. The chemical parameters of sediment quality and metals in all samples are within NOAA standard. That mean the sediment is suitable for ecosystem. Details of the measurements are presented in ***Appendix 5F***.

PHOTO 5.2.14-1: COLLECTION OF SEDIMENT IN THE STUDY AREA

TABLE 5.2.14-1
RESULTS OF SEDIMENT QUALITY ANALYSIS AT EACH STATION

Parameter	Unit	Station				NOAA*	
		SB1	SB2	SB3	SB4	ERL	ERM
Particle size							
- Silt or Clay	%	0.14	0.16	0.01	0.17	-	-
- Fine Sand	%	3.46	5.89	1.88	6.11	-	-
- Medium Sand	%	34.20	29.54	16.75	33.81	-	-
- Coarse Sand	%	39.75	40.04	48.59	39.27	-	-
- Fine Gravel	%	22.45	24.37	32.77	20.65	-	-
Chemical parameter							
Oil & Grease	mg/kg	296	475	506	987	-	-
Organic Matter	%	0.30	0.20	0.09	0.13		
Total Organic Carbon	%	0.31	0.17	1.77	0.11	-	-
Metals							
- Arsenic	mg/kg	4.96	1.92	4.56	1.94	8.2	70
- Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	1.2	9.6
- Chromium	mg/kg	14.7	7.20	7.27	6.05	81	370
- Copper	mg/kg	5.88	3.98	5.10	1.88	34	270
- Iron	mg/kg	10,056	4,566	18,591	4,477	-	-
- Lead	mg/kg	4.87	2.95	4.96	2.33	46.7	218
- Zinc	mg/kg	46.5	44.6	15.2	17.9	150	410
- Mercury	mg/kg	<0.10	<0.10	<0.10	<0.10	0.15	0.71

Remark: * NOAA Screening Quick Reference Table, from "Sediment quality criteria in use around the world", *Limnology* (2002) 3: 65-75

ERL = the Effect Range Low is the concentration of chemicals in seabed sediments in the low levels which cause insignificant toxicity to sensitive organisms in the seabed sediments

ERM= the Effect Range Median is the concentration of chemicals in seabed sediments in the medium levels which cause insignificant toxicity to sensitive organisms in the seabed sediments

Source: TEAM Consulting Engineering and Management Co., Ltd., January, 2015

5.3 BIOLOGICAL COMPONENTS

5.3.1 Terrestrial Resource

The surveys of terrestrial resources covered the 78.6 km^2 study area focusing on the project site of 34 acres (about 14 ha). However, only about 38.4 km^2 of the study area are land area while the remaining 36.5 km^2 are coastal water area.

The land part of the study area consists of idle land covered with natural vegetation and agricultural areas. The idle land accounts for about 21 % of the total land area. It could be categorized as beach forest, mangrove forest, mixed forest, and deciduous forest. The agricultural land is rubber plantation, palm and cashew plantation, paddy field and orchard. The land use is discussed in **Section 5.4.7**.

A. Forest Resource

The Consultant conducted forest resource survey during January 21-23, 2015 and October 6-8, 2015 to collect information on existing conditions of forest areas, vegetation types, and land use patterns. There were 2 sample plots within power plant project area and additional 16 sample plots within 5 km radius of power plant area (see ***Figure 5.3.1-1***). 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:

- 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.

The survey identified four types of natural forest areas in the study area as shown in ***Photo 5.3.1-1***. The survey results are summarized below:

(1) The Boil-Off Gas Power Plant Site

Mangrove Forests

Mangrove area in the power plant site consisting of deteriorated mangrove forest. Some species were listed in botanical name as *Excoecaria agallocha* Linn., *Heritiera littoralis* Dry., *Avicennia* alba Bl., *Premna obtusifolia* R.Br., *Dendrolobium umbellatum* (L.) Benth., *Sonneratia alba* J.SM., *Aegialitis rotundifolia* Roxb., *Ceriops decandra* (Griff.) Ding Hou, *Rhizophora apiculata* Blume, *Rhizophora mucronata* Poir., *Flagellaria indica* L., *Cleisostoma halophilum* (Ridl.) Garay, *Pandanus odoratissimus* Jacq. Nom. Illeg., *Drynariasparsisora* (Desv.) S. Moore, *Cryptocoryne ciliata* Wydler, *Pyrrosiaadnascens* (G. Forst.) Ching, *Archidendron jiringa* Nielsen, etc. Picture of these species are showed in ***Photo 5.3.1-2***.

Beach Forest

Beach forest is found in the east side of the project site boundary and the west site adjacent to Andaman sea. Beach forest is open area with scattering patches of vegetation. Very few species were found in this site as *Acanthus ebracteatus* Vahl., *Impomoea pes-caprae* (L.) R.Br., *Lumnitzera littorea* Voigt, *Sonneratia alba* J.SM., *Aegialitis rotundifolia* Roxb., *Flagellaria indica* L., *Cleisostoma halophilum* (Ridl.) Garay, *Drynariasparsisora* (Desv.) S. Moore and *Archidendron jiringa* Nielsen. Picture of these species are showed in ***Photo 5.3.1-2***.

(2) Study Area within 5 km from the Boil-Off Gas Power Plant Site

The area within 5 km distance from the power plant site has no forest areas designated as conservation forest by MONREC. Four types of forests were found in the area-mangrove forest, beach forest, mixed forest, and deciduous forest. At least 145 plant species were identified in the area.

Mangrove Forest

Mangrove forest still has an abundance of large, medium and small sized mixed up massively. Plant species representative are in family Avicenniaceae, Apocynaceae, Rhizophoraceae, Combretaceae, Malvaceae, Meliaceae, Euphobiaceae, Palmae, Plumbaginaceaeand Leguminosae-Caesalpinioideae. The dominant plant species are *Avicennia alba* Blume, *Avicennia officinalis* L., *Cerbera odollam* Gaertn., *Rhizophora apiculata* Blume, *Rhizophora mucronata* Poir, *Ceriopstagal* (Perr.) C.B. Rob., *Bruguiera cylindrica* (L.) Blume, *Lumnitzera littorea* (Jack) Voigt, *Hibiscus tiliaceus* L., *Heritiera littoralia* Dryand., *Xylocarpus granatum* Koenig, *Xylocarpus moluccensis* (Lam.) M. Roem., *Excoecaria agallocha* L., *Nypa fruticans*Wurmb, *Aegialiti srotundifolia* Roxb. and *Intsia bijuga* (Colebr.) Kuntze. Pictures of some dominant plant species are shown in ***Photo 5.3.1-3***.

Beach Forest

Dominant species found in the beach forest are listed in common Thai names and botanical names as follows: *Manilkara hexandra* (Roxb) Dubard, *Anacardiu moccidentale* L., *Casuarina equisetifolia* J.R. & G. Forst., *Syzygium cinereum* (Kurz) Chantar. & J. Parn., *Careya arborea* Roxb., *Eurycoma longifolia* Jack, *Phyllanthus emblica* L., *Diospyros ferrea* (Willd.) Bakh.var. ferrea, *Morinda coreia* Buch.-Ham. and *Lannea coromandelica* Merr.Pictures of some dominant plant species are shown in ***Photo 5.3.1-3***.

Mixed Forest

Dominant plant species found in the mixed forest are listed in common Thai names and botanical names as follows: *Suregada multiflorum* (A.Juss.) Baill., *Streblus asper* Lour., *Nephelium hypoleucum* Kurz, *Fernandoa adenophylla* (Wall. ex G. Don) Steenis, *Hopea odorata* Roxb., *Cratoxylum cochinchinense* (Lour.) Blume, *Garuga pinnata* Roxb., *Spondias pinnata* (L. f.) Kurz, *Dillenia obovata* (Blume) Hoogland, and *Microcos tomentosa* Sm. Pictures of some dominant plant species are shown in ***Photo 5.3.1-3***.

Deciduous Forest

Dominant plant species found in the deciduous are listed in common Thai names and botanical names as follows: *Dipterocarpus obtusifolius* Teijsm. ex Miq., *Aporusa villosa* (Wall. ex Lindl.) Baill, *Xylia xylocarpa* (Rxob.) Taub., *Ochna integerrima* (Lour.) Merr. and *Croton oblongifolius* Roxb.

In addition to the identified perennial tree species, other vegetation found in the study area include small seasonal plants, climbers, epiphytes, grasses and reeds.

Common seasonal plants and climber plants in the area are listed in common Thai names and botanical names as follows: *Mimosa pudica* L., *Macroptilium lathyroides* (L.) Urb., *Caesalpinia bonduc* (L.) Roxb., *Flagellaria indica* L., *Acanthus ilicifolius* L., *Tylophora flexuosa* R. Br., *Premna obtusifolia* R.Br., *Streptocaulon juventas* (Lour.) Merr., *Caesalpinia crista* L., *Aganosma marginata* (Roxb.) G. Don, *Gloriosa superb* L., *Abrus precatorius*L., *Clerodendrum inerme* (L.) Gaertn., *Pandanus odoratissimus* L.f., *Finlaysonia maritima* Backer ex K. Heyne and *Derris trifoliate* Lour.

Epiphytes are *Dendrobium secundum* (Blume) Lindl., *Aerides falcate* Lindl. and *Dendrobium draconis* Rchb. f.

Grass groups and other reeds are *Cynodon dactylon* (L.) Pers., *Spinifex littoreus* Merr. and *Schoenoplectus mucronatus* (L.) Palla. Pictures of some dominant plant species are shown in ***Photo 5.3.1-3***.

(3) Plant Status

Of the 145 plant species found in the area within 5 km from the power plant site, 5 species are listed as Threatened Species in the IUCN Red List (2013).The threatened species are:

Vulnerable Species (VU)–two species were found, namely *Hopea odorata* Roxb. and *Intsia bijuga* (Colebr.) Kuntze.

Near Threatened Species (NT)–three species were found in this area, namely *Aegialitis rotundifolia* Roxb., *Ceriops decandra* (Griff.) Ding Hou and *Sonneratia ovata* Backer. Pictures of some dominant plant species are shown in ***Photo 5.3.1-4***.

B. Wildlife Resources

The surveys of wildlife resources in the project site and the outer area were carried out simultaneously with the forest resource surveys during January 21-23, 2015 and October 6-8, 2015.

Field survey conducted using two methods, direct searching method and indirect inquiring method. The direct searching method is carried out in the selected sample areas by line transects and point count. Binocular was used to detect the diurnal squirrels and other day-active small mammals. More ground searches were conducted to detect tracks and other signs of existing wildlife resources such as track in soft soils and crew marks, feeding signs, dropping and quills, etc. Indirect inquiring method is carried out by interview local people for obtain information and exact representative of each habitat.

As the terrestrial ecosystem in the study area has long been disturbed, most of wildlife species found in the surveys were small animals which had adapted to thrive well in disturbed and poor habitats. A total of 89 wildlife species was recorded in the surveys consisting of 10 mammals, 49 birds, 20 reptiles and 7 amphibians.

Findings in the two surveyed areas are summarized below:

(1) The Boil-Off Gas Power Plant Site

In total, 43 wildlife species were found in the boil-off gas power plant site, consisting of4mammal species, 28 bird species, 7 reptile species, and 4 amphibian species. Pictures of some of the species are shown in ***Photo 5.3.1-5***.

Details of species diversity and distribution of the 4 wildlife groups in the power plant site are as follows:

Mammals

Most of the four mammal species observed in the power plant site are several kinds of rats, shrews, and squirrels, namely *Pipistrellus javanicus*, *Mus musculus*, *Rattus rattus* and *Callosciurus erythraeus*.

Birds

Birds can migrate rapidly searching for habitats and food sources. The distribution ranges of birds are very wide, especially for the arboreal birds. Some birds require specific habitats and ecological conditions, while many species can live and feed in diverse ecosystems.

In the power plant site, there are at least 28 species of birds in open areas, mangrove forests and coastal areas, and sparse forest. Some observed species include: *Butorides striatus*, *Egretta garzetta*, *Ardeola bacchus*, *Vanellus indicus*, *Actitis hypoleucos*, *Coracias benghalensis*, *Todirhamphus chloris*, *Phalacrocorax niger*, *Streptopelia chinensis*, *Acridotheres tristis*, *Hirundo rustica*, *Centropus sinensis*, *Falco tinnunculus*, *Glaucidium cuculoides*, *Nectarinia jugularis*, *Phylloscopus inornatus*, *Orthotomus sutorius* and *Psittacula alexandri*.

Reptiles

About seven species of this wildlife group were found in the power plant site, all are species distributed widely in Myanmar. The reptiles found living in mangrove forests, sand beach, and sand dune are: *Ptyas korros*, *Cerberus rynchops*, *Boiga dendrophila*, *Python reticulatus*, *Trimeresurus purpureomaculatus*, *Varanus nebulosus* and *Leiolepis belliana*.

Amphibians

Four species of this group were found in the power plant site, including *Fejervarya cancrivora*, *Fejervarya limnocharis*, *Kaloula pulchra* and *Microhyla ornata*.

(2) The Area within 5 km from the Boil-Off Gas Power Plant Site

In total, 86 wildlife species were found in this outer area, consisting of 10 mammal species, 49 bird species, 20 reptile species, and 7 amphibian species (***Photo 5.3.1-5***).

Details of species diversity and distribution of the 4 wildlife groups are as follows:

Mammals

There are 10 mammals species listed in this study area. In 5 km radius of power plant can find the wild animals generally such as *Macroglossus sobrinus*, *Pipistrellus javanicus*, *Scotophilus kuhlii*, *Callosciurus caniceps*, *Callosciurus erythraeus*, *Mus musculus*, *Rattus rattus*, *Bandicota indica*, *Paradoxurus hermaphroditus* and *Sus scrota*.

Birds

Birds can migrate rapidly searching for habitats and food source. The distribution ranges of birds are very wide, especially for the arboreal birds. Some birds require specific habitats and ecological conditions, while many species can live and feed in diverse ecosystems.

In the study area, there are 49 species of birds in the forest and food sources forest or in dense and diverse vegetation as well as in agricultural areas, open areas, scattered trees areas, abandoned areas and community areas such as *Butorides striatus*, *Egretta garzetta*, *Ardeola bacchus*, *Casmerodius albus*, *Vanellus indicus*, *Dicrurus macrocercus*, *Centropus bengalensis*, *Charadrius alexandrinus*, *Pluvialis fulva*, *Actitis hypoleucos*,*Numenius phaeopus*, *Pernis ptilorhyncus*, *Haliastur indus*, *Falco tinnunculus*, *Glaucidium cuculoides*, *Tringa totanus*, *Lanius cristatus*, *Phalacrocorax niger*, *Columba livia*, *Streptopelia chinensis*, *Passer montanus*, *Acridotheres tristis* and *Copsychus saularis*.

Reptiles

About 20 species of this wildlife group were found in the area. They are *Ptyas korros*, *Chrysopelea ornata*, *Ahaetulla prasina*, *Enhydris plumbea*, *Cerberus rynchops*, *Naja* sp., *Trimeresurus albolabris*, *Trimeresurus purpureomaculatus*, *Python reticulatus*, *Gekko gecko*, *Hemidactylus frenatus*, *Hemidactylus garnotii*, *Cosymbotus platyurus*, *Leiolepis belliana*, *Calotes mystaceus*, *Mabuya multifasciata* and *Varanus nebulosus*.

Amphibians

About 7 species of this wildlife group were found in the area. They are *Fejervarya limnocharis*, *Fejervarya cancrivora*, *Hoplobatrachus rugulosa*, *Duttaphrynus melanostictus*, *Microhyla ornata*, *Kaloula pulchra* and *Polypedates leucomystax*.

C. Wildlife Status

Status for Conservation Concern: Based on IUCN (2013), results of field survey show that threatened species were not found within the power plant site. Most species were classified as Least Concern Species (LC).

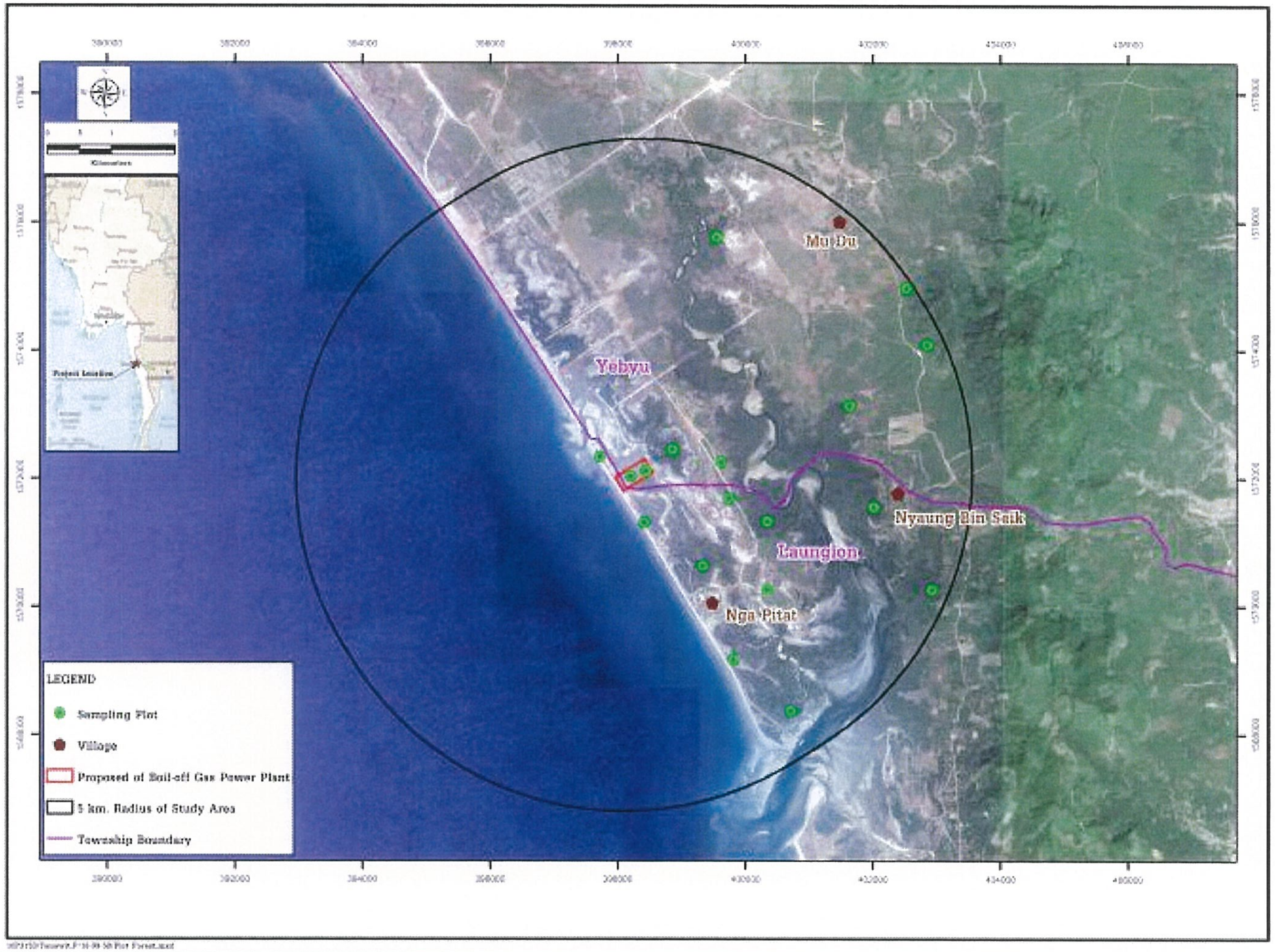


FIGURE 5.3.1-1: STUDY AREA AND SAMPLING PLOTS WITHIN THE POWER PLANT SITE AND AREA 5 KM RADIUS OF POWER PLANT PROJECT AREA

Mangrove Forest [1]

Beach Forest [1]

Deterioration Mangrove Forest [2]

Deciduous Forest [2]

Fertile Mangrove Forest [2]

Mixed Forest [2]

Remark: [1] Type of forest within the boil-off gas power plant site

[2] Type of forest within area 5 km radius of the boil-off gas power plant site

PHOTO 5.3.1-1 : THE EXISTING FORESTRY WITHIN THE POWER PLANT SITE AND AREA 5 KM RADIUS OF POWER PLANT SITE

Rhizophora apiculata

Excoecaria agallocha

Cryptocoryne ciliata

Lumnitzera littorea

Avicennia alba

Heritiera littoralis

PHOTO 5.3.1-2 : PLANT SPECIES WITHIN POWER PLANT SITE

(a) ***Dipterocarpus obtusifolius*** **Teijsm. ex Miq.**

(b) ***Phyllanthus emblica*** **L.**

(c) ***Suregada multiflorum*** **(A.Juss.) Baill.**

(d) ***Dodonae vicosa*** **Jacq.**

(e) ***Rhizophora apiculata*** **Blume**

(f) ***Casuarina equisetifolia*** **J.R. & G. Forst.**

(g) ***Careya arborea*** **Roxb.**

(h) ***Lumnitzera racemosa***

(i) ***Derris indica***

(j) ***Spinifex littoreus***

(k) ***Ipomoea aquatica*** **Forssk.**

(l) ***Abrus precatorius*** **L.**

PHOTO 5.3.1-3 : PLANT SPECIES WITHIN AREA 5 KM RADIUS OF POWER PLANT SITE

Hopea odorata Roxb.

Intsia bijuga (Colebr.) Kuntze

Aegialitis rotundifolia Roxb.

Ceriops decandra (Griff.) Ding Hou

Sonneratia ovata Backer

PHOTO 5.3.1-4 : THREATENED SPECIES (IUCN, 2013) WITHIN AREA 5 KM RADIUS OF POWER PLANT SITE

Remark: [1]Wildlife species within the boil-off gas power plant site

[2]Wildlife species within area 5 km radius of the boil-off gas power plant site

PHOTO 5.3.1-5: WILDLIFE SPECIES WITHIN THE POWER PLANT SITE AND AREA 5 KM RADIUS OF POWER PLANT SITE

5.3.2 Marine Ecology

5.3.2.1 Information Collection

The study of marine ecology was based on information obtained from: (i) past surveys and studies of marine ecology of Tanintharyi Region; (ii) field surveys in the sea waters near the project site; and (iii) interviewing villagers in Nga Pitat, Sakhanthit, Nyaung Bin Seik, Pan Din In and Muangmagan Villages regarding sea turtle nesting area.

The secondary information reviewed included (i) published results of past surveys of cetacean and sea grass in the region; and (ii) results of coral reef site surveys conducted by ITD on July 2012.

A marine ecological survey was conducted on 21 January 2015 at the four sea water quality sampling stations are shown in ***Figure 5.2.12-1*** and ***Photo 5.3.2-1***. The survey collected water samples for plankton analysis and sea bed samples for benthos analysis.

Plankton sampling at each station was performed by collecting 30 liters of water from 0.3 m depth and pouring the collected water sample through plankton net with 70 micron mesh size. The retained plankton was transferred into a storage bottle and was 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-seawater solution. All samples were sent to laboratory at Kasetsart University (Thailand) for identification.

PHOTO 5.3.2-1 : MARINE ECOLOGICAL SAMPLING ACTIVITIES

Results of the marine ecology survey can be summarized as follows:

(1) Phytoplankton

In total, 16 species of phytoplankton were identified. They belong to 4 classes, namely: Cyanophyceae (Blue-Green Algae), Bacillariophyceae (Diatom), Coscinodiscophyceae (Centric diatom), and Class Dinophyceae (Dinoflagellates). The phytoplankton densities were found to range from 19,600 to 30,550 cells/m^3. The dominant species was *Peridinium* sp. as it was most abundant at all sampling stations with densities ranging from 4,700 – 14,100 cells/m^3.

(2) Zooplankton

In total, 12 taxa of zooplankton were identified. They belong to 3 phyla- Phylum Arthropoda, Phylum Chordata, and Phylum Protozoa. The zooplankton densities were found to range from 47,600 to 112,800 cells/m^3. The most abundant zooplankton was copepod nauplius with densities ranging from 14,000-51,700 cells/m^3.

The diversity index of plankton was lowest at 1.89 at Station SW1 while the highest value of 2.30 was found at Station SW4. The average diversity index of all four stations was 2.10.

The collected data on diversity index of phytoplankton and zooplankton indicate that the coastal water quality was moderately suitable for aquatic organisms and resources.

Results of plankton identification for this study were shown in ***Table 5.3.2-1***.

(3) Benthos

In total, 10 species of benthos could be identified in the benthic samples collected at all four sampling stations. They belong to Phylum Annelida, Phylum Arthropoda, Phylum Mollusca, and Phylum Echinodermata. Their densities ranged from 44to 264 individuals/m^2. The population was most abundant at Stations SW1 and SW4 and least abundant at Station SW2.The largest benthos population found at SW1 and SW4 were polychaete in Family Capitellidae and Family Cossuridae, with densities of 220 individuals/m^2 and 198 individuals/m^2, respectively. The benthos data indicate that the marine ecosystems in the vicinities of SW1 and SW4 is more fertile than those in the vicinities of SW2 and SW3.

Results of benthos identification are shown in ***Table 5.3.2-2***.

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS

Phytoplankton/Zooplankton (Division / Class / Order / Suborder / Family / Genus)	SW 1	SW 2	SW 3	SW 4	Total (Cell/m^3)
Phytoplankton					
Division Cyanophyta					
Class Cyanophyceae (Blue-Green Algae)					
Order Nostocales					
Family Oscillatoriaceae					
Oscillatoria		5,200	2,800	4,700	12,700
Division Chromophyta					
Class Bacillariophyceae (Diatom)					
Order Biddulphiales (Centric Diatom)					
Suborder Coscinodiscineae					
Family Coscinodiscaceae					
Coscinodiscus sp.		2,600	5,600	2,350	10,550
Family Heliopeltaceae					
Arachnoidiscus sp.		2,600			2,600
Class Coscinodiscophyceae					
Order Melosirales					
Family Hyalodiscaceae					
Hyalodiscus stelliger	4,700				4,700
Order Coscinodiscales					
Suborder Rhizosoleniineae					
Family Rhizosoleniaceae					
Rhizosolenia calcar-avis	2,350				2,350
Suborder Biddulphiineae					
Family Eupodiscaceae					
Triceratium favus	2,350			2,350	4,700
Order Bacillariales (Pennate Diatom)					
Suborder Bacillariineae					
Family Bacillariaceae					
Nitzschiasigma		2,600			2,600
Family Naviculaceae					
*Pleurosigma*sp.			2,800		2,800
Family Eunotiacea					
Eunotia flexuosa	2,350			2,350	4,700
Class Dinophyceae (Dinoflagellates)					
Order Gonyaulacales					
Family Ceratiaceae					
Ceratiumbreve				2,350	2,350
C. deflexum	2,350				2,350
C. extensum		2,600			2,600
C. furca		2,600			2,600
C. fusus		2,600			2,600

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS (CONT'D)

Phytoplankton/Zooplankton (Division / Class / Order / Suborder / Family / Genus)	Station				Total (Cell/m³)
	SW 1	SW 2	SW 3	SW 4	
Order Peridiniales					
Family Peridiniaceae					
*Peridinium*sp.	4,700	7,800	8,400	14,100	35,000
Family Pyrophacaceae					
Pyrophacus horologium	2,350			2,350	4,700
Zooplankton					
Phylum Arthropoda					
Class Crustacea					
Subclass Copepoda					
*Copepod larva (Nauplius)	51,700	31,200	14,000	35,250	132,150
Order Calanoida					
*Unidentified Calanoida	11,750	2,600	8,400	7,050	29,800
Order Cyclopoida					
*Unidentified Cyclopoida	32,900	13,000	2,800	14,100	62,800
Order Harpacticoida					
*Unidentified Harpacticoida	4,700			2,350	7,050
Phylum Chordata					
Class Larvacea					
Order Copelata					
Family Oikopleuridae					
Oikopleurafusiformis				2,350	2,350
Phylum Protozoa					
Class Ciliata					
Subclass Spirotricha					
Order Tintinnida					
Family Codonellidae					
Tintinnopsis radix	9,400	23,400	16,800	7,050	56,650
T. mortensenii	2,350		2,800		5,150
Codonelopsis ostenfeldi				2,350	2,350
Family Cyttarocylidae					
Favella campanula		2,600		2,350	4,950
Family Rhabdonellidae					
Rhabdonella cuspidata				2,350	2,350
Family Tintinnidae					
Leprotintinnus nordguisti		5,200	2,800		8,000
Class Sarcodina					
Subclass Rhizopoda					
Order Foraminiferida					
Family Codonellidae					
Globorotalia inflata				2,350	2,350

TABLE 5.3.2-1

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS (CONT'D)

Phytoplankton/Zooplankton						Station				Total (Cell/m^3)
Division	Class	Order	Suborder	Family	Genus	SW 1	SW 2	SW 3	SW 4	
Total density										
Phytoplankton						21,150	28,600	19,600	30,550	99,900
Zooplankton						112,800	78,000	47,600	77,550	315,950
Total						133,950	106,600	67,200	108,100	415,850
Total diversity										
Phytoplankton						**7**	**8**	**4**	**7**	**16**
Zooplankton						**6**	**6**	**6**	**10**	**12**
Total						**13**	**14**	**10**	**17**	**28**
Ratio of Phytoplankton : Zooplankton						**0.19**	**0.37**	**0.41**	**0.39**	**Avg.=0.34**
Diversity index						**1.89**	**2.16**	**2.06**	**2.30**	**Avg.=2.10**

Remark: * = unidentified

SW1: UTM 395675E 1573545N Zone 47P
SW2: UTM 397446E 1570914N Zone 47P
SW3: UTM 396298E 1569482N Zone 47P
SW4: UTM 399599E 1597402N Zone 47P

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015

TABLE 5.3.2-2

RESULTS OF BENTHOS SAMPLINGS AND ANALYSIS

Benthos	Station				Total (Individual/m²)
	SW1	SW2	SW3	SW4	
Phylum Annelida					
Class Polychaeta					
Subclass Scolecida					
Family Capitellidae	44	22	22	220	308
FamilyCossuridae	198				198
Subclass Canalipalpata					
Order Terebellida					
Family Terebellidae				44	44
Subclass Aciculata					
Order Phyllodocida					
Family Glyceridae			22		22
Family Nereididae			44		44
OrderAmphinomidae					
FamilyAmphinomidae		22			22
Phylum Arthropoda					
Class Malacostraca					
Superorder Peracarida					
Order Amphipoda					
Suborder Gammaridea					
Family Ampithoidae	22		22		44
Order Isopoda					
Suborder Cymothoida					
Family Cirolanidae			22		22
Phylum Mollusca					
Class Bivalvia					
Subclass Pteriomorphia					
Order Veneroida					
FamilyArcidae					
Anadara sp.			22		22
PhylumEchinodermata					
Class Ophiuroidea					
Order Ophiurida					
Family Ophiotrichidae					
*Ophiothrix*sp.			22		22
Total density (individual/m²)	**264**	**44**	**176**	**264**	**748**
Total diversity (species)	**3**	**2**	**7**	**2**	**10**

Remark: SW1: UTM 395675E 1573545N Zone 47P
SW2: UTM 397446E 1570914N Zone 47P
SW3: UTM 396298E 1569482N Zone 47P
SW4: UTM 399599E 1597402N Zone 47P

Source: TEAM Consulting Engineering and Management Co., Ltd., January 2015

(3) Endangered Marine Species

Marine species of concern are turtles, coral reefs, dolphin, whales, and dugong and seagrass as these are vulnerable to anthropogenic impacts.

A. Coral Reefs

Coral reefs nearest to the project site are at four islands namely; Bashuhino, Heinze Bok, North, and Pasut Kyun Islands. These four islands have a combined coral reef area of about 790,000 m^2 (United Nations Environment Programme and World Conservation Monitoring Center (UNEP-WCMC), 2010).

However, these four islands are at quite a distance from the project site as shown in ***Table 5.3.2-3*** and a map in ***Figure 5.3.2-1***. They would be too distant to be affected by development activities under the Project.

TABLE 5.3.2-3

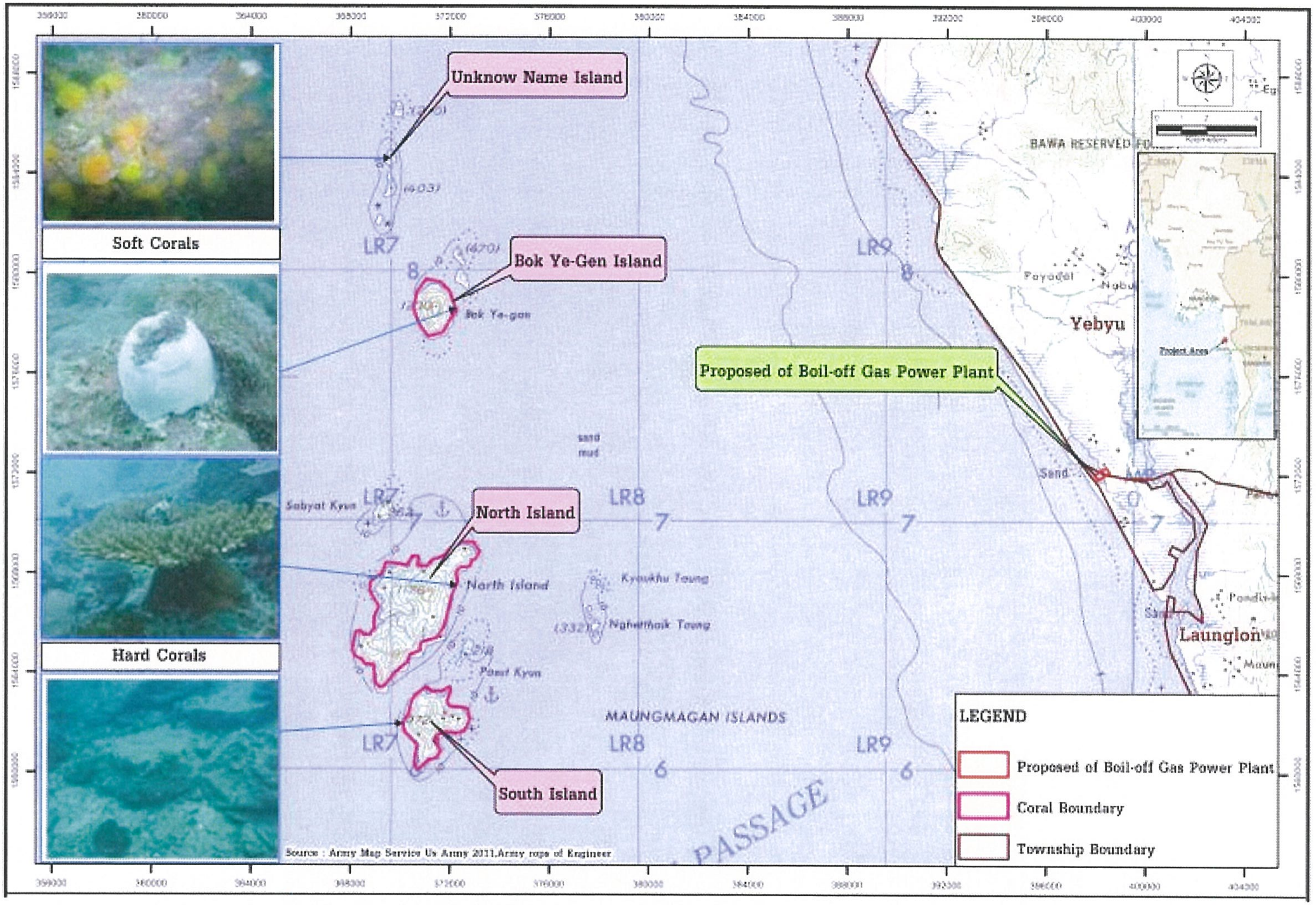
DISTRIBUTION OF CORAL REEF ON ISLANDS AROUND PROPOSED POWER PLANT PROJECT

Island Name	Estimation Distance from Proposed Project Site (km)
1. Bok Ye-Gen	25.0
2. South	27.0
3. North	27.0
4. Unknown name	26.7

Source: Coral reefs survey at these four islands on July 3, 2012 by ITD.

Although the four islands are remote from DSEZ, ITD conducted surveys of coral reefs at these four islands on July 3, 2012. The surveys found fringing reefs around the islands. Tabulate coral, *Acropora* spp. were commonly found in the reef areas while soft corals, sea anemone *Heteractis magnifica* and orange cup coral *Tubastraea coccinea* were developed at the pinnacle where currents are strong.

Observations made during the field surveys by the Consultant also found no coral reef areas in coastal waters near the project site.



Source : TEAM Consulting Engineering and Management Co., Ltd., October 2014.

FIGURE 5.3.2-1: LOCATIONS OF FOUR ISLANDS WITH CONFIRMED EXISTENCE OF CORAL REEFS

B. Sea Turtles

In the coastal area of DSEZ, it is highly likely that sea turtles have no longer used beaches in the area as their nesting sites. This conclusion was derived from the interviews of fishermen in the five coastal villages near the project site.

During the interview of two fishermen in Nga Pitat Village on 19 October 2014, the interviewed persons were shown photos of all known marine endangered species in the Bay of Bengal and Andaman Sea and asked about their sighting. If any species was reportedly sighted, the interviews would pursue more details on such species, including (i) location and frequency of sighting (ii) number of each sighting and (iii) behavior of each species. Information on nesting of sea turtle was asked as well.

The two interviewed fishermen in Nga Pitat Village informed that one nest of leatherback turtle was found at one spot on Nga Pitat beach in 2013. All eggs were illegally collected by locals for consumption and selling at Muangmagan at between 900-1,000 kyat per one egg. The interviewed fishermen also informed that leatherback turtle spawning season was between October to November. This information was again confirmed individual interviewed during the dry season visits to the villages in January 2015. The location of Nga Pitat beach is shown in ***Figure 5.3.2-2*** and general views of the beach is shown in ***Photo 5.3.2-2.***

However, the public consultation meeting on January 23, 2015, the participants confirmed again that leatherback turtle had not visited Nga Pitat beach for nesting over the past 3-4 years. This could be due to the impact of illegal fishing in the shoreline zone on the turtles as turtles could be trapped in the fishing nets. In addition, one unpopulated islet was declared by the Government as turtle conservation area. The turtles would then go to this islet for nesting as it is safer for them. This islet is about 21 km from the project site.

The interviewed fishermen in Sakhanthit, Nyaung Binsiek, Pan Din In, and Muangmagan Villages also confirmed no turtle nesting areas on beaches in their villages.

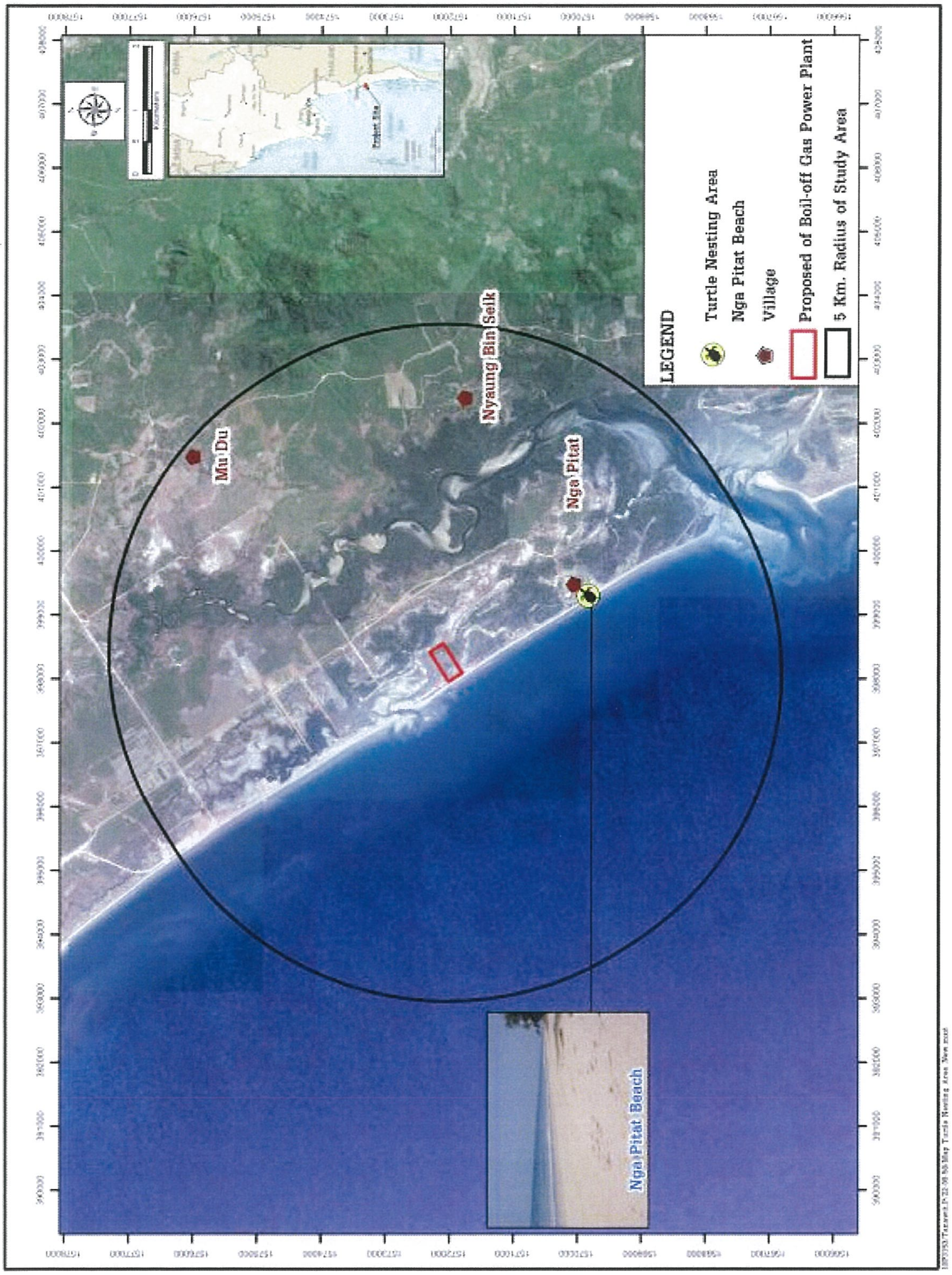
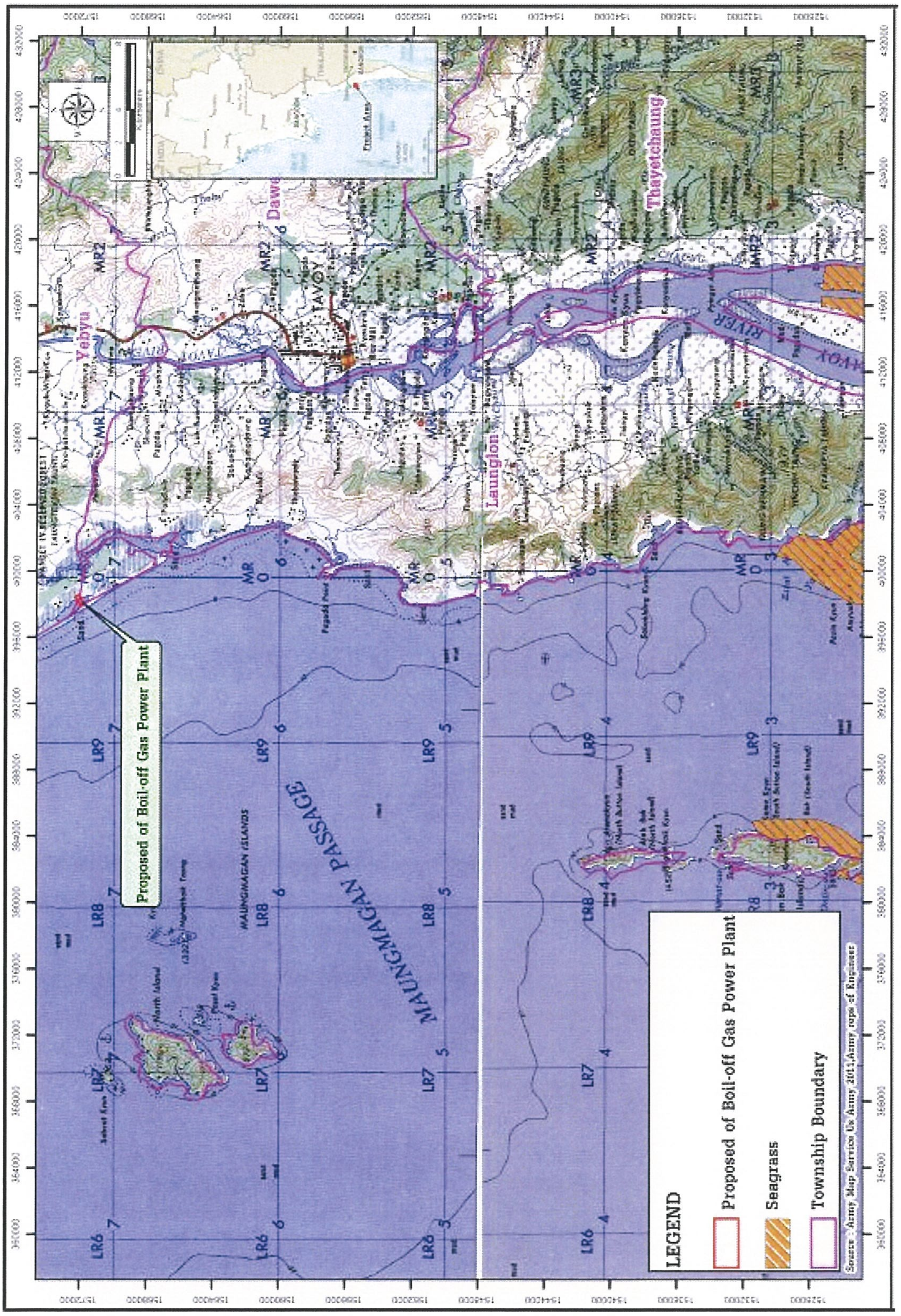


FIGURE 5.3.2-2: NESTING AREA OF LEATHERBACK TURTLE AT NGA PITAT BEACH

PHOTO 5.3.2-2: NGA PITAT BEACH (399300E 1569824N, WGS Zone 84)

C. Seagrass

During the field surveys in January 2015, no seagrass was found in the coastal waters in the vicinity of the proposed project site. The nearest seagrass area is about 42 km south of the proposed power plant site. The dominant type of seagrass species is *Halophila decipiens* which was found in seagrass beds in the coastal water at Maungmagun. ***Figure 5.3.2-3*** shows the locations of seagrass areas.



Source : TEAM Consulting Engineering and Management Co., Ltd., October 2011.

FIGURE 5.3.2-3 : LOCATIONS OF SEAGRASS AREAS

5.3.3 Fisheries

The fishery survey was conducted in October 2014 for the proposed project. The results of survey could be used as the baseline information on fisheries for the Project.

The fishery survey involved interviewing local fishermen, observations of fish sold in the local fish market, and interviewing fish traders in Nga Pitat Village and Sakhanthit Village, the two villages nearby the power plant site. Fishing activities and fish species were photographed during the survey. The interviews were intended to collect the following information: (i) fishermen-fishing activities and fishing gear, and main fishing grounds; and (ii) fish traders-quantities of main fish species landed per day, and destinations of the fishery products.

The results of fishery survey can be summarized as follows:

A. Fish Species

A total of 53 fish species were identified as listed in ***Table 5.3.3-1***. Species of economic importance are grouper (Family Serranidae), snapper (*Lutjanus* spp.), emperor (*Lethrinus* spp.), catfish (*Arius* spp.), mackerel and tuna (Family Scombridae), and trevally (Family Carangidae). Among these, Trevally (Family Carangidae) was observed as the dominant group while yellow spotted trevally (*Carangoides fulvoguttatus*) and bludger (*Carangoides gymnostethoides*) are the main fishery resources. The other species of less economic-importance include are Stingray (Family Dasyatidae), and catfish (Family Ariidae). Two species of Stingray included Imbricated stingray (*Dasyatis imbricatus*), and sharp nose stingray (*Himantura gerrardi*). Engraved catfish (*Arius caelatus*) was also reported as common species in this area as well.

In addition to fish, crabs and shrimps are other marine resources of economic importance. Two economic-important species of crab are mud crab (*Scylla serrata*) and blue swimming crab (*Portunus pelagicus*). The main species of shrimp include banana prawn (*Penaeus merguiensis*), giant tiger prawn (*Penaeus monodon*), and lobsters. Two species of lobster found in this area are painted spiny lobster (*Panulirus versicolor*) and mud spiny lobster (*Panulirus polyphagus*).

B. Fishing Grounds

The main fishing grounds are waters around the South Island, North Island and Bok Ye-gen Island. These islands are about 30 km to the west of Nga Pitat Village.

TABLE 5.3.3-1

LIST OF SPECIES OBSERVED IN THIS STUDY (OCTOBER 2014)

No.	Family	Scientific Name	Common Name
1	Orectolobidae	*Chiloscyllium* sp.	Bamboo shark
2	Carcharhinidae	*Carcharhinus melanopterus*	Blacktip reef shark
3	Rhinobatidae	*Rhynchobatus djiddensis*	White spotted guitarfish
4	Dasyatidae	*Dasyatis kuhlii*	Blue spotted stingray
5	Megalopidae	*Megalops cyprinoides*	Indo-Pacific tarpon
6	Clupeidae	*Anodontostoma chacunda*	Chacunda gizzard shad
7		*Sardinella* sp.	Sardine
8	Pristigasteridae	*Opisthopterus tardoore*	Tardoore
9	Ariidae	*Arius* sp.	Catfish
10		*Arius thalassinus*	Giant catfish
11	Synodontidae	*Saurida* sp.	Lizardfish
12	Harpodontidae	*Harpodon* sp.	Bombay-duck
13	Platycephalidae	*Thysanophrys arenicola*	Flathead
14	Serranidae	*Cephalopholis boenak*	Chocolate hind
15		*Epinephelus areolatus*	Areolate grouper
16		*Epinephelus bleekeri*	Duskytail grouper
17		*Epinephelus coioides*	Orangespotted grouper
18		*Epinephelus erythrurus*	Cloudy grouper
19		*Epinephelus sexfasciatus*	Sixbar grouper
20	Teraponidae	*Terapon jarbua*	Jarbua terapon
21		*Terapon theraps*	Large scaled terapon
22	Rachycentridae	*Rachycentron canadum*	Cobia
23	Carangidae	*Carangoides chrysophrys*	Longnose trevally
24		*Caranx ignobilis*	Giant trevally
25		*Caranx sexfasciatus*	Bigeye trevally
26		*Scomberoides commersonianus*	Talang queenfish
27	Coryphaenidae	*Coryphaena hippurus*	Common dolphinfish
28	Leiognathidae	*Leiognathus* sp.	Pony fish
29	Lutjanidae	*Lutjanus bohar*	Twospot red snapper
30		*Lutjanus erythropterus*	Crimson snapper
31		*Lutjanus fulviflamma*	Blackspot snapper
32		*Lutjanus lutjanus*	Bigeye snapper
33		*Lutjanus sebae*	Emperor red snapper
34	Haemulidae	*Plectorhinchus gibbosus*	Harry hotlip
35	Nemipteridae	*Nemipterus* sp.	Threadfin bream
36	Lethrinidae	*Lethrinus lentjan*	Pinkear emperor
37		*Lethrinus olivaceus*	Longface emperor
38		*Monotaxis grandoculis*	Hump nosebigeye bream
39	Sciaenidae	*Argyrosomus amoyensis*	Amoy croaker
40		*Nibea* sp.	Croaker
41		*Pennahia* sp.	Croaker
42	Mullidae	*Parupeneus indicus*	Indian goatfish

TABLE 5.3.3-1

LIST OF SPECIES OBSERVED IN THIS STUDY (OCTOBER 2014) (CONT'D)

No.	Family	Scientific Name	Common Name
43	Ephippidae	*Drepane punctata*	Spotted sickle fish
44	Polynemidae	*Eleutheronema tetradactylum*	Four finger threadfin
45	Sphyraenidae	*Sphyraena jello*	Pick handle barracuda
46	Scombridae	*Euthynnus affinis*	Mackerel tuna
47		*Thunnus tonggol*	Longtail tuna
48		*Rastrelliger brachysoma*	Indo-pacific mackerel
49		*Rastrelliger kanagurta*	Indian mackerel
50		*Scomberomorus commerson*	Narrow barred Spanish mackerel
51		*Scomberomorus* sp.	Spanish mackerel
52	Stromateidae	*Pampu sargenteus*	Silver pomfret
53	Bothidae	*Grammatobothus polyophthalmus*	Manyeyed flounder

Source: Field survey by TEAM Consulting Engineering and Management Co., Ltd. (October, 2014)

C. Fishing Gears

In Nga Pitat Village, seven fishermen were interviewed. Two types of fishing boats are used. The medium-sized boats are about 8-10 m long and equipped with 5-10 horse-power engines while small-sized boats are 4-6 m long with no engine. The small and medium sized boats need 1 to 2 persons and 2 to 4 persons, respectively. Most of the boat crews are family members of boat owners. They fish all year round using different types of fishing gears. Four major types of fishing gears are push net, hook and line, tangling net, and trap.

In Sakhanthit Village, five fishermen were interviewed. There are about 30 to 40 fishing boats in this village. Most are small boats without engine while a small number are medium-sized boats with engines. Major types of fishing gears are the same as those used by fishermen in Nga Pitat Village. The exception is small boats that operate crab traps and hooks with lines in nearby mangroves areas. Crews of small boats are family members of boat owners while about 2 to 3 additional crews are hired for engine boats. A number of set nets are operated in the estuary near the village.

Photo 5.3.3-1 show fishing boats and fishing gears used by local fishermen, and fish vending in Nga Pitat Village and Sakhanthit Village.

D. Quantities of Fish Catches

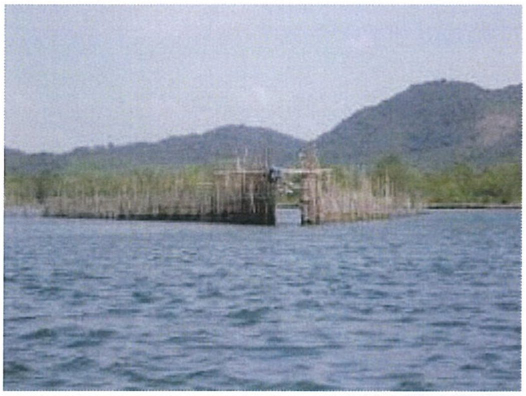
From interviewing with fish traders in Pan Din In Village, an average quantity of fishery resources landed here is in a range of 200-1,000 kg/day.

E. Markets

Most of fish catches are sold and the remaining are kept for home consumption. Fish catches are either direct sold in local market or to fish traders in Pan Din In Village.

Fishing boat at Nga Pitat Village

Fishing boat at Sakhanthit Village



Set net at estuary area near Sakhanthit Village

Push net operated near the beach

Selling fish in Sakhanthit Village

PHOTO 5.3.3-1: FISHERY RELATED ACTIVITIES

5.4 SOCIO-ECONOMIC COMPONENTS

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 three villages in the study area. They are Nga Pitat and Nyaung Bin Seik Villages in Launglon Township, and Mudu Village in Yebyu Township. Questionnaires were used to guide the interviews (see ***Appendix 5G***). Results of the interviews are presented in ***Appendix 5H***, and are used to describe the local socio-economic conditions presented in subsequent sections.

5.4.1 Population

The population and number of households in the four studied villages are presented in ***Table 5.4.1-1***. The total population was 3,935 living in 939 households. This gives an average household size of about 4-5 persons. The population in the study area accounted for only about 1.41% of the total population of the two townships. For each township, the population of the studied villages in each township accounted for only 0.84% for Launglon Township, and 2.1% of Yebyu Township.

At the village level, Mudu is the largest village in term of population. Its population of 2,654 is much larger than the other three villages; their total population was less than the population of Mudu.

TABLE 5.4.1-1

HOUSEHOLDS AND POPULATION IN FOUR VILLAGES OF THE STUDY AREA

Township	Village	No. of Household	Population		
			Male	Female	Total
Launglon	Nga Pitat	180	477	434	911
	Nyaung Bin Seik	75	157	213	370
	Total of 2 villages in the study area	215	634	647	**1,281**
	Township population	N/A	73,525	78,349	151,874
	% to township population	N/A	0.86	0.82	0.84
Yebyu	Mudu	684	1,313	1,341	**2,654**
	Township population	N/A	62,259	64,593	126,798
	% to township population		2.1	2.1	2.1
2 townships	Total of 3 villages in the study area	**939**	1,947	1,988	**3,935**
	Total population of 2 townships		135,784	142,888	**278,672**

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

5.4.2 Health Conditions

According to information derived from the interviews of village headmen and key informants, there were no serious health problems in the four villages in the study area. The mortality and morbidity rates were low. In 2014, only few cases of fever, cough, malaria, TB and HIV were recorded. These diseases were also recorded as the five leading diseases of the townships. However, there were no reports on mortality caused by these diseases.

The three (3) villages have no hospital and health care centers. Residents of Mudu Village have to travel about 17 km to hospital in Yebyu, or 10 km to nearest health care center in Lae Shaung Village. Their preference is the township hospital as it is better equipped than health care center with 25 beds, 2 physicians and 16 nurses. However, with poor road conditions to Yebyu, Lae Shaung health care center is the alternative for people in Mudu despite poorer facilities and inadequate personnel. It has only one nurse, compared to the hospital.

Villagers in Nga Pitat and Nyaung Bin Seik depend on medical service provided at Muangmagan station hospital, a travel distance from 4 to 10 km depending on the villages. This station hospital has 16 beds, 1 doctor and 16 nurses.

5.4.3 Gender Issues

As shown in ***Table 5.4.1-1,*** female population in the three villages is slightly higher than male with the female to male population ratio of 1.02 to 1. This ratio is similar at the township level, 1.06 to 1 and 1.03 to 1 in Luanglon and Yebyu Townships, respectively.

In general, men and women are equal in Myanmar, thus there are no gender issues as in some countries. Roles, work division and decision making between men and women are determined by physical conditions, social structure and norm. Decision making on some aspects are on a joint or sharing basis by both male and female. Although some decisions are made by one side, the decisions made are respected by the other. For example, men and women make decisions together on house purchasing and religious activities.

In the study area, men play a major role on fishing, farming and political interest, while 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.

5.4.4 Main Economic Activities

(1) Occupations

Fishing and collecting aquatic fauna are main economic activities of most villagers in Nga Pitat and Nyaung Bin Seik Villages. Although these villages are fishing communities, agriculture also plays a role in Nga Pitat and Nyaung Bin Seik although to a less extent than fishing.

Mudu is different from the other two villagers in economic activities. The economy of the community is land based relying on growing perennial crops, mainly cashew nut, betel nut, rubber and fruits. Paddy and sugar cane are also cultivated in Mudu but in a smaller area than orchards. Cropping pattern in Nga Pitat and Nyaung Bin Seik are similar to Mudu, but cultivation area is smaller.

Besides major occupations of fishing and farming, some villagers are engaged in other occupations, mainly waged labours and employees. About 15% of the villagers work outside their villages. Some of them are working at the ITD site, in Dawei city; and, for the majority, in Thailand.

Small businesses exist in nearly every village. Most common in the communities are small shops selling foods, drink and household supplies.

(2) Household Income and Cost of Livings

Based on the occupations mentioned above, major sources of income of villagers are fishing and farming while the other sources are wages and small businesses. The annual household incomes in the three villages ranged from 1,800 to 7,700 USD equivalent, an average of 5,000 USD equivalent per year or 410 USD equivalent per month. Household expenses are slightly lower than the earnings. The annual household expense ranged from 1,600 to 7,700 USD equivalent, an average of about 4,000 USD equivalent. Nearly all the earnings was spent, mostly on foods, followed by education, health and others.

(3) Unemployment

Unemployment in the three villages was very low as family members of working age worked in family fishery and/or farming business.

5.4.5 Level of Education

The majority of villagers in the three villages completed only primary education. Only few people have secondary and higher education. Some elders received only informal rudimentary education from monks in temples.

5.4.6 Vulnerable Groups

Vulnerable groups in the three villages are small in number. Their number was estimated at about 8% of the total village population. The number of disabled and living alone persons was very small, only 0.7% and 0.3% of total population, respectively. The proportion of women household heads who are over sixty years old is less than 2.2%. According to the key informants, there is no special program to support these peoples in this area. By social structure, they are taken care of by their families, relatives and neighbors. This social safety net enables them to stay in the communities without difficulties.

5.4.7 Land Use

Information on existing land use of the study area was established using the following sources of secondary information:

- Topographic map, scale 1 : 50000
- Satellite image of GOOGLE EARTH (http://earth.google.com).
- Geographical Information System (GIS) of Tanintharyi Region

The secondary information was verified and supplemented by ground truth surveys conducted from January 21 to 24, 2015.

The study area covers 21,399.54 acres of which about 9,918 acres (46.35%) are water bodies, mainly the coastal waters. The total land area is therefore about 11,481 acres. About 44.6% of the land area is village area and agricultural area. ***Photo5.4.7-1*** shows typical scenes of the various types of land use in the study area. The land use types are summarized in ***Table 5.4.7-1*** and shown in a land use map in ***Figure 5.4.7-1***.

TABLE 5.4.7-1

LAND USE TYPES IN THE STUDY AREA

Name	Area (acre)	Percent (%)
Village/Built Up Area and Agricultural Area	5,116.70	23.91
Forest Area	4,419.71	20.65
Miscellaneous	1,945.39	9.09
Water Bodies	9,917.74	46.35
Total	**21,399.54**	**100.00**

Source : TEAM Consulting Engineering and Management Co., Ltd., January, 2015

The power plant site will covers 34 acres consisting of 5.72 acres of beach forest, 2.91 acres of mangrove forest, and 25.37 acres of water bodies.

(1) Village/Built Up Area and Agricultural Area

The village/built up area and agricultural area cover 5,116.70 acres or 23.9% of the study area. This type of land use covers the three villages, three schools, four religious places (Mudu Monastery, Kyaung Thit Monastery, Yay Wine Monastery and Nyaung Bin Seik Monastery), cement factory, paddy fields, mixed orchards and perennial trees, rubber growing area, eagle wood area, cashew area, and coconut area.

(2) Forest Area

Forest areas cover 4,419.71 acres or 20.65% of the study area. The forest areas consist of mixed deciduous forest, mangrove forest and beach forest as presented in **Section 5.3.1**.

Village

Paddy field

Rubber area

Cashew area

Mangrove forest

Beach forest

PHOTO 5.4.7-1: TYPICAL SCENES OF LAND USE IN THE STUDY AREA

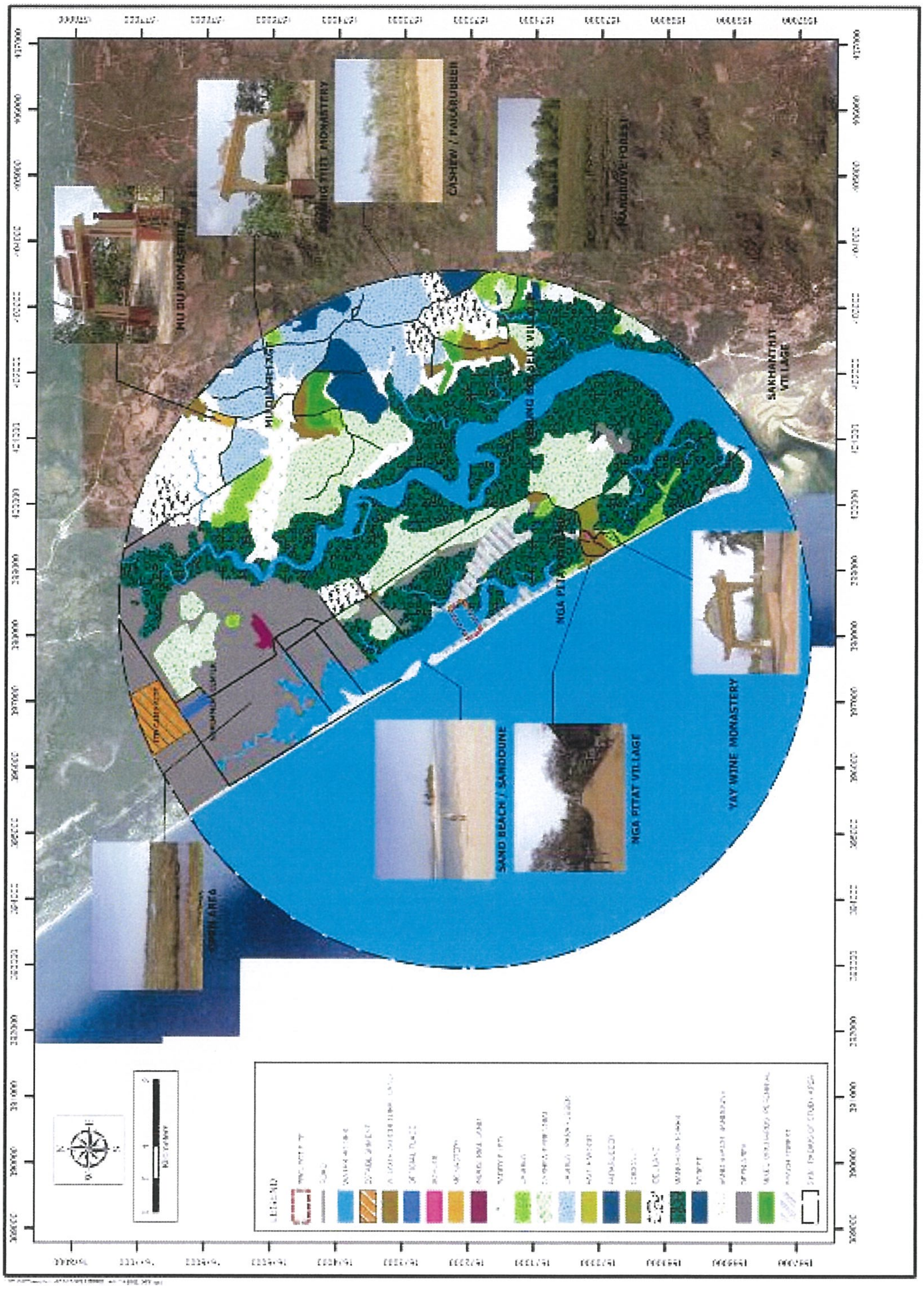


FIGURE 5.4.7-1: EXISTING LAND USE WITHIN PROJECT STUDY AREA

(3) Miscellaneous Areas

Miscellaneous areas cover 1,945.39 acres or 9.09% of the study area. Most of this land use type are open land, idle land, sand beach/sand dune and road.

(4) Water Area

Water area covers 9,917.74 acres or 46.35 percent of the study area. Almost all of this area is the coastal water.

5.4.8 Infrastructure

A. Road Condition

Roads within the three villages in the study area are unpaved laterite road about 4 m wide. The main road within the study area is the road along the coast. The main road is also unpaved laterite road, about 7 m wide with two traffic lanes, constructed by ITD which provides access to Dawei City. Most of the local roads can be used all year round. ***Figure 5.4.8-1*** is a map showing existing roads in the study area. Existing road conditions at several locations are shown in ***Photo 5.4.8-1***.

B. Traffic Counting

To establish base line data on traffic conditions, traffic counting was carried out at two stations within the study area from 6.00 am to 6.00 pm on 25 and 26 January, 2015, covering one working day and one holiday. The two traffic counting (TC1 and TC2) stations are at the junction of Nga Pitat Village and the ITD coastal road at coordinates 399322E and 1569791N. TC1 was located on the ITD coastal road and TC2 was located in front of Nga Pitat Village.

The location of one traffic counting station is indicated on a map in ***Figure 5.4.8-1***and ***Photo 5.4.8-1***.

Traffic counting was done manually by one observer. The number and types of vehicles passing the station were recorded. The traffic counting data 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.

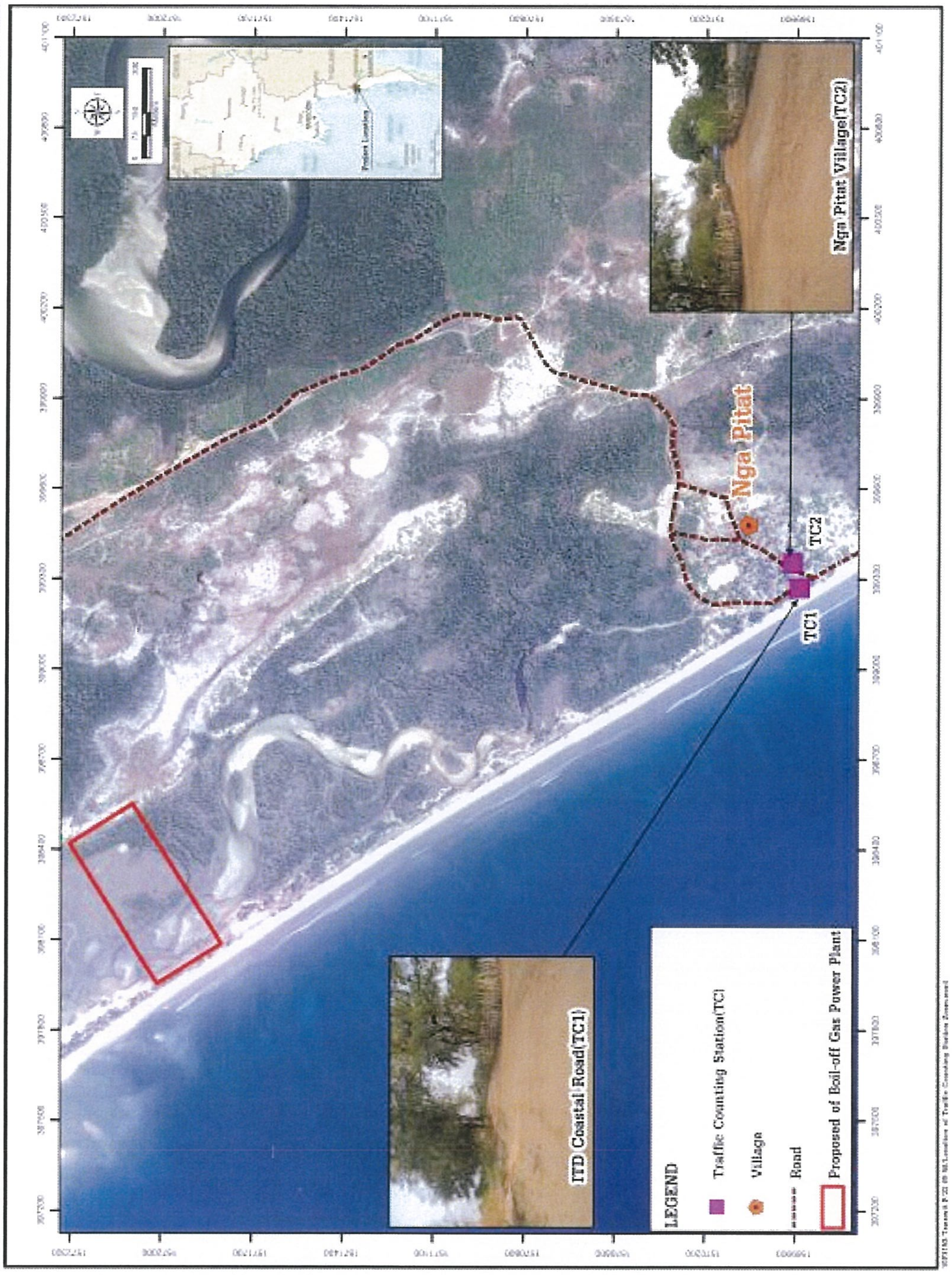
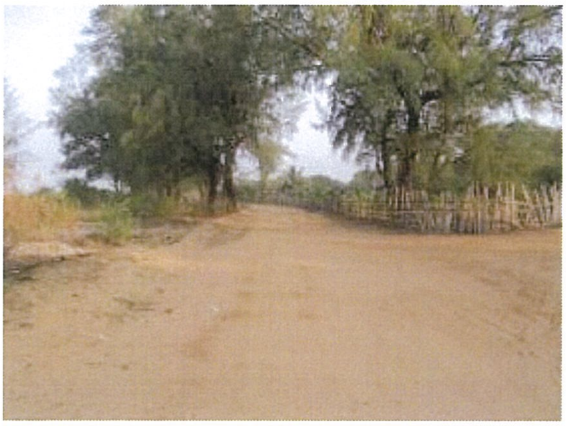


FIGURE 5.4.8-1 : LOCATION OF TRAFFIC COUNTING STATION

Existing condition of road at Mudu Village

Existing condition of road at Nyaung Bin Seik Village

Existing condition of road at Nga Pitat Village



Traffic counting at the ITD coastal road (TC1)

Traffic counting in front of Nga Pitat Village (TC2)

PHOTO 5.4.8-1 : TRAFFIC COUNTING AND EXISTING CONDITION OF ROAD 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 5.4.8-1***. This is used as "Traffic Volume" or "V".

2) Select an applicable carrying capacity or "C" for the road (***Table 5.4.8-2***). The capacity can be estimated following the highway capacity manual (HCM, 2000).

3) Ratio of V/C can be calculated using the following formula

$$\text{V/C ratio} = \frac{\text{Traffic Volume}}{\text{Carrying Capacity of Respective Road}}$$

V/C ratio can be used to compare with the values defined by the Division of Traffic Engineering (Thailand) as shown in ***Table 5.4.8-3*** for indication of present traffic condition.

TABLE 5.4.8-1

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.

TABLE 5.4.8-2

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

TABLE 5.4.8-3

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

(1) Results of Traffic Counting

The results of traffic counting are presented in four tables in ***Appendix 5I***. 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.

Station TC1

The number of vehicles passing coastal road on Sunday 25th and Monday 26th January 2015 was 88 and 89 units/day, respectively. The majority of vehicles were motorcycles. The hourly traffic volume was relatively consistent over the counting period. For holiday (Sunday) and working day (Monday) the traffic volume was highest during evening (during 3.00 pm – 6.00 pm) about 26 units/hour for holiday and 27 units/hour for working day, respectively.

Station TC2

The number of vehicles passing the coastal road on Sunday 25th and Monday 26th January 2015 was 73 and 102 units/day, respectively. The majority of vehicles were motorcycles. The hourly traffic volume was relatively consistent over the counting period. For the holiday (Sunday), the traffic volume was highest during the evening (during 3.00 pm – 6.00 pm), about 26 units/hour. For the working day (Monday), the traffic volume was highest during the morning (during 06.00 am – 09.00 am), about 32 units/hour.

(2) Traffic Conditions

Table 5.4.8-4 shows the highest V/C ratios calculated for the traffic condition during the field survey. The V/C ratio of the holiday and working day at Station TC1 were 0.0012 and 0.0019, respectively while V/C ratio of the holiday and working day at Station TC2 were 0.0009 and 0.0010, respectively. However, the ratios were much lower within the range of 0.20– 0.36. These figures indicate light traffic condition on the main road and it could receive more traffic.

TABLE 5.4.8-4

EXISTING TRAFFIC CONDITION WITHIN PROJECT STUDY AREA

Description	TC1			TC2		
	Sun, 25th	Mon, 26th	Average*	Sun, 25th	Mon, 26th	Average*
Total Traffic volume (PCU/day)	2.328	3.838	3.083	1.879	1.969	1.924
Traffic volume per 12 hours*(PCU/hours)	4.657	7.676	6.167	3.758	3.938	3.848
Carrying capacity (C) (PCU/hours)	2,000	2,000	2,000	2,000	2,000	2,000
V/C ratio	**0.0012**	**0.0019**	**0.0015**	**0.0009**	**0.0010**	**0.0010**
Traffic Condition	Very good traffic flow			Very good traffic flow		

Remark: * Average of 25 and 26 January 2015 Values

** Traffic volume per 12 hours according to Traffic counting during field investigation on 25 and 26 January 2015

TC1: ITD coastal road

TC2: In front of Nga Pitat Village

Source: Traffic survey by TEAM Consulting Engineering and Management Co., Ltd., January 2015

C. Electricity

The three 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.

D. Water Supply

Currently, there are no piped water supply systems in three villages. The villagers use groundwater (bored and shallow wells) and rain water.

E. 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. Wastewater is directly discharged into natural canals nearby.

5.5 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 and Rakhine people is live 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.

(2) Sites of Traditional and Historical Value

As the Burmese is strongly religious people, temples exist in every village (see **Section 5.4.7**). It is common for villagers to visit local temples for religious purposes and also for some community social activities. Besides, cemetery is also available in every village.

There are an important historical and religious Buddha's footprint and other pagodas in the area of Nabule settlement where Muduis located in. 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 are 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

At the coastal villages of Nga Pitat, Nyaung Bin Seik, and some part of Mudu, the people rely mostly on marine and mangroves resources for their livelihoods (***Photo 5.5-1***). Fish and other marine products are the primary sources of protein and cash income for local people in the project area. While men fish in the sea, women and children collect aquatic products from mangroves and creeks such as clam, crab, and fish. Most of the products are sold for cash. According to villagers, Thailand is the major market for local seafood products.

In addition to providing foods, mangrove forest also supplies woods for building, fishing boat and fuel. The mangrove forest is therefore a valuable natural resource as it serves as nursing ground of fish and other aquatic animals, protects the shoreline from erosion, and supports local livelihoods.

In Nga Pitat Village, mangrove around project site will be utilized for fishing boat and house construction, and fuel. During field survey on 8 October 2015, one dockyard of Nga Pitat village was found less than 1 km from the south of project site. There are two boatyards of fishermen of Nga Pitat village composed of

1) Britney Creek: This creek cover inside of proposed project site. This area can protect the boat from wind and wave especially during wet season. Some peoples navigate along this creek to the Nga Pitat Village, many of them commute on the public track from the village to the boatyard area. This area are also source of fishing ground for Nga Pitat Villager. Major type of marine species in this area include crab, fish, and clam. Income from fishing activities in this area approximate 7,000-8,000 kyat/day.

2) Ji U Creek: This creek is branch on the left of Pan Din In River. The canal locate approximate 4 km from the southern of proposed project site. From interviewed with village headman of Nga Pitat Village, the fishing boat will dock in this area only on wet season. This area are also source of fishing ground for Nga Pitat Villager. Major type of marine species in this area include crab, eel, and clam. Income from fishing activities in this area approximate 500 kyat/day.

In Nyaung Bienseik Village, Nyaung Bienseik Canal is major source of fishing ground and wood for fuel and house construction. Major type of marine species in this area include crab and clam. Income from fishing activities in this area approximate 10,000 kyat/day.

In Mudu Village, some people carry on a fishermen. Pan Din In River is major source of fishing ground. Major type of marine species in this area include crab and clam.

Some villagers in these two villages and most of Mudu peoples rely 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.

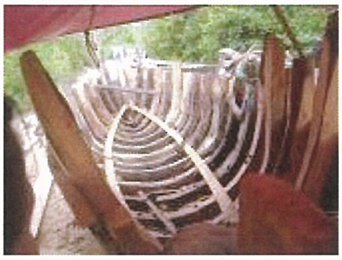
Livestock is practiced in small-scale mainly for household consumption. Chicken and pigs are raised freely around the houses. Some villagers raise cows, mainly for draft labour.

The location of boatyard, source of firewood, and dockyard described on ***Figure 5.5-1***.

Boatyard and Product from Fishing Ground Activity at Britney Creek

Boatyard and Product from Fishing Ground Activity at Ji U Creek

Product from Fishing Ground and Wood at Nyaung Bienseik Canal



Dockyard at Nga Pitat Village | **Firewood in Nga Pitat Village**

PHOTO 5.5-1: NATURAL RESOURCE USES IN THE STUDY AREA

FIGURE 5.5-1 : LOCATION OF NATUREL RESOURCE USE AND SHRINE IN STUDY AREA

(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 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 three villages of the study area.

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 VISUAL COMPONENTS

The beach in the study area has two locations with tourism potential-Nabule and Maungmagan beaches. Nabule beach is about 32 km northwest of Dawei and 10 km north 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 5.6-1***).

Maungmagan beach is about 12 km northwest of Dawei and 7 km south 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 5.6-2***).

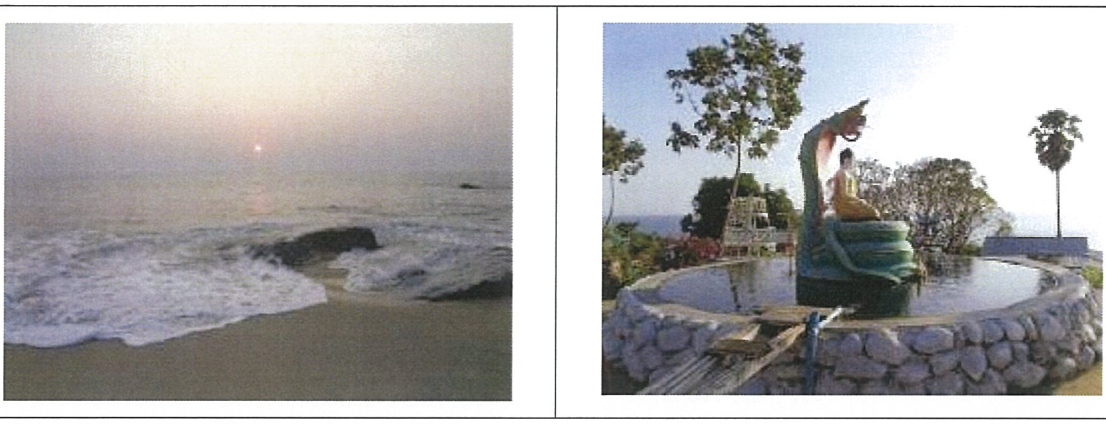


PHOTO 5.6-1: VIEWS AT NABULE BEACH

PHOTO 5.6-2: VIEWS AT MUANGMAGAN BEACH

CHAPTER 6

IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES

CHAPTER 6

IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES

6.1 IMPACT AND RISK ASSESSMENT METHODOLOGY

6.1.1 Impact Assessment

6.1.1.1 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. 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.

6.1.1.2 The Conceptual Framework

A. Impact Analysis

The first major step in conducting an ESIA is "Impact Analysis" as shown in a diagram in ***Figure 6.1-1***. The Impact Analysis is essentially a cause-effect analysis based on the following logics.

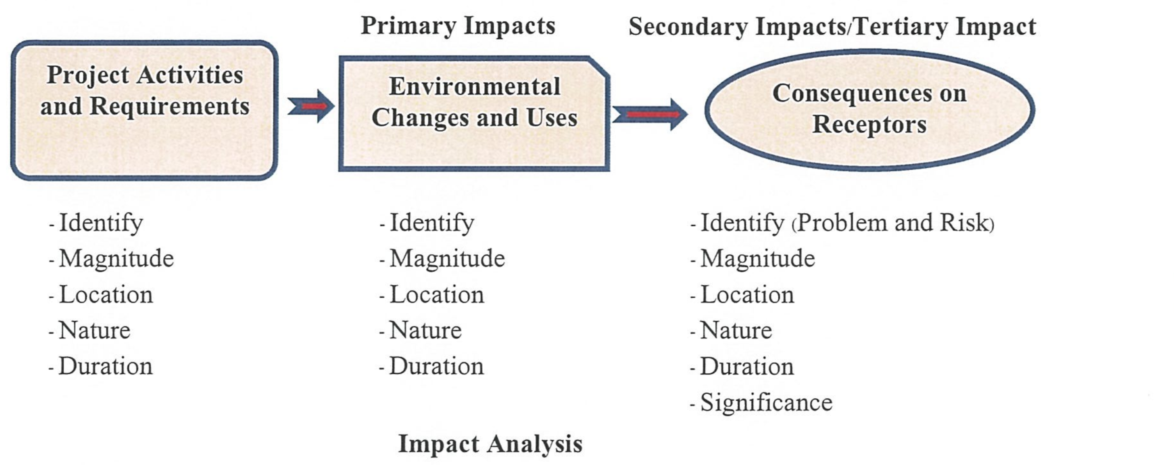


FIGURE 6.1-1 : IMPACT ANALYSIS LOGIC

1) Project construction and operations involve various physical activities and require use of environmental resources as inputs.Examples:

- Construction activity-filling and compacting a 34 acre project site
- Required environmental resource-an 34 acre forest land for the construction site
- Operational activity-combustion of Boil-off Gas (BOG) for power generation

2) Project activities and requirements consume and emit 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 operations of trucks and heavy equipment (project activity).

- Changes during operation-change in ambient air quality caused by caused by emissions of gaseous pollutants in stack gas of power plant (project activity), reduction of seawater quality caused by discharge of untreated effluent into the sea.

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 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 forest area 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 marine ecosystem (secondary impact) caused by coastal pollution (primary impact) could have impacts on livelihood of local fishermen. The consequences of the secondary impacts could be considered as ***tertiary impacts***.

6) Secondary and tertiary impacts are ***problems*** that need to be solved by reducing the primary impacts through measures applied to causative project activities or requirement. They are considered problems, since based on existing knowledge and experience, they will certainly occur. Example-coal combustion 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 turbine 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 a 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:

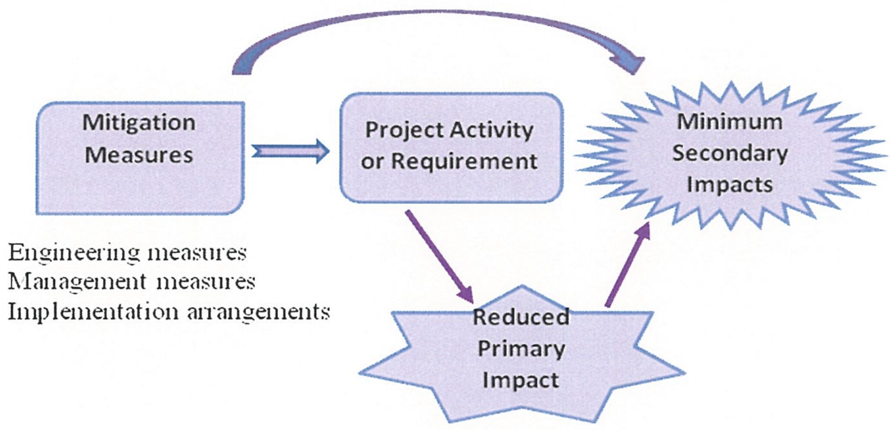
- Engineering measures to be incorporated in the design for implementation by the contractors

- 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 6.1-2 is a diagram showing the mitigation measure concept.



Formulate Measures to Address the Anticipated Problems

FIGURE 6.1-2 : MITIGATION MEASURE CONCEPT

6.1.1.3 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 Project will use the low NO_x burner technology to minimize the NO_x emission; 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. In the case of wastewaters, their treatment will be required to comply with the applicable effluent quality standards.

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. For example, ground level concentrations (GLC) of NO_x will be predicted at various distances from the stack of the power plant. The impacts on ambient air quality will be assessed based on the applicable ambient air quality standard. If the GLC of NO_x exceeds the maximum permissible limit prescribed in the ambient air quality standards, the impact of NO_x emission on the ambient air quality could be considered critical or major. Treatment of the flue gas or increasing the stack height would be necessary to reduce the impact on ambient air quality.

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 noise sources. 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 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 6.1-3*** 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; (ii) the magnitude of the NO_x emission issue is the total amount of NO_x in the flue gas to be discharged into the atmosphere; and (iii) 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) the low NOx burner technology will be used to minimize the amount of NOx emission; and (ii) the construction site will be frequently sprayed with water to 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: (i) the amount of NO_x emission with the low NO_x burner technology can be calculated from the efficiency of this technology or from the supplier's guaranteed concentration of NO_x in the flue gas; and (ii) 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 and NO_x emission issues can be referred to applicable source standards, such as effluent quality standard for the wastewater issue and emission standards for the air pollution 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. For example, best practicable measures will be implemented to minimize the wastewater volume and the amount of pollutants. If the wastewater to be discharged from the power plant does not meet the effluent quality standard, the wastewater must be treated to produce the effluent that meets the effluent quality standard.

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.

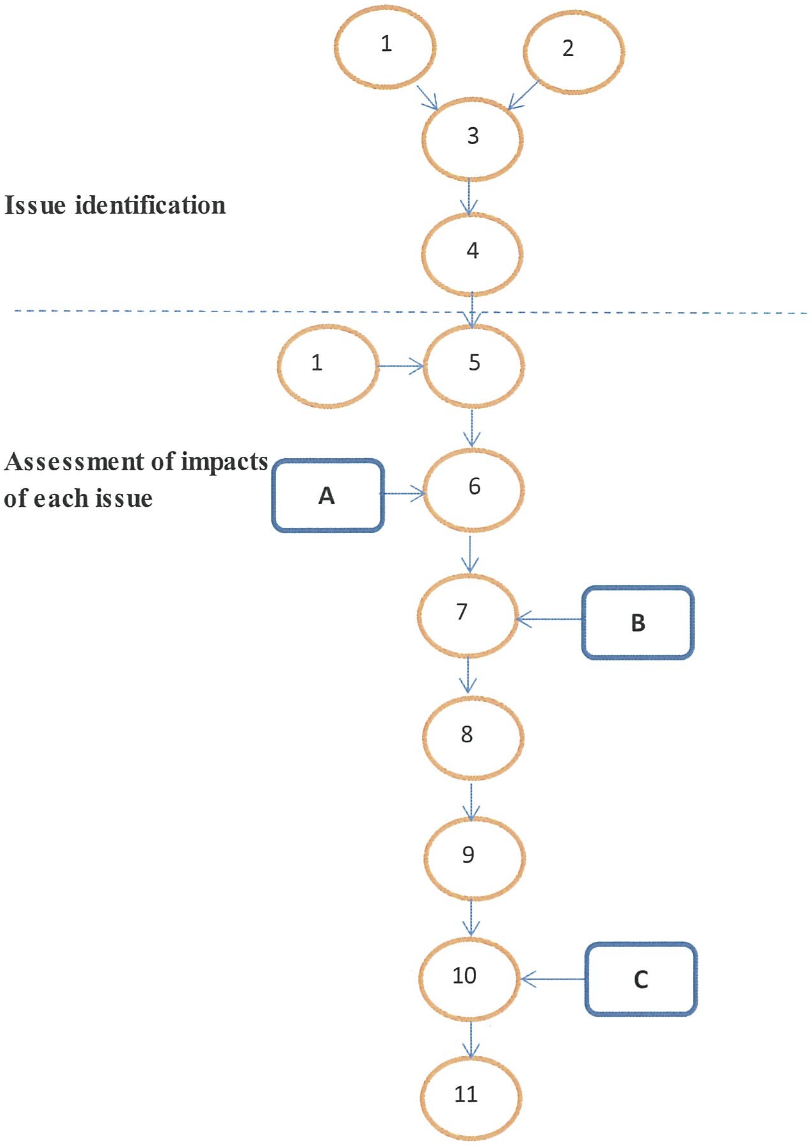
(5) Calculate or Estimate the Impact of the Remaining Magnitude of the Issue on Ambient Environmental Quality

A good example is the NO_x emission issue. This step will calculate the dispersion of the remaining amount of NO_x in the flue gas in the ambient air around the Project site. The results will be increases in NO_x in the ambient air at various locations around the Project site.

(6) Compare the Resulting Ambient Environmental Quality with the Applicable Ambient Environmental Quality Standard.

An example is the NO_x issue. Despite the emission standard is met, the resulting ambient NO_x level may be higher than the maximum permissible level of NO_x in the ambient air quality standards. This could be the case if the baseline level of NO_x in the ambient air is already high because the air shed is already polluted. In this case, the impact of NO_x emission on ambient air quality could be reduced by treatment of the stack gas to reduce the NO_x emission or by increasing the stack height. Another 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.



1=Information on Project Nature and Scope
2=Baseline information on physical, environmental, and socio-economic settings of the study area
3=Identify relevant environmental and social issues anticipated during construction and operation
4=Identify sensittive receptors
5=Estimate magnitude of the issue, if possible
6=Identify measures for reducing magnitude of the issue, if possible
7=Compare the remaining magnitude with applicable source standards
8=Calculate impacts of the remaining magnitude of the issue on the receptors
9=Determine duration and nature of the impacts
10= Compare the impacts with the applicable ambient standards, if applicable
11=Assess the significance of the impacts

A=Established knowledge base on impact mitigation measures
B=Applicable source standards or criteria
C=Applicable ambient standards or cirteria

FIGURE 6.1-3 : METHODOLOGY FOR THE IMPACT ASSESSMENT OF EACH ENVIRONMENTAL ISSUE

6.1.1.4 Methodology for the Determination of Significance

The impact of an environmental issue is divided into 5 levels based on six criteria or considerations as shown in ***Table 6.1-1***. The criteria will need to be modified to make them specific and relevant to each environmental issue.

TABLE 6.1-1

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				
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-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.

6.1.2 Risk Assessment

6.1.2.1 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 of 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. The ERMP could also be presented as part of the EMP.

C. Environmental Risk Management (ERM) 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 and the operational 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 root causes, 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 6.1-4*** 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.
- ***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.

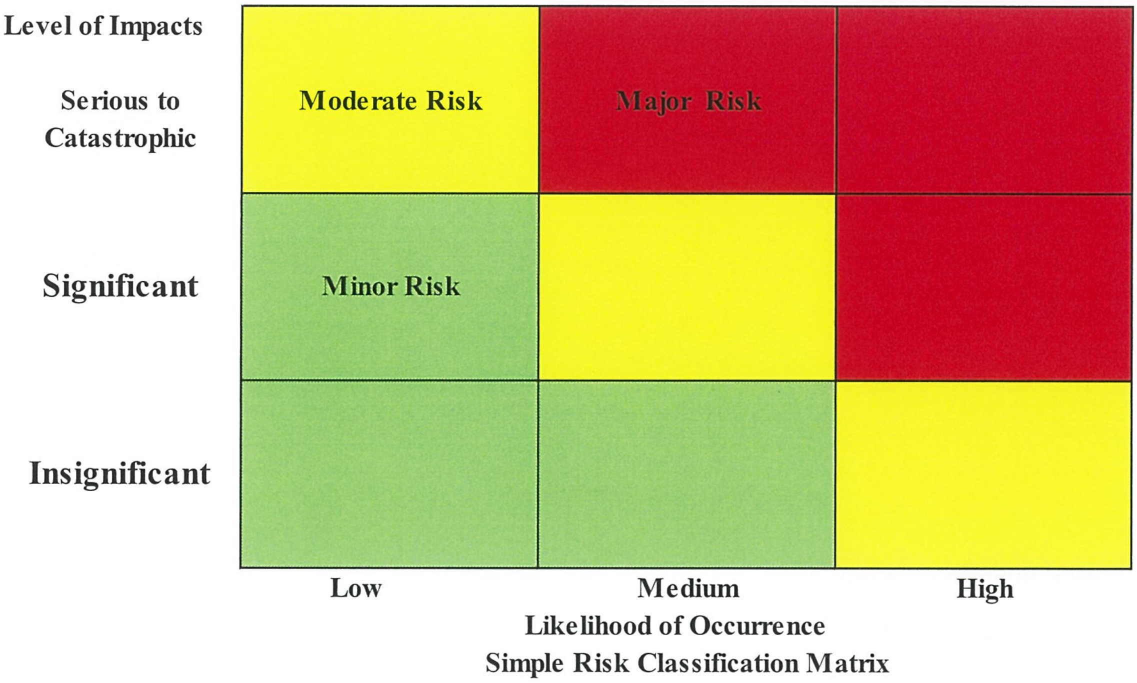


FIGURE 6.1-4 : SIMPLE RISK MATRIX

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.

[1]Modified from the matrix in NASA Risk Management Presentation - Imsworld.org www.imsworld.org/.../NASA%20risk%20managemnt%20power%20poin...

(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 site to raise its elevation by about 1 to 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 6.1-5 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.

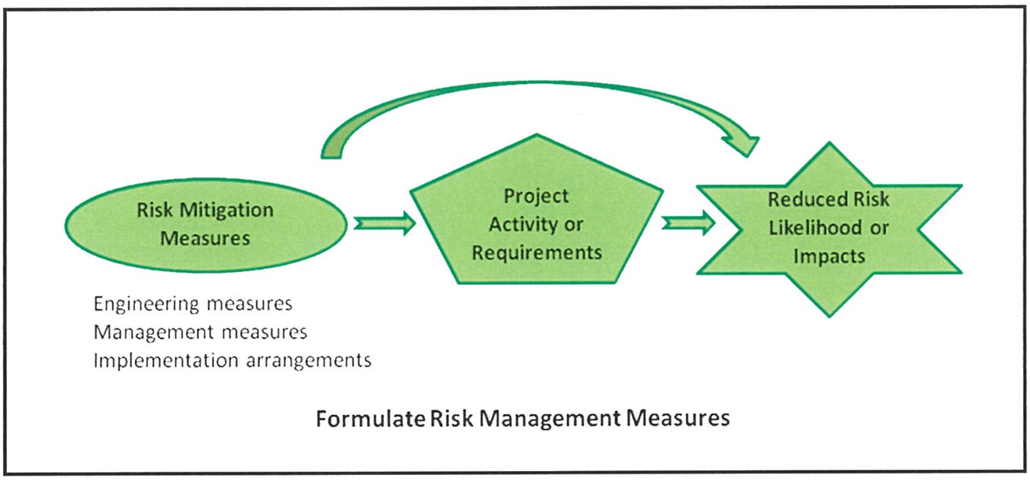


FIGURE 6.1-5 : ENVIRONMENTAL RISK MANAGEMENT LOGIC

(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 Boil-off gas power plant management entity such as the corporate risk management plan.

6.2 PRE-CONSTRUCTION PHASE-IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION

6.2.1 Impact Assessment

6.2.1.1 Pre-Construction Activities

For the onshore site, the pre-construction phase will prepare the construction site ready for the construction of onshore facilities. Environmental impacts in this Project phase will be related to site clearance, site filling, and site compaction. The site preparation works will be completed in four months.

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.

A. Impacts on Ecosystem

The site clearance and filling of boil-off power plant will permanently eliminate the existing swamp, mangrove ecosystems, and beach forest. Fish and other aquatic animals will also be eliminated. Some wildlife living in the ecosystems may be able to flee to the adjacent mangrove, beach forest, and swamp areas. The impacts are permanent and irreversible.

B. Impacts on Livelihood of Villagers

Villagers in Nga Pitat Village near the Project site, harvest fish and other resources from the Britney Creek and mangrove in the Project site. They also berth their fishing boats in the creek. The loss of mangrove and Britney Creek will therefore have adverse impacts on their livelihood.

C. Environmental Disturbances Caused by Dust, Noise and Gaseous Emissions

The site preparation works will be carried out by heavy equipment, particularly bulldozers, excavators, and graders. Their operations would create fugitive dust, noise and exhaust emissions in the Project site and may be felt by people in Nga Pitat village. These environmental disturbances would be mainly the OHS issue affecting workers at the construction site.

6.2.1.2 Impact Assessment

A. Impacts on Ecosystems

The main 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 about 34 acres of fertile and degraded mangrove. This loss of forest area is small compared to the total mangrove area of Tanintharyi region of 469,681 acres in 2008.[2]As all the coastal land in DSEZ will be cleared and converted into an industrial area, the ecological impact of this Project should be viewed in the overall impact of DSEZ on mangrove. For Tanintharyi Region, the mangrove coverage was 262,063 ha in year 2000[3] and 190,154 ha (469,681 acres) in 2008. It should be noted that the loss of mangrove has been an area of concern in Myanmar long before the development of DSEZ. There are a number of ongoing projects on mangrove rehabilitation in the country.

The impacts of on the three near-threatened species and loss of vegetation cover on ecosystems are evaluated as shown below. The issue deserves medium 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	Medium

[2]Challenges and Lessons Learned from Ongoing CLEARR Project (MERN), **Workshop on mangrove rehabilitation and conservation** 12 November 2012, U Win Maung, Project Manager, Coastal Livelihood and Environmental Assets Restoration in Rakhine (CLEARR)

[3]FAO data quoted in *Coastal forest rehabilitation and management in Myanmar,* by U Tin Tun, Deputy Director, Nature and Wildlife Conservation Division, Forest Department, Myanmar, www.fao.org/forestry/12674-0353fe60e1dd4ede696dce7fca06e5c5c.pdf

B. Impacts on Livelihood of Villagers

Nga Pitat village has a total population of 911 of which about all of villagers would be adversely affected by the Project. The impact is considered significant and its control is accorded high priority. The evaluation is shown below.

Impact category	Secondary impact
Impact duration	Permanent, reversible
Impact extent	About people in Nga Pitat village
Impact magnitude	High, long term
Impact severity	Significant
Control priority	High

C. Environmental Disturbances Caused by Dust, Noise and Gaseous Emissions

As Nga Pitat village, the nearest village, is about 2.22 km from the construction site, the effects of dust, noise, and emissions during the pre-construction period will not reach the village if control during land clearance and land filling activities.

Typical noise levels of Bulldozers, excavators and graders are around 85 dB(A) measures at 15 m from the source.[4] According to calculation, main concern and should be proposed mitigation measures include both dust and noise level on Nga Pitat.

Appendix 6A presents calculations of fugitive dust dispersion and ***Appendix 6B*** presents calculations of noise propagation. The environmental disturbances will be confined mostly within the construction site. Therefore, they will affect only the construction workers, thereby being OHS issues.

The impacts of these environmental disturbances are considered significant and their control priority should be high to protect the workers.

[4]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

6.2.1.3 Impact Mitigation Measures

A. Impacts on Ecosystems

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 swamps and mangrove areas.

- In consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers, design and implement a mangrove reforestation program in areas outside DSEZ. The purpose is to compensate for the loss of mangrove area by the Project.

- 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. Impacts on Livelihood of Villagers

The Project Proponent intends to develop Chi Oo Klong area inside Pan Din In River to provide the new ground for fishing and resource harvesting and the new area for fishing boats berthing. This area is outside DSEZ southeast of Nga Pitat village as indicated in a map in ***Figure 6.2-1***.

The Project Proponent will need to prepare a detailed plan for the development of this alternative area in consultation with the affected local villagers and fishermen, and concerned authorities including MONREC, the Fisheries Department at Taninthayi Region. The development will need approval from these authorities. If justified, supports will be provided to the affected local villagers and fishermen to enable them to adjust to the new fishing ground and boatyard area.

In addition, the Project Proponent should design and implement a 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:

- Community forest and mangroves management
- Coastal aquaculture within extensive system
- Fish processing
- Crop cultivation techniques
- Product development and marketing
- Food preparation and preservation

The affected people should be given preferential treatment in employment in the Project.

FIGURE 6.2-1: PROPOSED ALTERNATIVE BOATYARD AND FISHING GROUND AREA

C. Fugitive Dust, Noise and Gaseous Emissions

Fugitive dust will be generated most during the compaction. Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust.

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 boil-off power plant to reduce noise impact to Nga Pitat Village.

6.2.2 Risk Assessment

It is assumed that the EPC Contractor will responsible for site preparation works.

6.2.2.1 Risk Identification

During the four months of site preparation works, 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 affected people in nearby communities.

These two uncertain events could have the following consequences on the Project:

- The authorities may order the Project to suspend the works 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

6.2.2.2 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

Figure 6.2.2-1 shows a risk matrix for the construction phase.

Risk 1 is considered major risk as it would have a high level of likelihood of occurrence and a high level of impacts.

Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a high level of impacts.

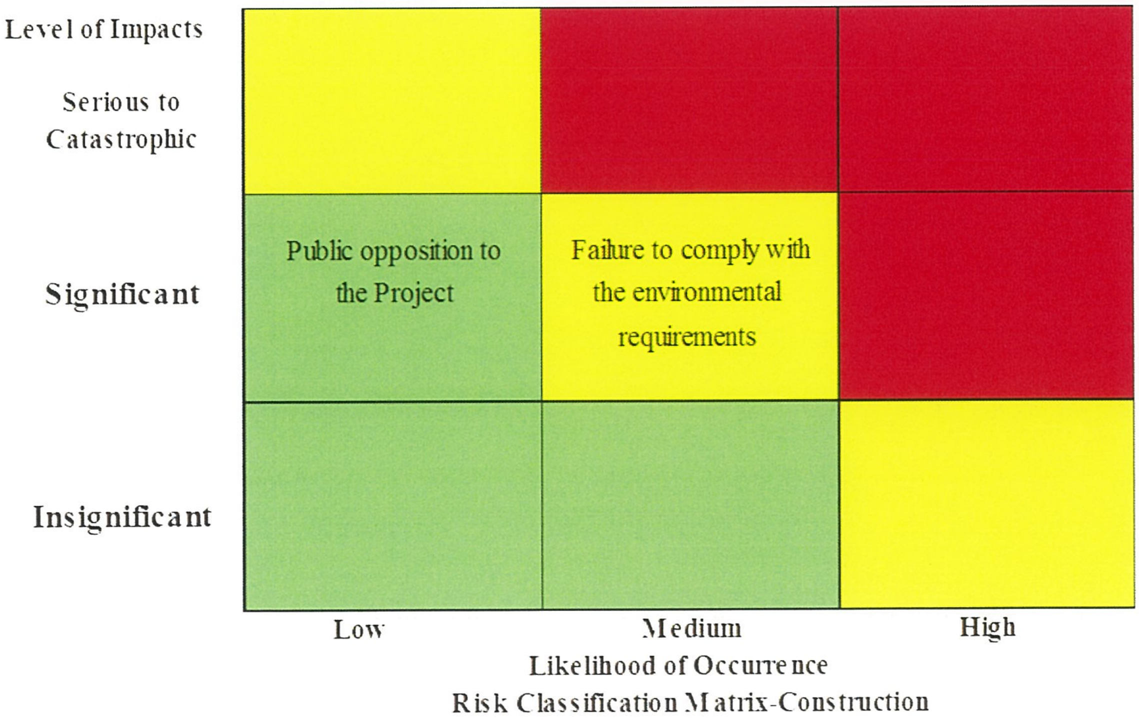


FIGURE 6.2.2-1 : RISK MATRIX FOR THE PRE-CONSTRUCTION PHASE

6.2.2.3 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 6.2.2-1***. The measures will be implemented through contractual arrangements and stakeholder engagement.

TABLE 6.2.2-1

MITIGATION MEASURES FOR ENVIRONMENTAL RISK MANAGEMENT DURING PRE-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 ESIA 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 environment 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 construction 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 accommodated by an analysis of environmental implications and revised mitigation measures.

TABLE 6.2.2-1

MITIGATION MEASURES FOR ENVIRONMENTAL RISK MANAGEMENT DURING PRE-CONSTRUCTION PHASE (CONT'D)

Cause	Mitigation Measures
Change in the environmental requirements during the construction without revising the originally proposed mitigation measures.	Change in the environmental requirements may be initiated by MONREC or the Project Proponent with approval of MONREC. The changes must be subject to the change procedure in project management. The EPC contractor will analyze 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 neighboring.
Rough relationship between the Project and the surrounding communities	1. CSR activities should be initiated as soon as possible in the construction phase. 2. The Project management team should visit as often as possible the villages located within the area of influence of the Project.

6.2.2.4 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 analyzed 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 Construction EMP (CEMP) prepared by the EPC contractor and the timeliness in correcting deficiencies in the CEMP found by the project management team-environmental management during the pre-construction phase will be included in the CEMP;
- trend of the EPC contractor and subcontractors being unable to conform with the site preparation 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.

The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management.

6.3 CONSTRUCTION PHASE-IMPACT AND RISK IDENTIFICATION, ASSESSMENT AND MITIGATION

6.3.1 Construction Activities

A. Construction Sites

During the construction period of about 15 months, the EPC contractor will erect temporary facilities such as worker camps, office buildings, fence, equipment shed, water supply, drainage, oil storage, canteen, toilets, etc. The construction would require about 70 workers at peak time. Details of the worker camps are not available at the time of preparing this Final ESIA Report. However, the worker camps would be located near the construction site or within the project construction area, and will be served with temporary water and electricity supply systems. Drinking water would be served by potable water from private sector within nearby project area. Electricity would be obtained from diesel generators.

Construction activities will include transport of construction materials, transport of power plant equipment and pre-fabricated parts of the power house, and construction of power plant and support facilities. The activities in construction phase is carried out as follows:

Transport of Construction Materials: Sand 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 and transported to the construction site by ships or trucks. Alternatively, they could be sourced in Myanmar and shipped from Yangon port to the existing small port near the project site. At this stage of project development, transport of construction materials has not yet definitely planned.

Transport of Power Plant Equipment and Pre-Fabricated Parts of the Power House: Gas engines and associated equipment, and prefabricated parts of the power house will all be imported in containers from Finland to a major port in Thailand or Yangon Port. The containers could be transported from Thailand to the project site by trucks or ships. If the containers are shipped to Yangon Port, they would be shipped to the existing small port near the project site. At this stage of project development, transport of power plant equipment and power house parts has not yet definitely planned. The sea

transport could affect navigation safety to 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.

Construction of Power Plant and Support Facilities: They could be grouped into two categories: (i) civil works; and (ii) mechanical and electrical works. The mechanical and electrical works will cover the installation and erection of power house, gas engines, switch yard, control system, and distribution cables. The civil works will cover construction of power house floor, structure, and the remaining facilities. None of piling activities during boil-off power plant construction.

Site Drainage and Wastewater Disposal: During the construction period, storm runoff from the 34-acre project area could cause increased turbidity of the coastal waters near the project site. A small volume of wastewater will be generated from 50 workers and could be disposed of in septic tanks. The final effluent will be drained into the coastal water through the storm sewer.

6.3.2 Impact Identification

Based on the nature and magnitude of construction works, the Consultant identified in ***Table 6.3.2-1*** 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 6.3.2-1

ENVIRONMENTAL ISSUES TO BE MANAGED DURING CONSTRUCTIONWORK

Environmental Issues	Activities / Sources
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

6.3.3 Impact Assessment

6.3.3.1 Gaseous Emissions

A. Sources

Diesel-powered heavy construction equipment, vehicles and generator sets are the major sources of gaseous emissions during the construction. 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.

As the nearest community is about 2.22 km away from the power plant 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.

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.

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 (repowered engines, electric drive trains). 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. Impact Mitigation Measures

No additional mitigation measures apart from the source reduction measures would be necessary. However, heavy equipment operators could be provided with masks, if deemed necessary, to minimize the impact of particulates.

H. 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 15 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.

6.3.3.2 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. In this case, none of piling activities during project construction due to all of equipment will be pre-fabricated or manufactured from oversea, thus the construction equipment will be limited for transport equipment (trucks and cranes) and welding equipment and tools.

Construction activities that generate excessive noise include soil compaction by heavy graders and truck. The construction noise levels will affect construction workers and could also affect the nearby receptors.

Noise will be managed at the construction sites. The power plant construction site will be where noisy construction activities are most intensive and concentrated. A smaller extent of noise will be generated along the construction corridors.

B. Sensitivity of Receptors

The closest receptor to the power plant construction site is Nga Pitat village. This village is located about 2.22 km south of the boil-off power plant site. This village has about 180 households. The most noise sensitive receptor in the village is Yay Wai Monastery and Nga Pitat School.

C. Magnitude of Noise Levels at Sources

Table 6.3.3-1 compiles data on noise levels of various construction equipment 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.

TABLE 6.3.3-1

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, Derrick	88
Crane, Mobile	83
Bull Dozer	85
Grader	85
Trucks	88
Excavator	81
Drilling machine	84
Wheel loader	79
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic tool	85
Pump	76
Generator	81
Horizontal directional drilling machine (HDD)	100

Source: U.S. EPA," Noise from Construction Equipment and Operations, Building Equipment and Home Appliances", NTID300.1, December 31, 1971

The data in ***Table 6.3.3-1*** clearly indicates that heavy machine (Crane) and truck generate the highest levels of noise at 88 dB(A). Therefore, crane and truck will be the most significant sources of noise at the power plant construction site during the durations of foundation work and building structure which may take about 1.5 months and 4 months, respectively.

D. Mitigation Measures to Reduce Noise at Sources

Possibilities are limited for reduction of noise levels of construction equipment and truck. The EPC contractor and the subcontractors may rent construction equipment and truck 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 and truck that has best noise performance.

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:

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) \quad \text{...1)}$$

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 2,220 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 and October 7-10,2015was 54.5-60.7 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 47.6 to 72.7 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 6.3.3-2 presents the calculated noise levels in Leq-24 hour and Leq-1 hour at the receptors if the noise levels at sources are 88 dB(A). The 88 dB(A) represents noise levels of heavy construction equipment and truck. It was assumed that noise sources would simultaneously operates. Therefore, the source noise levels will be slightly higher than the above figures. For examples, three heavy equipment will result in 92.77 dB(A) compared to 88 dB(A) for one heavy equipment.

The calculated ambient noise levels at the receptors clearly indicate that without control, the noise control targets will not be met in case low combine noise level at 1hr. Therefore, the construction noise at the site perimeter fronting the receptors will have to be reduced.

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.

Control Case

Table 6.3.3-2 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 between 85-90 dB(A), or about 11%. The EPC contractor will prepare a design of sound barrier using appropriate materials, and construct the sound barrier as 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 6.3.3-2*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

Considering, mitigation measure during construction period was provided with an installation of noise barrier at the construction site. Therefore, at all sensitive areas, noise from construction activities was decreased.

Noise level combination between the project activities and the maximum existing average sound level measured over the 24 hour period at the nearest receptor, Nga Pitat community (2.22 km from project site) would be 60.7-60.9 dB(A) which does not exceed the WHO ambient noise standard of 70 dB(A) for 24 hours noise exposure (***Table 6.3.3-2***).

The maximum of the different hourly noise level between combined construction noise and background noise at the nearest receptor location is 0.3-2.5 dB(A) which does not exceed the IFC Standard (2007) noise level of 3 dB(A) (***Table 6.3.3-2)***.

TABLE 6.3.3-2
CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR

Nga Pitat village

Receptor, r2	2,220	m
Noise source,r1	15	m
Log (r2/r1)	2.17	
Noise level at r2, Lp1	Source-20x(Log(r2/r1)	
Ambient noise level,Lp2	60.7 dB(A) Leq-24 hr.	
-Low	47.6 dB(A) Leq-1 hr.	
-High	72.7 dB(A) Leq-1 hr.	
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))	
Noise level of sources		
heavy equipment	88	92.77
truck	88	92.77
Assume 3 simultaneous operations		

PARTICULARS	NO CONTROL		CONTROL LEVEL			STANDARD
Impact-Leq-24 hr. LP0-ambient	60.7	60.7	60.7	60.7	60.7	
LP1-Source	92.8	92.8	80.0	85.0	90.0	
LP2-Effect of Source	49.4	49.4	36.6	41.6	46.6	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.7	1.6	1.6	1.7	
Combined Noise Level	61.0	61.0	60.7	60.8	60.9	70.0 [a/,b/]
Impact-Leq-1 hr High Combined Noise Level	72.7	72.7	72.7	72.7	72.7	
Increase	0.0	0.0	0.0	0.0	0.0	3.0 [c/]
Low Combined Noise Level	51.6	51.6	47.9	48.6	50.1	
Increase	4.0	4.0	0.3	1.0	2.5	3.0 [c/]

Management Measures

The following management measures should be implemented to complement the physical measures.

(1) 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.

(2) Speeds of vehicles in the construction site will not be more than 40 km/hr.

(3) Noise performance requirements of construction equipment will need to be clearly stated in contract specifications.

(4) Temporary sound barriers or shielding should be installed for non-mobile equipment.

(5) The EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period.

(6) The construction environmental management plan will need to include an efficient complaints redress procedure and an efficient corrective action procedure to address the none compliance of noise performance.

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 15 months. More significant during the site preparation and construction
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	**Medium**

The construction noise issue deserves medium control priority.

6.3.3.3 Vibration

Impacts of the Project on vibration will be an issue of concern only during the construction phase. Major cause of vibration is blasting activities for preparation of the dam foundation.

A. Sources

Potential sources of vibration in this Project include:

- Excavation works;
- Handling and transportation of excavated materials; and
- Movement of heavy vehicles on unpaved roads and surfaces.

Vibration is expected in the construction of the power plant and support facilities, and in transportation of materials and heavy equipment. However, the largest source of vibration would be at the power plant construction area. Nevertheless, measures for vibration control will also be necessary at the construction sites of all facilities.

B. Sensitivity of Receptors

The receptors of vibration will be the same receptors of construction noise.The closest receptor to the boil-off gas power plant construction site is Nga Pitat community. This village is located about 2.22 km south of the power plant site. This village has about 180 households. The most noise sensitive receptor in the village is Yay Wai Monastery and Nga Pitat School.

C. Predicted of Vibration Levels at the Receptors

Construction activities that may cause vibration impact which is dependent on types of machinery, construction method and distance of vibration receptor. Reference vibration level is calculated by using data from U.S. EPA which distance from machinery is 25 ft or 7.62 m (***Table 6.3.3-3***). Equation of vibration calculation is:

$$PPV_{equip} = PPV_{ref} \times \left(\frac{D_{ref}}{D}\right)^{1.5}$$

where PPV_{equip} = Peak Particle Velocity at various distances from machinery (in./sec.)

PPV_{ref} = reference vibration level at distance reference (inch/sec.)

D_{ref} = distance reference (25 ft or 7.62 m)

D = distance between machinery and sensitive receptor (ft or m)

TABLE 6.3.3-3

VIBRATION LEVEL FROM CONSTRUCTION MACHINERY AT 25 FT FROM SOURCE

Machinery Type	Peak Particle Velocity at 25 ft or 7.62 m. (inch/sec)
Pile Drive (Sonic)	0.734
Clam Shovel Drop (Slurry Wall)	0.202
Hydromill (Slurry Wall) (In Soil)	0.008
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003

Source : Federal Transit Administration (FTA), 2006, Transit Noise and Vibration Impact Assessment, P.12.13, available online at http://www.fta.dot.gov/documents/FTA_Noise and_Vibration_Manual.pdf

Due to none of piling activities during construction phase, therefore, assume the highest vibration level generator is large bulldozer which has particle velocity 0.089 inch/sec at 25 ft. The vibration levels are shown in ***Table 6.3.3-4***. According to the closest sensitive receptor, Nga Pitat village is the one which is approximately 2.22 km of distance from the project site. It is found that at 2.22 km the vibration level is 0.000018 inch/sec. According to Whiffin, A.C., and Leonard (***Table 6.3.3-5***) and DIN4150 (***Table 6.3.3-6***), human cannot feel and be harmed by this vibration level, so as cultural structure in the nearest community. The impact will be temporary and controlled by appropriate manner. Therefore, no significant impacts are expected.

TABLE 6.3.3-4

VIBRATION LEVEL OF CONSTRUCTION ACTIVITIES AT VARIOUS DISTANCES

Distance from the Project (meter)	Prediction Results of Vibration Level from Construction Activities (inch/sec)
1,000	0.000059
2,000	0.000021
2,200	0.000018
3,000	0.000011

TABLE 6.3.3-5

IMPACT OF VIBRATION TO HUMAN AND BUILDING

Max. velocity mm/sec (inchs/sec)	Human Impact	Building Structure Impact
0 - 0.15 (0-0.006)	Not noticeable to persons	No impact/damage on all structure type
0.15 - 0.3 (0.006-0.012)	Barely noticeable to persons	No impact/damage on all structure type
2.0 (0.079)	Noticeable to persons	Higher of vibration level result in damage of ancient building
2.5 (0.098)	Troublesome to persons if vibration in continuity	No risk on general building structure or architectural structure
5 (0.197)	Noticeable to persons in building (relate to the level that effect to persons on the bridge in short period)	Danger to architectural structure and general building without plaster wall and ceiling, in case of flexible wall/ceiling will result in small damage
10-15 (0.394-0.591)	Troublesome to persons if vibration in continuously and unacceptable for persons on the bridge	Vibration is higher than normal traffic vibration level which damages architectural structure and causes small damage on general structure.

Source : Whiffin, A.C., and Leonard, D.R., 1971. A Survey of Traffic Induced Vibration, Eng.

TABLE 6.3.3-6

DIN 4150 REGULATION OF VIBRATION TO BUILDING STRUCTURE

Peak Particle Velocity	Impact to Building
2 mm/sec (0.079 inch/sec)	Not danger to Ancient Building
5 mm/sec (0.197 inch/sec)	Initiation of damage on architectural structure
10 mm/sec (0.394 inch/sec)	Acceptable level for good residential building
20-40 mm/sec (0.787-1.575 inch/sec)	Acceptable level for industrial factory

Source : German Standards Organization, 1986, Vibrations in Building Construction, DIN 4150 pt3.

D. Mitigation Measures for Vibration

No mitigation measures will be required.

6.3.3.4 Wastewaters

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 70 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

During the construction period of about 15 months, storm runoff from the 34-acre project area could cause increased turbidity of the coastal waters near the project site. As the exposed area is only about 34 acres, the increased turbidity would be small considering the large coastal volume and intense mixing by wave actions.

The construction would require about 70 workers. A small volume of wastewater will be generated and could be disposed of in septic tanks. The final effluent will be drained into the coastal water through the storm sewer.

The seawater quality was good with high level of dissolved oxygen (> 4 mg/l) and very low heavy metal together with organic contamination (see ***Section 5.2.12***). Wastewater to be discharged from the boil-off gas power plant construction site may have some impacts on seawater quality and the marine ecosystem.

C. Estimates of Wastewater Volume

Domestic Sewage: The domestic wastewater was estimated at about11 m^3/day based on a per capita volume of about 150 liters/day.

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.[5]

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

[5]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*

rough estimate of the volume of wheel wash water using the following assumptions: (i) 2 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 40 m^3.

Surface Runoff: The volume of surface runoff will depend on the total daily amount of rainfall. For a daily maximum rainfall of 2,081 mm over the 13.76 ha (34 acres) construction site, the total volume of surface runoff will be 28,635 m^3.

D. Mitigation Measures for Waste Water Reduction at Sources

Domestic sewage and wash water will be appropriately treated and reused on site as much as possible to minimize the volume to be discharged into the sea.

Wash waters will be treated to remove suspended solids and neutralize, if necessary. The treated effluent will be reused on site as much as possible to minimize the volume to be discharged into the sea.

Storm water cannot be reduced and 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 if not treated will have a BOD load of about 30 kg/day based on a per capita BOD load of about 50 g/day. This amount of pollution load could be considered small comparing with the existing BOD load that makes the sea low in dissolved oxygen. However, the domestic sewage will be treated to minimize the BOD load to be discharged into the sea. For the BOD not exceeding 50 mg/l, the total BOD load discharged into the sea will be only about 1.5 kg/day. This pollution load is very small and will not have perceptible impacts on seawater quality and marine ecosystem.

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 about 0.33 m^3/day, it will not have significant impacts on the seawater. 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 sea water quality and marine ecosystem would be insignificant. Nevertheless, the surface runoff will be managed using established best practices.

Considering the low pollution load of the treated effluent discharged into the sea, the Project will not cause perceptible change in the seawater quality. Consequently, the receptors-the marine ecosystem-would not be sensitive to the discharge of treated effluent from the construction site into the sea.

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 open sea or nearby drainage channels, if exist.
- The power plant construction site should be surrounded by temporary fences to limit the amount of sediment that could be washed from the construction area during the raining time into the sea.
- 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 discharge of surface runoff into the open sea.
- The collected storm water will be drained into a retention pond for removal of suspended solids before discharging into the sea or a nearby drainage channel, if exist. After the construction, the retention pond will be retained and used for wastewater management during the operational phase.

Domestic Wastewater

- Toilet wastes will be separated from grey water or salvage.
- Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond.
- Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. The volume of toilet wastes is estimated at about 20% of the total volume of domestic wastewater, or about 3 m^3/d. The septic tank effluent (seepage) will be discharged into the retention pond. Alternatively, toilet wastes and grey water could be treated in a package sewage treatment plant.
- Grey water will be discharged into the retention pond.
- The retention pond will be designed as an oxidation pond with a hydraulic retention time of about 7 days.

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 sea water quality and marine ecosystem 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 15 months. More significant during the site filling period of about 1.5 months and during the concreting work period of about 4 months.
Impact extent	Mainly on the sea of the effluent discharge point.
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.3.3.5 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, steel works, piping 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, remnants of steel bars and beams, packaging materials, broken roofing materials and tiles, and remnants of pipes, glasses, and other inert building materials.

(2) ***Non-construction waste***: Includes wastes generated in worker camps, canteens and offices 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 6.3.3-7*** below. The best rates of the three references are similar, i.e. about 1.9-1.963 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 1.5 acres of land for the boil-off power plant block Assuming that this area will be concrete floor, the total amount of construction wastes to be generated in the construction was estimated at 120 tons. For the construction period of about 15 months, the average daily amount of waste would be about0.32 tons/day based on 25 construction days per month.

TABLE 6.3.3-7

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/100m^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 70 people will be working on the Project site. Assuming that all construction personnel will live on site, each will generate about 0.8 kg/day.

The total amount of non-construction wastes was estimated at about 56kg/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;
- Soil contaminated with toxic or hazardous pollutants
- 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;
- Drums and containers that once contained the items listed above;
- Mercury containing wastes such as fluorescent bulbs, broken mercury switches, batteries, or thermostats
- Other items that may have inseparable hazardous constituents.

The amount of hazardous wastes could be roughly estimated at 1% to 2% of the total amount of wastes. This figure is used for estimating the amount of hazardous wastes in the residential construction. However, it may be used to give a rough idea on the magnitude of the hazardous waste issue.

At 1% of the total amount of wastes, the total amount of hazardous waste was estimated at about 3.2 kg/day.

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 five 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 off-site construction

The benefits of off-site factory production in the construction industry are well documented and include the potential to considerably reduce waste especially when factory manufactured elements and components are used extensively. Its application also has the potential to significantly change operations on site, reducing the amount of trades and site activities and changing the construction process into one of a rapid assembly of parts that can yield many benefits including:

Off-site construction is one of a group of approaches to more efficient construction sometimes called Modern Methods of Construction (MMC) that also include prefabrication and improved supply chain management. Technologies used for off-site manufacture and prefabrication include light gauge steel framing systems and modular and volumetric forms of construction which offer great potential for improvements to the efficiency and effectiveness of construction. To assess the suitability of off-site construction, design teams should consider the following questions:

- Can the design or any part of the design be manufactured off site?
- Can site activities become a process of assembly rather than construction?

3) 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.

4) 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'.

5) 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 off 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 15 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

6.3.3.6 Road Traffic

A. Sources

During the construction period of 15 months, the construction of boil-off gas power plant and facilities will necessitate the need for transportation of construction wastes, construction materials, and plant equipment. Consequently, traffic loads will be increased on existing roads within the study area, ITD coastal road and Nga Pitat road, the access road to the power plant construction site. It is expected that most construction personnel will stay in camps within the premise of the construction sites. 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

The impact areas will be ITD coastal road, and the junction of Nga Pitat Village to the power plant site;

ITD coastal road-This road within the study area is the road along the coast linking the Project site to Nga Pitat Village and Dawei City. The traffic load on this road is currently in the range of 88 to 89 vehicles per day. The majority of vehicles are motorcycles (see ***Section 5.4.8).*** The traffic condition is similarly all days. The carrying capacity of this road is 2,000, while the highest average traffic volume is 7.676 PCU/hr (see ***Table 6.3.3-8***).Most land areas along this road are populated with houses and industrials.

Nga Pitat road-The access road is rural road in Nga Pitat Village. Existing condition of this road is unpaved laterite road.

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 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 = 13.76 ha
- Thickness of concrete= 8 inches
- Concrete mix= 1:2:4

The calculation results are given in ***Appendix 6C.*** The key findings are:

Total weight of cement	11,686	tonnes
Total weight of sand	24,864	tonnes
Total weight of coarse aggregate	49,727	tonnes
Total weight of materials	86,277	tonnes

If the concrete works will take 4 months, the number of truck trips will be only about 4 trips/hour on average.

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 land filling period is extended to 120 days.

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.
- Minimize traffic congestion on Nga Pitat Road during the construction period

F. Predicted Impacts

As indicated by the V/C ratios presented in ***Section 5.4.8*** traffic on ITD Coastal Road was congested at Station TC1 and was light at Station TC2. The transportation of fill material will increase the existing traffic loads by about 125 PCU/hr. The V/C ratio at TC1 and TC2 will be increased as shown in ***Table 6.3.3-8***. The traffic at TC1 and TC2 will not be seriously affected.

TABLE 6.3.3-8
IMPACTS OF TRANSPORT OF FILL MATERIALS ON EXISTING TRAFFIC

PARTICULARS	TC1	TC2
Existing maximum average traffic, PCU/hr	7.676	3.938
Carrying capacity, PCU/hr	2,000.00	2,000.00
Existing V/C ratio	0.0038	0.0020
Existing traffic condition	Very good traffic flow	Very good traffic flow
During the site filling period		
Truck trips per day	497	497
Truck trips per hour based on 10 hrs	49.7	49.7
Truck traffic in PCU equivalent/hr (PCU for truck-2.5)	124.25	124.25
Total traffic during the site filling period, PCU	256.18	128.19
Carrying capacity, PCU/hr	2,000.00	2,000.00
New V/C ratio	0.1281	0.0641
Expected traffic condition	Very good traffic flow	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 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 Coastal 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:
  - Real-time monitoring of truck position, speed, route and performance in relation of traffic conditions and schedule requirements;
  - 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 transporting heavy and large plant equipment will have to be directed by a traffic police car.
- Post warning signs along the right of way where the access road construction takes place.

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 work sites to manage the impacts on car parking in the vicinity of worksites and help avoid project parking in local streets;

Pedestrians and Cyclists

- Maintain safe pedestrian and cycle access near construction works (particularly for elderly and children), including to community facilities, such as schools, monastery, open space, and particularly:
- 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 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 aboul5 months. More significant during the site filling period of about 1.5 months.
Impact extent	Mainly on ITD coastal road and along the routes from the material sources to the power plant construction site
Impact magnitude	Very good traffic flow at TC1 and TC2
Impact severity	Insignificant
Control priority	Medium

6.3.3.7 Impacts on Local Communities

The construction activities could have some impacts on local communities, mainly on the following aspects: (i) local economy; (ii) livelihood (iii) infrastructure and services; (iv) culture and tradition; and (v) community health, safety and security.

(i) Local Economy

A. Impacts

The Project construction will require about 70 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. Assuming a monthly wage of US$100[6] and 80% of income to be spent locally[7], the Project construction will generate a cash flow of about US$ 5,600 per month together with multiplier effect. 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. Nga Pitat, Nyaung Bin Seik and Mudu.
- 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:

[6] Calculation is based on findings from household survey in the study area, October 2015.
[7] Estimation is based on household survey in the study area in October 2015. Finding shows that income of the locals was mostly spent with no saving.

- 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 3 villages and one community).

(ii) Livelihood

A. Impacts

The major livelihood effect is adjust fishing ground activities in the new alternative fishing ground and boatyard area. In the early stage, the local people will obstruct to adjust fishing ground activities in the new area. Developer must be support and training local peoples until they can adjust in the new area.

The significance of the impacts is considered moderate, once the suggested measures are implemented.

B. Mitigation Measures

- Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase

- Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village).

(iii) 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 power plant construction site will have some impacts on the main road which link between Muangmagan to the project site, especially location near the entrance of Nga Pitat Village, and the coastal road (see ***Section 5.4.8*** and ***Figure5.4.8-1***). An increase of traffic volume will affect to the locals, especially Nga Pitat villagers. 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 and Muangmagan station 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 (see ***Section 5.4.2***). 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.

(iv) 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.

(v) 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 6.3.3.1, 6.3.3.2*** and ***6.3.3.6.*** 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.

6.3.4 Risk Assessment

It is study in case of opportunity of proposed project site to get impact from failure to comply with the environmental requirements and public opposition to the project.

6.3.4.1 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 boil-off gas power plant and associated facilities before handling over to the Project Proponent (iv) natural disaster eg. Cyclone and Tsunami. 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.

6.3.4.2 Risk Identification

(1) Uncertain Event

During the construction phase, three uncertain events or three 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.

(2) Natural Disaster

Dawei and proposed project is location potentially subject to cyclone and tsunami occurrence due to

- The location of project site related to cyclone in the Bay of Bengal
- According to seismic Hazard Map from Meteorological and Hydro Logical Department, Myanmar, the Boil-off power plant is classified as a Moderate Seismic Zone (Probable manage of ground acceleration 0.1-0.15g). With the location near Indian Ocean, the Tsunami may occur again similar to the situation in 2004 cause by earthquake.

6.3.4.3 Risk Assessment

The two identified risk events could be caused by the following:

Risk 1-Cyclone Situation

According to study from Royal Haskoning (2015), the main dataset that is used in this study is a JTWC data set containing cyclone data between 1969 and 2011. Since 1969 detailed information of tropical storms was gathered by JTWC. An overview of the very severe and super cyclonic storms that have occurred in this period is depicted in ***Figure 6.3.4-1***. In this figure the starting point of each track is indicated with a triangle marker. The black dot indicates the location of Dawei and the two black circles have a radius of respectively 100 and 200 km.

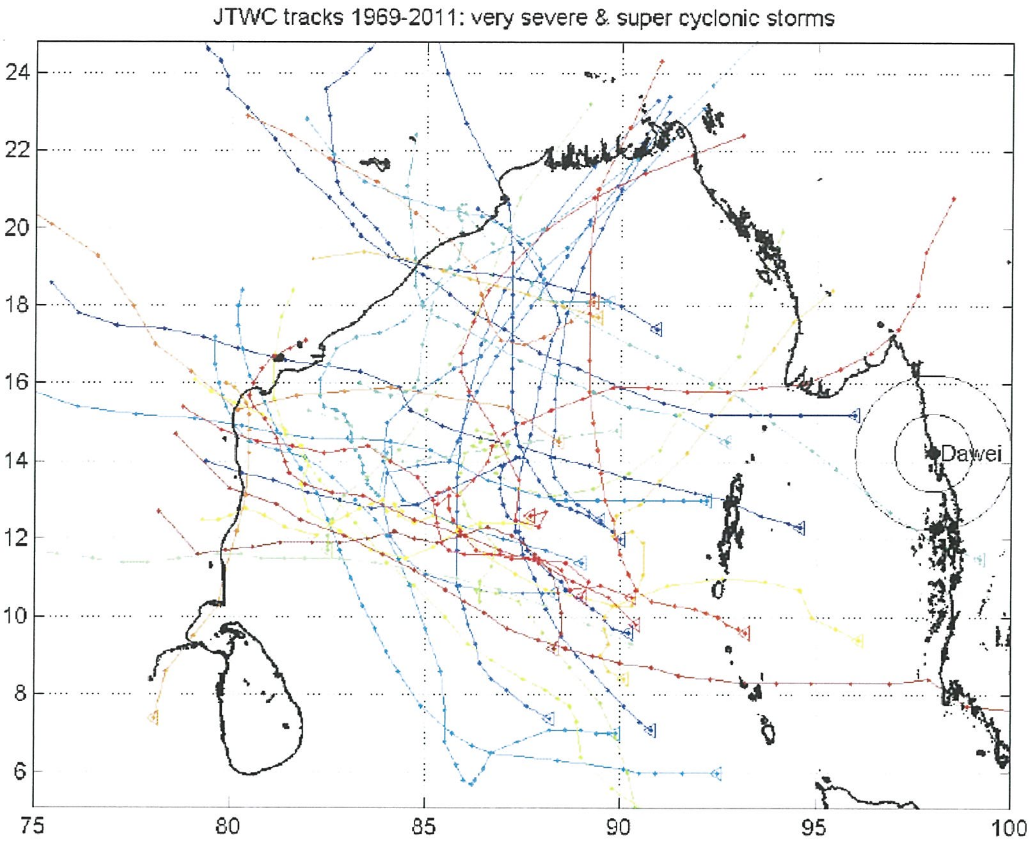
Based on the historical storms presented in ***Figure 6.3.4-1***, the following observations can be made:

- No cyclone in the period 1969 - 2011 made landfall in Dawei;
- Most of the cyclones are generated west of Dawei and move away from the site;
- The smallest distance between Dawei and a cyclone was 200 km.
- The probability of cyclone occurrence at Dawei is considered to be < 1 in 100 years for storms with a lower intensity that travel over land from the South China Sea.
- This would not motivate capital investments in the structures of the Boil-off Power Plant.

Risk 2-Tsunami

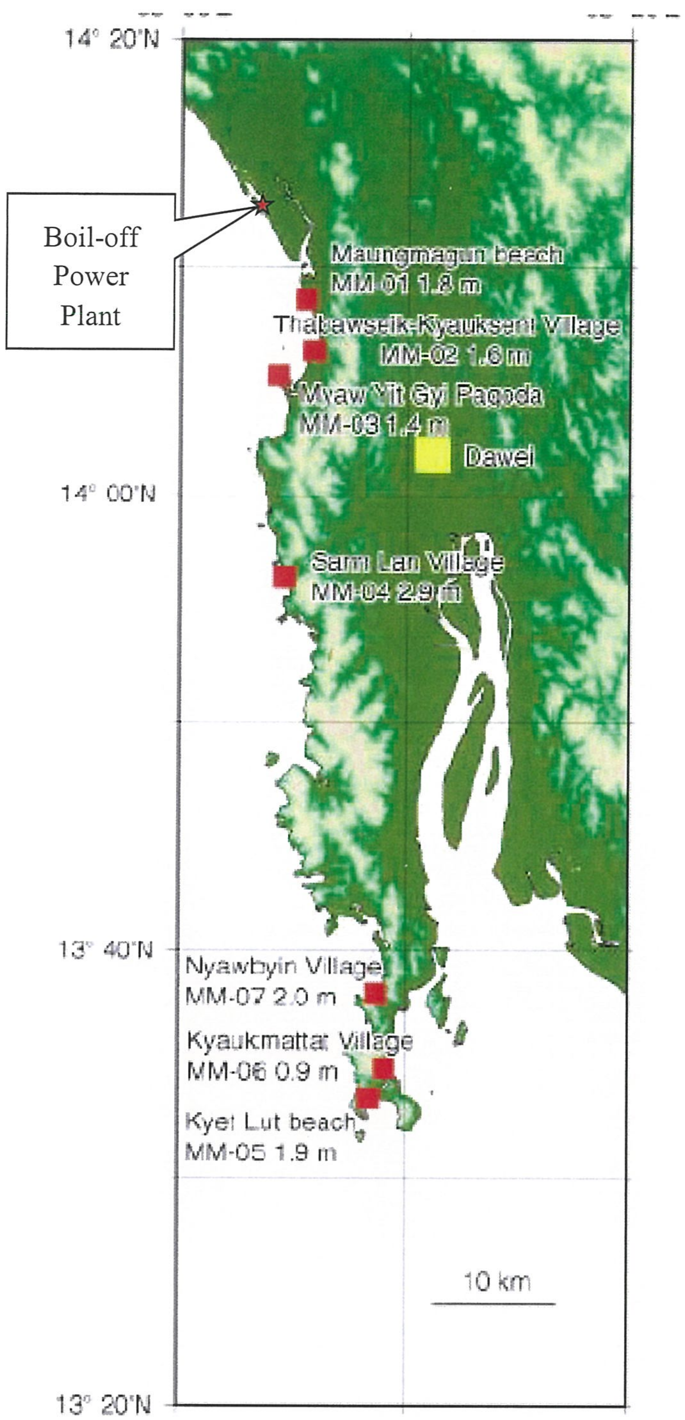
According to the result from "Report on Post Tsunami Survey along the Myanmar Coast for the December 2004 Sumatra-Andaman Earthquake, 2005", The study covered on Muangmagan beach. This area locate near to small port site (***Figure 6.3.4-2***). The study can summarize as follow:

- The tsunami height during 2004 at Muangmagan beach approximate 1.8 m,
- No adverse affected on the house and shop near Muangmagan beach. The effected only on increase water level on the beach along Muangmagan.



Source: Royal Haskoning (2015)

FIGURE 6.3.4-1: CYCLONES (VERY SEVERE AND SUPER CYCLONIC STORMS) THAT HAVE OCCURRED IN THE BAY OF BENGAL FROM 1969 TO 2011. BLACK DOT IS DAWEI. TWO BLACK CIRCLES HAVE A RADIUS OF RESPECTIVELY 100 AND 200 KM.



Source: Report on Post Tsunami Survey along the Myanmar Coast for the December 2004 Sumatra-Andaman Earthquake, 2005

FIGURE 6.3.4-2: MAP SHOWING TSUNAMI MEASUREMENT AT DAWEI AREA

According to the risk assessment results, Figure 6.3.4-3 shows a risk matrix for the construction phase.

Both Risk 1 and Risk 2 is considered minor risk as it would have a low level of likelihood of occurrence and a high level of impacts.

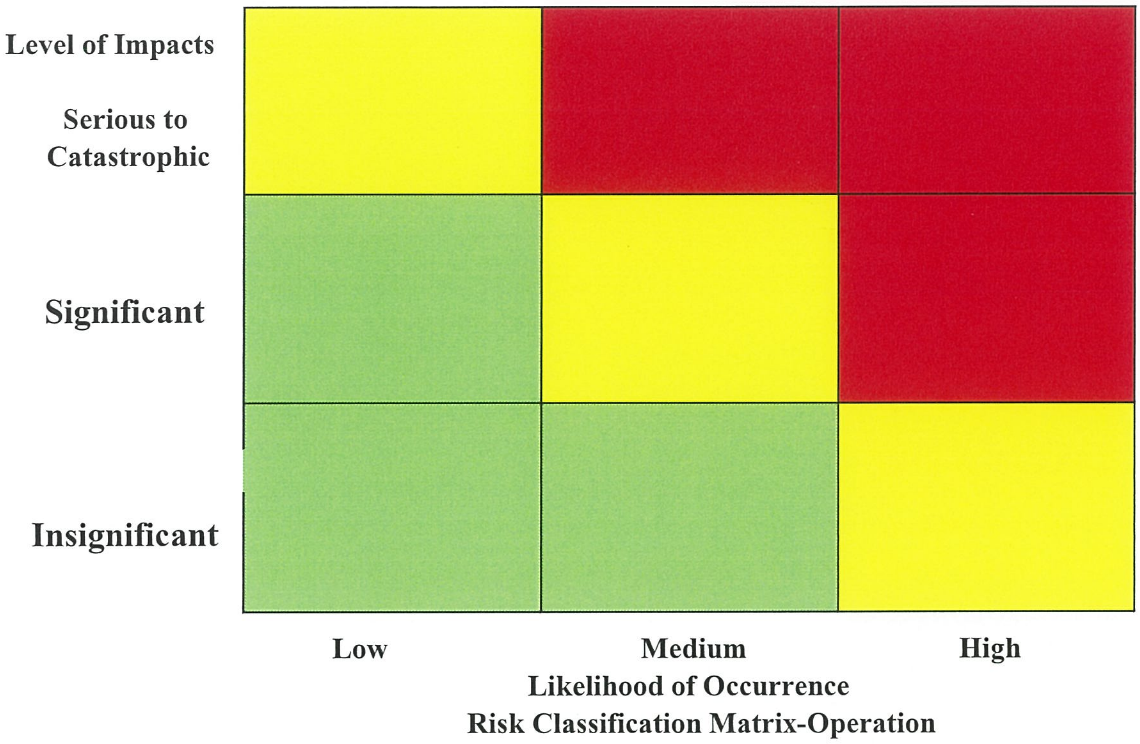


FIGURE 6.3.4-3 : RISK MATRIX FOR THE CONSTRUCTION PHASE

6.3.4.4 Risk Mitigation Measures

Even through very low effect from cyclone and tsunami to the small port and facilities, 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 as follow:

- Prepare the detail design of small port structure to withstand the cyclone and tsunami.
- Establish and regularly monitor the warning system for tsunami and cyclone.
- Set the safety zone for evacuation of staff and people in case of tsunami and cyclone.
- Set up the evacuation plan for tsunami and cyclone and train all staff in small port.

The measures will be implemented through contractual arrangements and stakeholder engagement. The detail of emergency plan are described in EMP Report.

6.3.4.5 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 analyzed 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.

The monitoring and evaluation should cover the following risk triggers.

Provide training Program about emergency plan and monitor results of pre-test and post-test of worker (at least once in year).

(3) Reporting and Corrective Actions.

The process for reporting and corrective actions in environmental management will also be applied to the environmental risk management.

6.4 OPERATIONAL PHASE

6.4.1 Nature of Project Operation

The operation of boil-off gas power plant is cleaner and simpler than a coal-fired power plant. For this Project, the following features of power plant operation which have environmental implications are noted:

(1) 15 MW Power plant will be utilized to generate electricity supply through boil-off gas, which is the supplementary benefit from LNG terminal.

(2) Major and other related components include:

- Engine hall
- Electrical equipment Building
- Tank yard and switch yard, and;
- Support facilities including compact workshop and warehouse, administration and social facility building, guardhouse, etc. These support facilities will be shared by the LNG terminal project.

(3) Boil of Gas (BOG) fuel will be transported from the LNG terminal through a underground gas pipeline to the gas metering and regulating station of the power plant.

(4) No gas storage tanks will be provided.

(5) 2 units of gas engines with low NOx burners will be used.

6.4.2 Relevant Environmental Issues

Based on information on the Project operation and Project area, and on established knowledge of environmental aspects of typical boil-off gas power plants, during the operational phase of this Project, the power plant management will have to manage the following issues:

(1) Emissions of air pollutants generated by combustion of BOG, including NOx.

(2) Excessive noise of gas engine generator

(3) Wastewaters from boil-off gas power plant personnel, wash water and storm water.

(4) Liquid waste from lube oil and

(5) Occupational health and safety of boil-off gas power plant personnel, particularly excessive noise and heat in the working areas inside and outside the power plant.

(6) Public safety of communities near the boil-off gas power plant.

(7) Impacts on livelihood of communities living near the power plant.

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 power plant 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 power plant together with a rather small number of about 70 workers will therefore have no direct impacts on the local cultural and archaeological heritages.

6.4.3 Impact Assessment

6.4.3.1 Gas Emissions/ Greenhouse Gas

(1) Gas Emission

A. Sources

During the operational phase of the Project, the boil-off gas power plant will continuously emit air pollutants generated by combustion of BOG in gas engines. For typical boil-off gas power plants, the main air pollutant in the flue gas is nitrogen oxides (NOx). Sulfur dioxide (SO_2) and particulate matters are not significant due to no content of sulfur and very low particulate content.CO_2 is not an air pollutant but it receives attention due to its global warming effect.

B. Receptors

Gaseous emissions from the boil-off gas 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 864 household, were identified, including the air quality sampling stations A1 at Mudu Village and A2 at Nga Pitat Village.

C. Estimates of Emission Loads

The emission loads of NOx (as NO_2) were estimated under the no-control scenario.

(1) Emission Load of NO_2

NOx formed in the combustion of natural gas will be thermal NOx, i.e. NOx naturally formed in high temperature combustion. Nitrogen gas in the natural gas will not contribute to the formation of thermal NO_2. 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_2 emission.

The emission load of NO_2 was estimated from the NO_2 value of the emission guaranteed by the gas engine manufacturer. For gas engine, the guaranteed NO_2 value is 120 ppmv at standard pressure and temperature (STP) and 7% excess O_2. From the Technical Feature of Boil-off Power Plant in Chapter 4 describe that fuel consumption is approx. 8,000 btu/kWh.

(2) Volume of Stack Gas

Based on the information from manufacturer information (Wartsila) on Boil-off Gas Power Plant type W 16V34SG D indicated Total flue gas volume actual is 48 al Am^3/s. with the end of stack temperature approx. 360°C.

D. Mitigation Measures for Pollutant Reduction at Sources

The Project adopts the following measures for reduction of pollutants at sources:

- Adopt the low NOx burner technology to minimize NOx emission.

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. The two most common types of low NOx burners being applied to natural gas-fired boilers are staged air burners and staged fuel burners.

E. Control Targets

The gaseous emission control will aim at complying with IFC's EHS Guidelines and National Environmental Quality (Emission) Guideline (Final Draft, 2015) for Thermal Power Plants relevant and to: (i) emission standards; (ii) ambient air quality standards; and (iii) the emissions should not contribute more than 25% of the applicable ambient air quality standards to allow additional future sustainable development in the same air shed. The standards are presented again herein for ready reference (***Table 6.4.3-1***).

TABLE 6.4.3-1

EMISSION STANDARDS FOR NATURAL GAS FIRED RECIPROCATING TURBINE

Combustion Technology	Parameter	Standard[1/2/]
Reciprocating engine	Nitrogen Oxides (NO_X)	200 mg/Nm^3 at 15% O2

Note : [1/] IFC Environmental, Health, and Safety Guidelines Thermal Power Plants, 2007

[2/] National Environmental Quality (Emission) Guideline (Final Draft, 2015) for Thermal Power Plants

It should be noted that SO_2 and particulates is not content in natural gas. Therefore, the Consultant checked and prepared follow WHO ambient air quality standard adopted by IFC and National Environmental Quality (Emission) Guideline, Myanmar and as shown in ***Table 6.4.3-2***.

TABLE 6.4.3-2

WHO AMBIENT AIR QUALITY STANDARD ADOPTED BY IFC

Parameter	Averaging Period	Guideline Value[1/] (μg/m³)
Sulfur dioxide (SO_2)	24-hour[1]	125 (Interim target-1) 50 (Interim target-2) 20 (guideline) 150 (guideline)[2/]
	10 minute[1]	500 (guideline)
	1-year[1]	80 (guideline)[2/]
Nitrogen dioxide (NO_2)	1-year[1,2] 1-hour[1,2] 24-hour[1]	40 (guideline) 200 (guideline) 150 (guideline)[2/]
Particular Matter PM10	1-year[1,2]	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour[1,2]	150 (Interim target-1) 100 (Interim target-2) 30 (Interim target-3) 50 (guideline)

Source: 1) General Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality, 2007

2) General Guideline of Air Emission, National Environmental Quality (Emission) Guidelines (Final Draft), 2015, Myanmar

F. Prediction of Impacts of the Gaseous Emissions

The impacts of gaseous emissions from the power plant on ambient air quality within the study area were investigated for NO_2. The predictions were based on the basic data in ***Table 6.5-3***.

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 resolutionfor 1.5-3.0 km distance from fence line
- 500 m grid resolutionfor 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 inputs for AERMOD were taken from the Feasibility Study Report and are presented in ***Tables 6.4.3-3***. 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

TABLE 6.4.3-3
EMISSION DATA USED IN AIR QUALITY MODELING

Emission Data	Unit	1 (Stack #1)	2 (Stack #2)
Coordinate of Stack (UTM (WGS84) Zone 47N)		1572031N, 398019E	1572038N, 398029E
Stack Height	m	27.5	27.5
Stack Diameter	m	1	1
End of Stack Velocity	m/s	30.545	30.545
End of Stack Temperature	deg C	345	345
Pressure Actual	Bar	Ambient pressure	Ambient pressure
%H_2O Actual	%	11.1	11.1
%O_2 Actual	%	10.2	10.2
Total Flue Gas Volume	Am^3/s	23.99	23.99
Concentration (@15% O_2, dry)			
NOx	mg/Nm^3	120	120
SO_2	mg/Nm^3	22	22
PM-10	mg/Nm^3	22	22
Emission Rate			
NOx	g/s	2.04	2.04
SO_2	g/s	0.37	0.37
PM-10	g/s	0.37	0.37

(e) Studied Cases

This case is run with three case of concentration of NO_2 from stack include

Case 1: Stack 1

Case 2: Stack 2

Case 3: Combination of Stack 1+ Stack 2

(f) Calculation Results

The calculation results for each stack height in ***Appendix 6D*** are summarized in ***Tables 6.4.3-4, 6.4.3-5*** and ***Tables 6.4.3-6*** below;

The following conclusions may be drawn from the calculation results:

1) The emission of SO_2 will have insignificant impacts on ambient air quality at all three cases.

2) The emission of NO_2 will have insignificant impacts on ambient air quality at all three cases which is below the permissible maximum of 200 microgram/Nm^3 at 1 hr, 150 microgram/Nm^3 at 24 hr and 40 microgram/Nm^3 at 1 year and will not exceed the 25% limit recommended by IFC.

3) The emission of PM-10 will have insignificant impacts on ambient air quality at all three cases.

G. Impact Mitigation Measures

The reduction of NO_2 at source using 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.

H. Evaluation of the Significance of Impacts

The impact of gaseous emission of the power plant on ambient air quality was evaluated as shown below. 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
Impact extent	Mainly on the receptors about 450 m from the power plant site
Impact magnitude	Insignificant
Impact severity	Insignificant
Control priority	High

TABLE 6.4.3-4
SUMMARY OF AIR QUALITY MODELING RESULTS OF STACK NO.1

Results	BOIL-OFF NO.1		
	NO_2 (µg/m^3)		
	1-hr	24-hr	1-yr
In the entire study area			
-maximum incremental increase in concentration	8.48	3.02	0.39
-% of ambient air quality standard	4.24	2.01	0.98
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	42.48	21.02	0.39
-% of ambient air quality standard	21.24	14.01	0.98
In only sensitive areas			
-ranges of concentrations	1.66-2.26	0.14-0.18	0.01-0.02
-% of ambient air quality standard	0.83-1.13	0.09-0.12	0.03-0.05
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	35.66-36.26	18.14-18.18	0.01-0.02
-% of ambient air quality standard	17.83-18.13	12.09-12.12	0.03-0.05
Standard	**200**	**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

TABLE 6.4.3-5
SUMMARY OF AIR QUALITY MODELING RESULTS OF STACK NO.2

Results	BOIL-OFF NO.2		
	NO_2 (µg/m^3)		
	1-hr	24-hr	1-yr
In the entire study area			
-maximum incremental increase in concentration	8.50	3.05	0.39
-% of ambient air quality standard	4.25	2.03	0.98
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	42.50	21.05	0.39
-% of ambient air quality standard	21.25	14.03	0.98
In only sensitive areas			
-ranges of concentrations	1.66-2.24	0.14-0.18	0.01-0.02
-% of ambient air quality standard	0.83-1.12	0.09-0.12	0.03-0.05
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	35.66-36.24	18.14-18.18	0.01-0.02
-% of ambient air quality standard	17.83-18.12	12.09-12.12	0.03-0.05
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
[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

TABLE 6.4.3-6

SUMMARY OF AIR QUALITY MODELING RESULTS OF COMBINATION OF STACK NO.1 AND 2

Results	BOIL-OFF NO. 1+2		
	NO_2 (µg/m^3)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	16.97	6.07	0.70
-% of ambient air quality standard	8.49	4.05	1.75
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	50.97	24.07	0.7
-% of ambient air quality standard	25.49	16.05	1.75
In only sensitive areas			
-ranges of concentrations	3.31-4.50	0.27-0.36	0.02-0.04
-% of ambient air quality standard	1.66-2.25	0.18-0.24	0.05-0.10
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	37.31-38.50	18.27-18.36	0.02-0.04
-% of ambient air quality standard	18.66-19.25	12.18-12.24	0.05-0.10
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
[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

(1) Greenhouse Gas

A. Sources

Main Source of greenhouse gas emission during operation of Project facilities will mostly result from Stack Emission from Boil-off Power Plant.

B. Sensitivity of Receptors

The receptors of greenhouse gas will be workers and communities near the project site, including Nga Pitat village.

C. Predicted Greenhouse Gas

The prediction of greenhouse gas from vessel can be calculated by formula which refer from The Interstate Natural Gas Association of America (INGAA), 2005 and Guideline for National Greenhouse Gas Inventories, The Intergovernmental Panel on Climate Change (IPCC), 2006

The formula can described as follow:

GHG Emission (tonne CO_{2eq}) = Fuel Consumption x Fuel Heating Value x Emission Factor x Global Warming Potential Value

Total Fuel Consumption (LNG) for 15 MW Boil-off Power Plant approx. 1,08,539.20 MMBtu/yr.

Emission Factor were use from 2006 IPCC Guidelines for National Greenhouse Gas Inventories as showed in Table below:

Parameter	Emission Factor (kg/TJ)
CO_2	56,100
CH_4	1
N_2O	0.1

Source: Table 2.2 Default Emission Factors for Stationary Combustion in the Energy Industries, 2006 IPCC Guideline for National Greenhouse Gas Inventories.

4) Global Warming Potential Value were use from Global Warming Potential (GWP), the Fourth Assessment Report (AR4) in 2007, IPCC, 2007 as showed in Table below:

Parameter	Global Warming Potential Value
CO_2	1
CH_4	25
N_2O	298

According to these information, the calculation results of greenhouse emission approx. 0.06 Mt CO_2 eq. (Table). The calculation results is very less or 0.06% when compare with Total GHG Emissions Excluding Land-Use Change and Forestry in Myanmar (98.93 MtCO_2 eq.)[8]. Therefore, the operation of Boil-off Power Plant project will very less effect in term of release of greenhouse gas emission.

However, Due to the operation of the project is long term, the mitigation measure should be proposed to ensure the development of this project will be control and minimize effect from release of greenhouse gas emission.

TABLE 6.4.3-7

ESTIMATE GREENHOUSE GAS EMISSION FROM 15 MW BOIL-OFF POWER PLANT PROJECT

Component		Value	Remark
Natural Gas Consumption	Btu/kWh	8,000.00	
	MMBtu/yr	**1,085,539.20**	Estimation from project capacity output about 15.49 MW/day
	TJ/yr	1,146.19	
CO_2	EF (kg/TJ)[1/]	56,100.00	
	Global Warming Potential [2/]	1	
	tonne CO_{2eq}/yr	64,301.16	
CH_4	EF (kg/TJ)[1/]	1	
	Global Warming Potential [2/]	25	
	tonne CO_{2eq}/yr	28.65	
N_2O	EF (kg/TJ)[1/]	0.1	
	Global Warming Potential [2/]	298	
	tonne CO_{2eq}/yr	34.160	
Total (Mt CO_{2eq}/yr)		**0.06**	

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

[8] CAIT Climate Data Explorer. 2015. Washington, DC: World Resources Institute. Available online at: http://cait.wri.org. Access on March 2016.

G. Recommended Mitigation Measures

- The recommendation same as for gas emission control

H. Evaluation of the Significance of Fugitive Dust Impact

The impact of greenhouse gas impact on the nearby communities is evaluated as follows:

Impact category	Direct impact
Impact duration	Throughout the operation period of about 50 years plus extension 25 years.
Impact extent	Local air pollution, mainly confined to within the project site
Impact magnitude	Small magnitude even without control at sources
Impact severity	Minor, insignificant impact on the receptors
Control priority	Medium

The greenhouse gas issue should receive medium control priority.

6.4.3.2 Ambient Noise

During the operation phase, the impact from operation of boil-off power plant is negligible. The reason is developer design the noise level at 125 m. (outside the guard house) about 65 dB (A). In addition, the results from noise calculation as shown at ***Table 6.4.3-8*** described that the noise level both 24 hr and 1 hr from operation of project combine with ambient noise level at closet village (Nga Pitat, 2.22 km) still within standard. Therefore, the noise impact from project operation to village is negligible.

Mitigation Measure

No mitigation measures will be required.

TABLE 6.4.3-8

CALCULATIONS OF AMBIENT NOISE LEVELS DURING OPERATION PHASE

Nga Pitat village

Receptor, r2	2,220	m
Noise source,r1	125	m
Log (r2/r1)	1.25	
Noise level at r2, Lp1	Source-20x(Log(r2/r1)	
Ambient noise level,Lp2	60.7 dB(A) Leq-24 hr.	
- Low	47.6 dB(A) Leq-1 hr.	
-High	72.7 dB(A) Leq-1 hr.	
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))	
Noise level of sources at 125 m from the boundary		
Control level	65.0	

PARTICULARS	NOISE LEVEL	**STANDARD**
Impact-Leq-24 hr. LP0-ambient	60.7	
LP1-Source	65.0	
LP2-Effect of Source	40.0	
LOG(LP0)	1.8	
LOG(LP2)	1.6	
Combined Noise Level	60.7	70.0
Impact-Leq-1 hr High Combined Noise Level	72.7	
Increase	0.00	3.0
Low Combined Noise Level	48.3	
Increase	0.70	3.0

6.4.3.3 Wastewaters

A. Sources

Waste Waters of the boil-off gas power plant will come from the following sources:

- Domestic sewage
- Plant wash water
- Strom water

B. Sensitivity of Receptors

The wastewater from the boil-off gas power plant and powerhouse cleaning will be treated to meet the national effluent standard before being discharged into the sea. Most of the treated effluent will be reused in the boil-off gas power plant site. The remaining volume will need to be discharged into the sea. Wastewater from consumption of staff (8 operators) will be treated on-site by septic tank. The storm water will be drained into storm sewer into the coastal water.

Andaman Sea is currently good quality with high level of dissolved oxygen and very low heavy metal together with organic contamination (see ***Section 5.2.12***). Wastewater to be discharged from the boil-off gas power plant site may not have impacts on seawater quality and the marine ecosystem.

C. Estimated Wastewater Volume

During operational period, 8 operators are expected to be working in the power plant. Water consumption is estimated at 150 liter/person/day, therefore, total water consumption is approximately 1.2 m^3/day. Consequently, wastewater, which is estimated at 80% of water consumption, is generated at a rate of 0.96 m^3/day. Most of wastewater is originated in toilet and bathroom and will be initially treated in septic tank.

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 8 persons would be about 0.4 kg/day. The contribution of the domestic sewage will be very small.

D. Mitigation Measures for Waste Water Reduction at Sources

The figures represent the possible minimum volume. It is not technically feasible to reduce the volume of these wastewaters 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 Standard unit
- Temperature increase, <2 °C above the maximum
- TSS <50 mg/l
- Oil and grease <10 mg/l
- Total residual chlorine <0.2 mg/l
- BOD5* <50 mg/l
- COD <250 mg/l

Remark:* The amount of dissolved oxygen consumed in five days by biological processes breaking down organic matter.

The above standards are prescribed in the National Environmental Quality (Emission) Guidelines (Final Draft), 22 April 2015 adopted from Pollution Prevention and Abatement Handbook, 1998.

F. Predicted Impacts on the Receptors

The domestic sewage from the boil-off gas power plant will have negligible impact on the dissolved oxygen level of the sea considering that:(i) the domestic sewage will be generated by not more than 8 staff of the power plant compared with the catchment area of the sea; and (ii) the high dilution volume of the sea. Therefore, the domestic sewage, even without treatment, will not have any impact on the seawater quality and the marine ecosystem.

The remaining two categories of wastewaters are inorganic in nature containing various inorganic compounds naturally present in water. They will have negligible impact on the pH level of the coastal water considering the high dilution volume of the seawater. Therefore, the inorganic wastewaters will not have any impacts on the coastal water quality and the marine ecosystem.

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 combined with other wastewater streams for further treatment.

(b) Domestic sewage will be treated in a small treatment plant. The treated effluent will be combined with the effluents from (a) and (b).

(c) A drainage system will be provided to collect surface runoff and storm water discharged into the sewers or directly into the coastal water. Surface runoff from open areas contaminated by oil will be separately drained into an oil separator before discharging into the main drainage system.

H. Evaluation of the Significance of Impacts

The impact of the treated effluent discharge on the costal quality and marine ecosystem was 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 boil-off gas power plant
Impact extent	Mainly on the sea of effluent discharge point.
Impact magnitude	Very small
Impact severity	Insignificant
Control priority	Medium

6.4.3.4 Waste

A. Sources

During the operation phase, the following waste will be generated and need to be controlled:

- Lubricating oil from maintenance of the engines
- Waste lube oil and spent coolant from maintenance of the power plant

B. Sensitivity of Receptors

Routine and scheduled maintenance of the two engines of the boil-off gas power plant will generate a small volume of waste lubricating oil. Maintenance of the power plant will generate waste lube oil and spent coolant water every 3 months.

C. Estimated Waste Quantities

Approximately 3,000 liters of waste lube oil and 2500 liters of coolant water every 2,000 hours (3 months)

D. Mitigation Measures for Waste Reduction at Sources

Reduction of waste lube oil and spent coolant water at sources could be achieved through good storage and best practices in maintenance management. These two liquid wastes will need to be separately stored and shipped to Thailand 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 and implement a liquid waste segregation system and procedure and communicate it to all maintenance 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 every 3 months;
- The storage area for liquid waste will need to be specially designed to prevent spills or leaks onto the soil and coastal quality.

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, coastal quality 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 3,000 liters of waste lube oil and 2500 liters of coolant water every 2,000 hours (3 months) will be separately stored and shipped to Thailand 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 prohibited.
- Provide adequate number of bins or containers with tight covers, collection of liquid waste.

H. Evaluation of the Significance of Impacts

The impact of liquid waste on the soil by contamination and costal quality was 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 boil-off gas power plant
Impact extent	Mainly on the soil and coastal quality near the. maintenance area
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.4.3.5 Occupational Safety and Health

A. Areas of Concern

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-fired power plants in Malaysia operated by the Project Proponent.

The OSH management system and procedures to be established will need to cover the following issues:

- Non-ionizing radiation
- Heat
- Noise
- Confined spaces
- Electrical hazards
- Chemical 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 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 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 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 turbine operations, fire, explosion, and chemical hazards.
- 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.

6.4.3.6 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 boil-off gas 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 boil-off gas 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 5.5*** 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, BOG, and oils. As the natural gas and BOG will be supplied by pipeline, 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 boil-off gas power plant operation on the marine ecosystem. As the impact on seawater quality will be negligible, the ecosystem services will not be an issue.

Community Exposure to Diseases

The boil-off gas power plant operation will need only 8 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 boil-off gas 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 boil-off gas 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 boil-off gas 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.

6.4.4 Risk Assessment during Operation Phase

It is study in case of opportunity of proposed project site to get impact from operation phase.

6.4.4.1 Environmental Risk Management Context

During the operational phase, the boil-off gas power plant operational team will routinely implement, as part of the boil-off gas 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 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 power plant risk management. The environmental risk mitigation measures will be implemented by the power plant management team within the scope of and procedures for the power plant risk management.

6.4.4.2 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 power plant and could cause injuries and fatalities to operational personnel and people in the nearest communities. The hazards in the 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-fired power plants include gas leakage, internal explosions, and failure of rotating machinery. Although these hazardous incidents are very rare for natural gas-fired power plants but they did occur.

Past Incidents

Two catastrophic accidents of power plants are briefly described below[9]:

- ***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 $1bn project. The accident was preventable if an inert gas had been used for cleaning and purging (US CSB, 2010).

- ***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 the 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;
- external events such as heavy objects dropping on a gas pipe;
- natural events such as earth quake, lightening strikes; and
- explosion or fire from other parts of the power plant.

The gas leaked could cause fire and/or explosion. Types of natural gas explosions are described in ***Appendix 6E*** for information.

The risk area will be the gas metering station. Gas leakage within the power plant will be included in the internal explosion.

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[9]Taken from: More on Vapor Cloud Explosions and Fires - AristaTek, www.aristatek.com/Newsletter/NOV10/NOV10ts.pdf

Internal Explosion

Internal explosion is a recognized risk event for thermal power plants. For a natural gas-fired combined cycle 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 combustor of gas turbine due to incorrect start-up procedures (e.g. due to a fuel leak and failure to purge before attempting ignition);
- internal explosion in other parts of the plant due to ingress of air (e.g. following maintenance) and subsequent ignition; and
- explosion within acoustic enclosure of gas engines due to fuel leak.

(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 power plant or the surrounding communities.

6.4.4.3 Risk Assessment

(1) Operational Risks

Consequences

If a serious accident occurs, the damages would be contained within the power plant site as the nearest community is about 2.22 km away.

Underlying Causes

Several studies of failures of chemical and 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 very small amounts of NOx and 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 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 power plant operation, even without treatment, will contribute only insignificant amounts of non-toxic pollutants into the sea. Therefore, non-compliance with the treated effluent standards and monitoring requirements, if occurs, will not result in a serious degradation of the seawater 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 medium.

6.4.4.4 Risk Classification

(1) Operational Risks

Although the operational risks could have serious consequences on the 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 or insignificant risk.

A simple risk matrix for the operational phase is shown in ***Figure 6.4.4-1***.

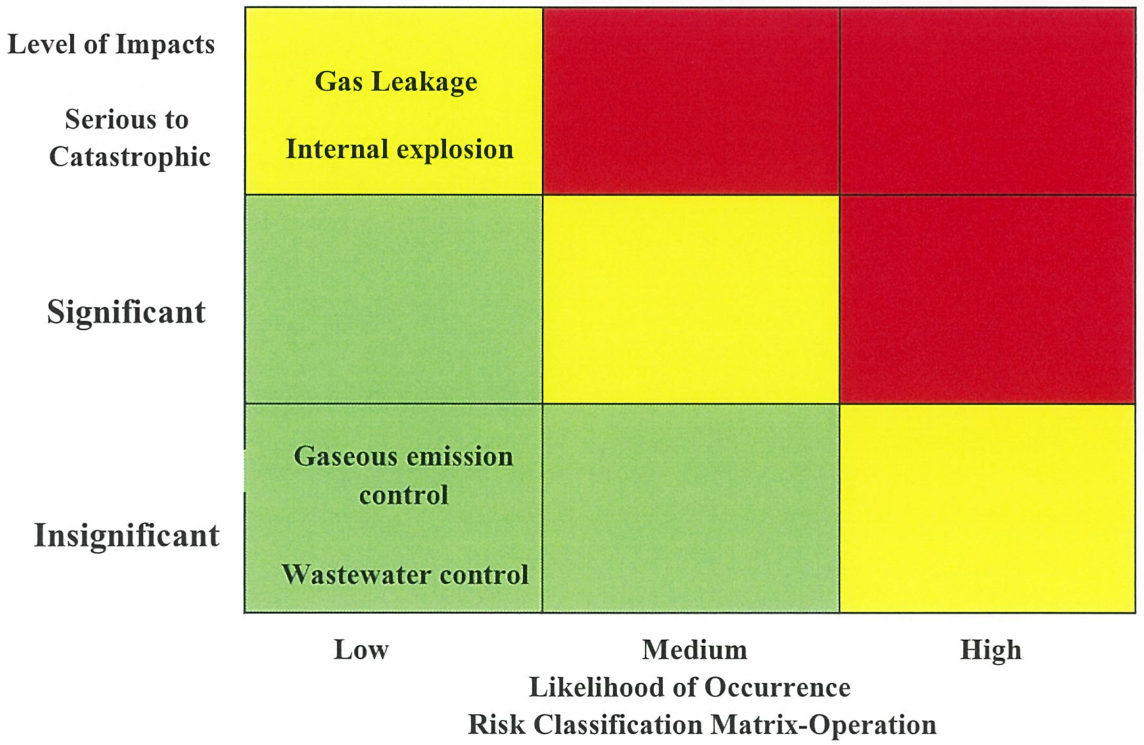

FIGURE 6.4.4-1 : RISK CLASSIFICATION MATRIX-OPERATION PHASE

6.4.4.5 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 boil-off gas 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 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).[10]
- 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 metering station, gas engine enclosure and flare system. The quality control system will need to clearly show the interaction between the EPC contractor and the design consultant and the subcontractors.

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[10]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.

- 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.
- The project proponent must be set buffer zone between gas engine of Boil-off power plant project and gas tank of LNG Terminal project (at least 1.5 km) to prevent hazard during gas leakage. If none of adequate distance, fire protection wall or plant perennial tree will recommended to set for protecting the impact during gas leakage situation.

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 power plant. Purging of the gas piping system must strictly observe guidelines in NFPA 56 (PS), Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping System. This provisions prohibit the use of flammable gas during cleaning procedures while safeguarding a range of activities related to cleaning and repairing piping systems. The EPC 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 metering station, the gas engines and generators, etc. The procedures will include safety aspect of high risk areas of operations such as flare system, gas engine combustors, generator cooling, boilers, and steam generator. The working procedures must be certified by qualified engineers with extensive experience in boil-off gas 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 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 boil-off gas 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 boil-off gas 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 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

The Project facilities will also include a fire protection system. Information on the fire protection system is presented in ***Appendix 6F***.

(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.

6.4.4.6 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 power plant management team starting from the testing and commissioning through the operational phase.

The boil-off gas power plant management organization should have a risk management committee to be chaired by the 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 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 gas engine 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.

6.5 DECOMMISSIONING PHASE IDENTIFICATION, ASSESSMENT AND MITIGATION

6.5.1 Decommissioning Phase Activities

Decommissioning or deactivation of the boil-off power plant will be carried out at the end of its working life if a decision is against retrofitting. 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 12 months before the decommissioning. The decommissioning phase would be from 1-2 years. An EIS would be required for environmental clearance of the decommissioning plan.

6.5.2 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 equipment, pipes, and cables, cleaning the equipment, tanks, and pipes, and demolition of control building and removal of instrument. 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 are coastal water, soil, groundwater and occupational health and safety of personnel.

The potentially affected environmental components to be considered during decommission phase are air quality, noise, residue and unused waste, and land reclamation (***Table 6.5.2-1***).

TABLE 6.5.2-1

ENVIRONMENTAL ISSUES TO BE MANAGED DURING DECOMMISSION PHASE

Environmental Issues	Activities / Sources
Air Quality	- Dust diffusion during demolition of onshore facilities and land reclamation
Noise	- Increase noise level from heavy equipments and vehicles.
Waste Management	- Residue from demolition activities - Hazardous waste - Domestic wastes from site workers
Land Reclamation	- Change condition of small port area for other use.

6.5.3 Impact Assessment

6.5.3.1 Environmental Disturbances Caused by Dust and Noise

As Nga Pitat villages, the both nearest village, is about 2.22 km from the project site, the effects of dust diffusion and noise during the decommission period will not reach the village if control during demolition 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.[11] According to calculation, main concern should be proposed mitigation measures both dust and noise level on Nga Pitat.

[11]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

Appendix 6G presents calculations of fugitive dust dispersion and Appendix 6H 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 to protect the workers.

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.

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 demolition and land reclamation of small port to reduce noise impact to Nga Pitat Village.

6.5.3.2 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 batteries, chemicals etc.

Even through the decommission phase are short period (approx. 12 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 local village nearby project site. 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.

6.5.3.3 Land Reclamation

During decommission phase, the land use will be change from power plant area to open area after demolition complete. Therefore, developer should plan with consultation with concerned authority as well as local communities to management on the open land.

Mitigation Measures

Developer should design with discuss with concerned authority and local villagers to management on the open land after demolition complete. Typical utilization on the open land such as mangrove reforestation, develop agriculture land, transfer port and area to local authorities to confirm use.

6.5.4 Risk Assessment

It is study in case of opportunity of proposed project site to get impact form air, noise, water 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 6.5.4-1 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.

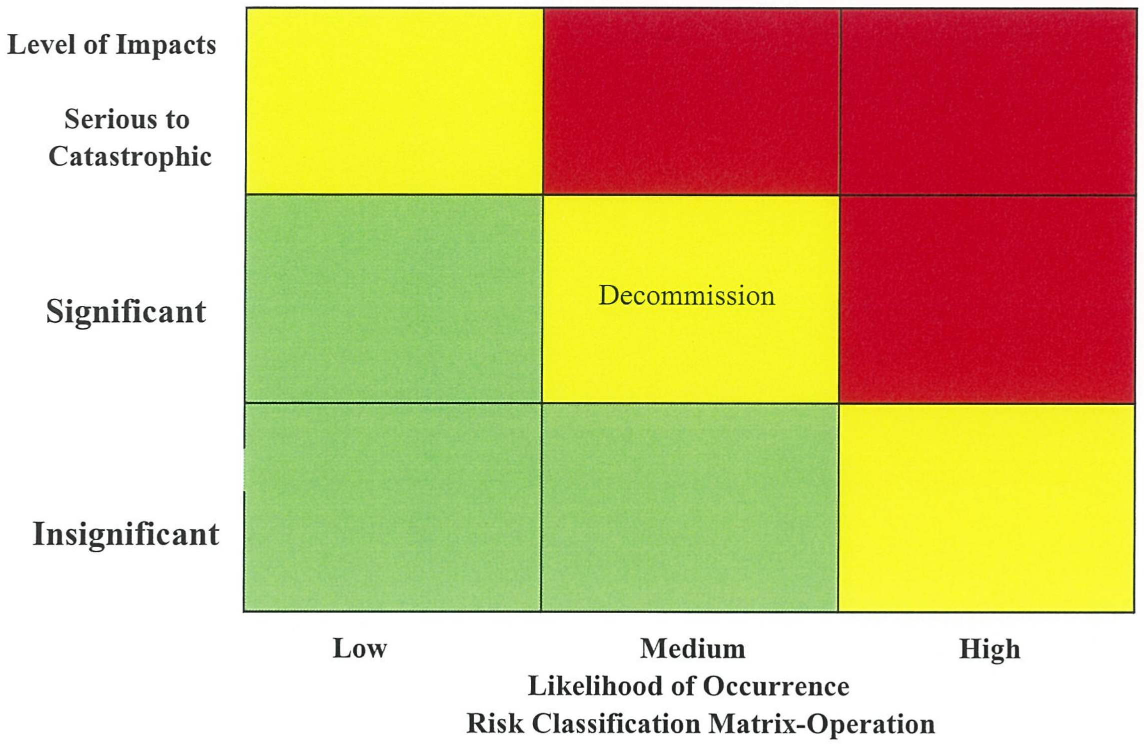

FIGURE 6.5.4-1 : RISK CLASSIFICATION MATRIX-DECOMMISSION PHASE

6.5.4.1 Mitigation Measure

A. Mitigation Measures to Reduce Fugitive Dust

At all 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% (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.

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 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.
- Speeds of vehicles in the decommissioning site will not be more than 40 km/hr.
- Temporary sound barriers or shielding should be installed for non-mobile equipment.

C. Mitigation Measures for Waste Management

- 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 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.

The Project will install a boil-off gas power plant in DSEZ to additionally supply electricity for LNG terminal consumption. Technically, this power plant will be utilized to generate electricity supply through boil-off gas, which is the supplementary benefit from LNG terminal.

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 Boil-off power plant is developed to support the Dawei SEZ. 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 NO_2 concentration in the ambient air on the operation period. The CIA, 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:

- Due to the boil-off power plant located next to initial phase power plant project which the project detail are list below:
- 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

Therefore, the CIA impact will be study on concentrated of NOx accumulated from the two projects that shown in ***Figure 7.2-1***.

7.2.3 Impact Assessment

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.

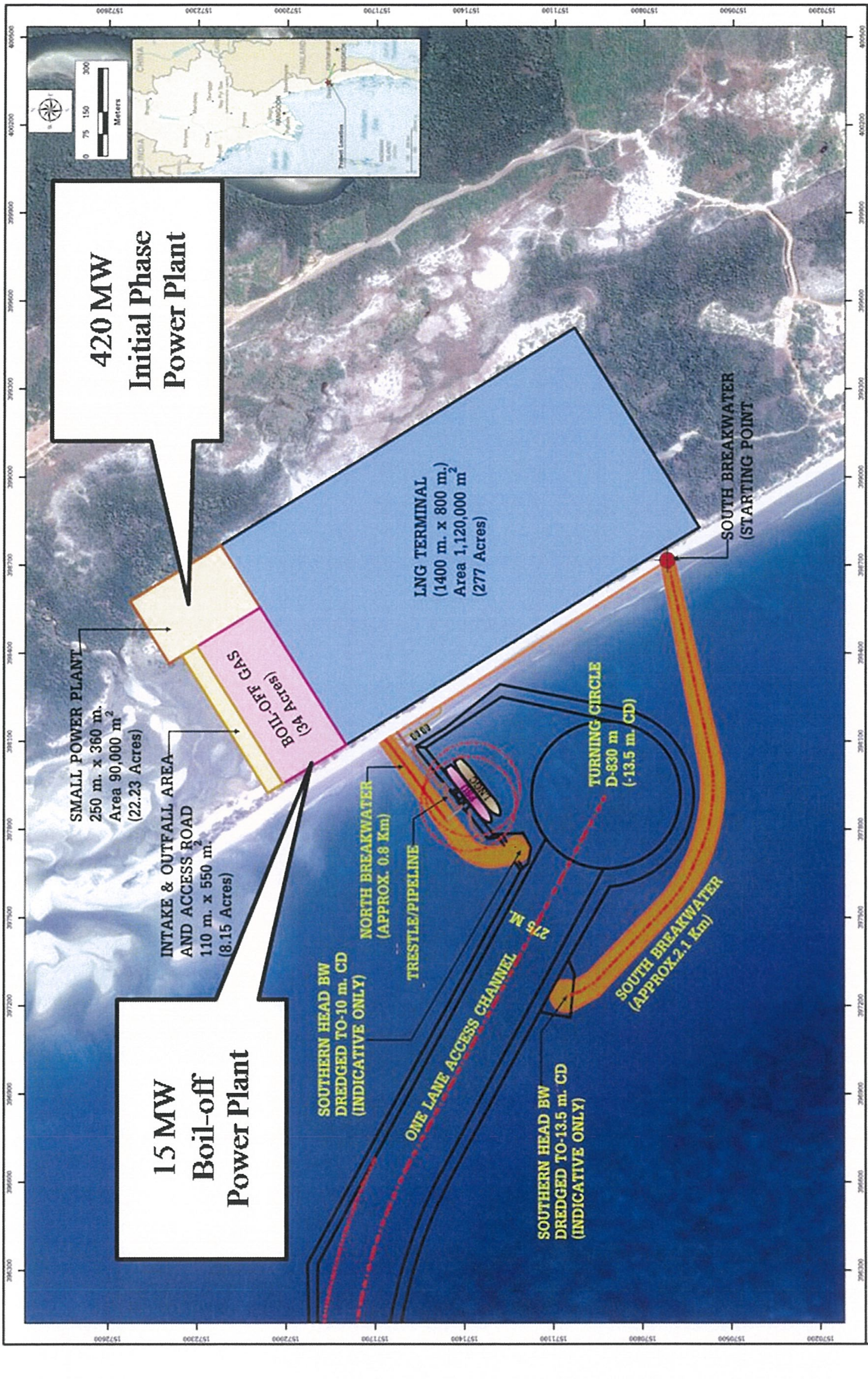

FIGURE 7.2-1: LOCATION OF BOIL-OFF POWER PLANT AND INITIAL PHASE POWER PLANT

7.3 CUMULATIVE IMPACTS ON AIR QUALITY

The cumulative impact on NO_2 concentration in the ambient air was predicted at the stack height of 27.5 m. The predicted concentration of NO_2 at various location in the study area are given in ***Appendix 6B***. ***Table 7.3-1*** and ***Figure 7.3-1*** shows the maximum concentration of NO_2 and the locations.

The predicted maximum concentration of NO_2clearly indicates that the study area could have two power plant. Details on NO_2 concentration from emission under 2 power plant 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 109.28 $\mu g/m^3$ (54.64% of AAQS). For the concentrations of NO_2-1 hr at sensitive receptors, the values were between 57.91-76.53 $\mu g/m^3$ (28.96-38.27 % 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 44.28 $\mu g/m^3$ (29.52 % of AAQS). For the concentrations of NO_2-24 hr at sensitive receptors, the values were between 19.18-22.27 $\mu g/m^3$ (12.79-14.85 % 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 4.31 $\mu g/m^3$ (10.78 % of AAQS). For the concentrations of annual NO_2 at sensitive receptors, the values were between 0.13-0.54 $\mu g/m^3$ (0.33-1.35% of AAQS) which are below the permissible maximum of 40 $\mu g/m^3$.

The results show that cumulative impact from two projects to sensitive receptors.

TABLE 7.3-1

PREDICTED IMPACTS OF THE OPERATION OF 2 POWER PLANT ON NO_2 CONCENTRATION IN AMBIENT AIR IN THE STUDY AREA

Results	**2 Power Plant**		
	NO_2 (µg/m³)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	75.28	26.28	4.31
-% of ambient air quality standard	37.64	17.52	10.78
-location of the maximum value	DSEZ Area	ANDAMAN SEA	DSEZ Area
-Coordinate (UTM(WGS84))	398307.31E, 1572624.37N	397707.31E, 1571924.37N	399107E, 1572324N
-Distance (meter) /direction from project site	331/N	979/W	555/ E
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	109.28	44.28	4.31
-% of ambient air quality standard	54.64	29.52	10.78
In only sensitive areas			
-ranges of concentrations	23.91-42.53	1.18-4.27	0.13-0.54
-% of ambient air quality standard	11.96-21.27	0.79-2.85	0.33-1.35
-location of the maximum value	Mudu Village /A1	Ka Myaing Swea Community	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	57.91-76.53	19.18-22.27	0.13-0.54
-% of ambient air quality standard	28.96-38.27	12.79-14.85	0.33-1.35
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

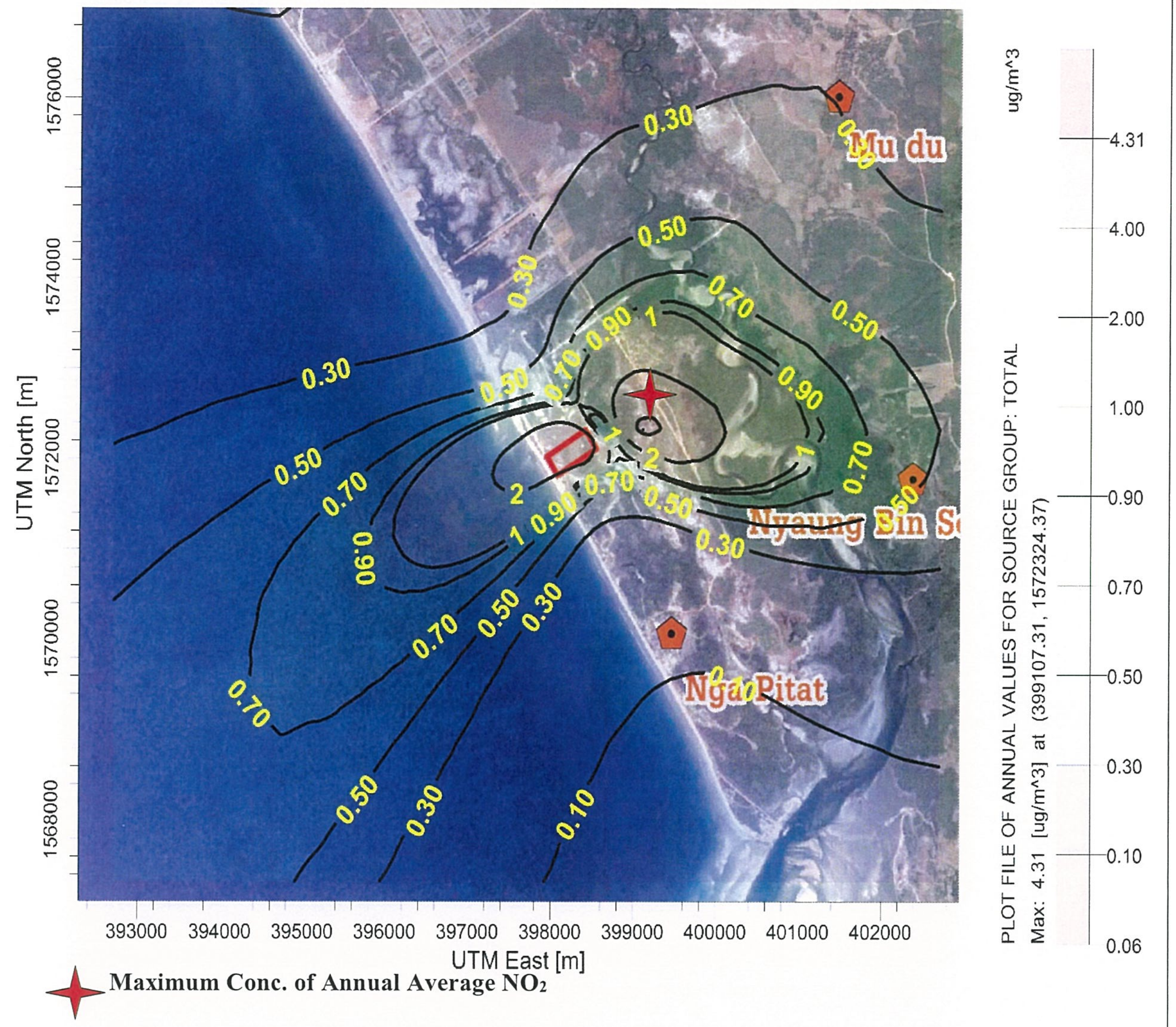

FIGURE 7.3-1: ISOPLETE OF ANNUAL AVERAGE CONCENTRATION OF NO_2 (CUMULATIVE BETWEEN BOIL-OFF POWER PLANT AND INITIAL PHASE SMALL POWER PLANT)

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

Although the EIA Procedure 2015 prescribes Environmental Management Plan (EMP) as Chapter 8 of the EIA report, CHAPTER VII of the Procedure indicates the need for the Project Proponent to submit an EMP for the Project. Therefore, the Consultant prepares an EMP for the Project as Volume 2 while Volume 1 is the EIA report. This Chapter 8-Environmental Management Plan in the EIA report presents a summary of the EMP in Volume 2 following the outline of Chapter 8 in the Procedure as much as applicable.

8.1 PROJECT DESCRIPTION

The Project is described in detail in Chapter 4.

8.2 THE CONCEPTUAL FRAMEWORK

8.2.1 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.*

Operation 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 depended on decision of the Concerned Authorities confirm to remove of all components at the end of concession.

8.2.2 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 boil-off power plant system and its associated facilities, the Project Proponent will require in 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 Boil-off 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 8.2-1***.

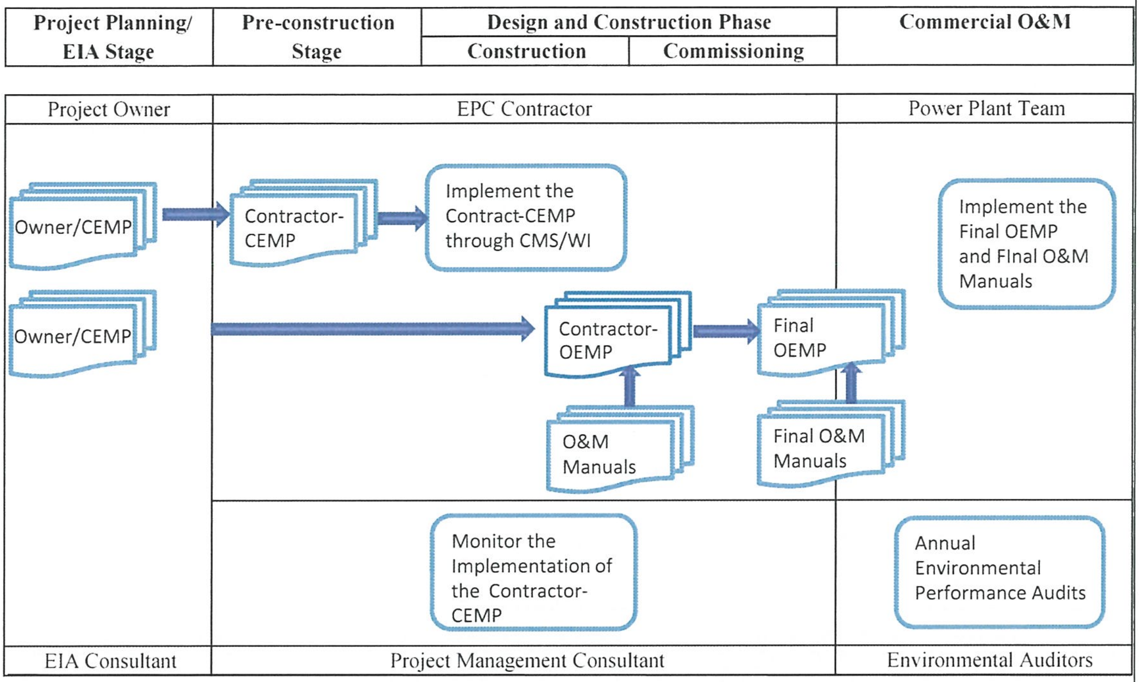

FIGURE 8.2-1 : APPLICATION OF THE ESIA-EMP

8.2.3 Scope of Project Environmental Management

Environmental management during the construction and operation phases of the Project is based on the same basic principle of management in each project phase thus consists of four related tasks (***Figure 8.2-2***):

(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

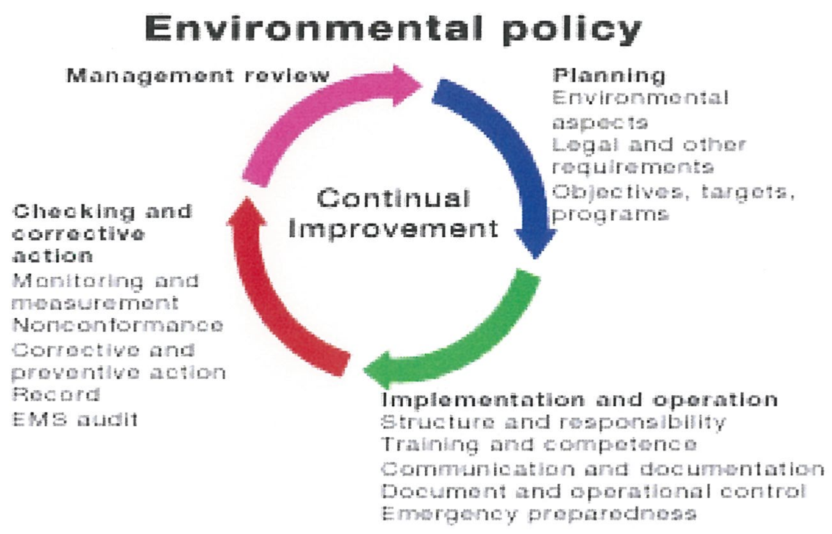

FIGURE 8.2-2 : PDCA CYCLE FOR ENVIRONMENTAL MANAGEMENT

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.

8.3 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.

8.3.1 Owner's Policy

Being a newly established company, DPG, the Project Proponent, has not yet formulated its environmental and social policies. However, DPG's Management is committed to the sustainable development principle in implementing this Project. Therefore, the Project Proponent intends to formally state its environmental and social policies in due course to guide its environmental and social management during the construction phase and the operation phase of the Project. The policies will be in line with

the policies adopted by the Myandawei Industrial Estate Company Limited in environmental and social management of its development activities in DSEZ. The policies can be briefly described as follows:

Environmental Policy

- Will comply with relevant environmental laws and regulations;
- Will manage our business with the goal to alleviate the adverse effects on the environment, undertake appropriate reviews and evaluations of our performance to measure and to ensure compliance with this environmental policy;
- Will encourage employees to have strong concern and be responsible for the clean environment; and
- Will educate the employees on the environment including exchanging the knowledge with other agencies in order to continuously and regularly maintain good environment and adopt working practices friendly to the environment.

Safety and Health Policy

- Will strive to prevent accident, injury and occupational illnesses through active participation of every employee.
- Commit to making consistent efforts to identify and eliminate or manage safety risks associated with our activities.
- Will strictly comply with all applicable laws and regulations. In case that no enforceable body of law exists, we will apply reliable standards of our own.
- Will arrange for the proper design of tool and equipment, regulations, training and the control tools in a manner that safeguards workers, property and the communities in which we operate from machine, working procedures and occupational illnesses.
- Employees who report to work with illegal drugs in their system or report with level of alcohol or other chemical substances that could impair performance are subject to strong disciplinary action.

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 pre-construction and 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.

8.3.2 Legal Requirements

Environmental management of the Project will comply with legal requirements pertinent to the EMP prescribed in the draft Electricity Law 2013, Environmental Conservation Rule 2014, and the Final ESIA 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 Electricity Law 2014 authorizes the relevant ministry to conduct ESIA, 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 ESIA 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. ESIA Procedure (2015)

Articles in the ESIA Procedure relevant to the preparation and implementation of the EMPs are summarized in ***Table 8.3-1***. Preparation and implementation of the two EMPs will need to comply with relevant articles in the table.

TABLE 8.3-1

CONTENT OF THE ESIA 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 through to 101
- Submission of an CEMP and OEMP	91,92,94,100
Revision and updating the EMPs	94 through to 101
Implementing the EMPs	102,103,104,105
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 through to 122

8.4 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts and mitigation measures discussed in Chapter 6 are summarized in ***Table 8.4-1*** for the preconstruction phase, ***Table 8.4-2*** for the construction phase, ***Table 8.4-3*** for the operational phase, and ***Table 8.4-4*** for the decommissioning phase.

TABLE 8.4-1
IMPACTS DURING PRE-CONSTRUCTION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Ecosystem	The site clearance and filling of boil-off power plant will permanently eliminate the existing swamp, mangrove, beach forest, fish, other aquatic animals and wildlife.	• 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 swamps and mangrove areas. • In consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers, design and implement a mangrove reforestation program in areas outside DSEZ. The purpose is to compensate for the loss of mangrove area by the Project. • 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.
Livelihood	Permanent Impact on Villagers in Nga Pitat Village near the Project site, harvest fish and other resources due to loss of the Britney Creek and mangrove in the Project site.	• The Project Proponent intends to develop Chi Oo Klong area inside Pan Din In River to provide the new ground for fishing and resource harvesting and the new area for fishing boats berthing. • 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
Fugitive Dust, Noise and Gaseous Emissions	NgaPitat Village will impact from dust diffusion and increase noise level due to site preparation works and heavy equipment e.g. bulldozers, excavators and graders	**Mitigation for Fugitive Dust** Water spraying could reduce as much as 75% of the dust. **Mitigation for Noise** Provide ear muff to workers working in the excessive noise environment.

TABLE 8.4-2
IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Impacts from Gaseous Emission	Increases emissions from operation of trucks and heavy construction equipment.	**Mitigation Measures for to minimize gaseous emissions at sources** • 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. • 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 (repowered engines, electric drive trains). • 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. • 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.

TABLE 8.4-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Noise	Increase ambient noise level at the construction activities that generate excessive noise include soil compaction by heavy graders and truck	• Major construction activities which generate loud noise should be limited to only during the day time. • Speeds of vehicles in the construction site will not be more than 40 km/hr. • Noise performance requirements of construction equipment will need to be clearly stated in contract specifications. • Temporary sound barriers or shielding should be installed for non-mobile equipment. • The EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period.
Wastewaters	Wastewaters from construction activities include: • Domestic sewage generated by daily living activities of about 70 construction personnel at peak of the construction • Wash waters in the construction site, mainly from truck wheel washing and concrete wash waters • Surface runoff	**Domestic Wastewater** • Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. • Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. • Grey water will be discharged into the retention pond which designed as an oxidation pond with a hydraulic retention time of about 7 days. **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.

TABLE 8.4-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Wastewaters (Cont'd)		**Surface runoff** • The site preparation activities, including land clearing and site filling and compaction, should be carried out during the dry season. • The power plant construction site should be surrounded by temporary fences to limit the amount of sediment that could be washed from the construction area during the raining time into the sea. • Construct a temporary drainage system to collect the surfaced runoff from the construction area to avoid the discharge of surface runoff into the open sea. • The collected storm water will be drained into a retention pond for removal of suspended solids before discharging into the sea or a nearby drainage channel, if exist.
Construction Wastes	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)	**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. **Waste Collection and Storage** • Daily collection and transport will be organized and carried out for each sub-category of segregated wastes; • The storage area for hazardous waste will need to be specially designed to prevent spills or leaks onto the soil.

TABLE 8.4-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Construction Wastes (Cont'd)		**Waste Reuse and Recycling** • 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; • Collection and recycling of used oils by a licensed contractor; **The remaining wastes that cannot be reused or recycled** • An efficient construction waste management system should be established and implemented. • Haphazard disposal of construction waste in or off the construction site will be prohibited. • Non-construction wastes will be disposed off with the construction wastes. • Provide adequate number of refuse bins or containers with tight covers, daily collection of disposal. • 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.

TABLE 8.4-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Road Traffic	Increase number of vehicle at ITD coastal road and Nga Pitat road due to transport construction wastes, construction materials, and plant equipment.	• In consultation with the concerned authorities at the national, regional, and township levels, develop and implement a Construction Traffic Management Plan • Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan • Heavy trailer trucks transporting heavy and large plant equipment will have to be directed by a traffic police car. • 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 work sites. • Provide traffic controls designed for the safe movement of pedestrians and cyclists near the worksites.
Local Communities	**Local Economy** - Cash injection into the local economy due to workers requirement on local services, particularly foods and sundries - Opportunities of local people to work during project construction	**Local Economy** • Priority should be given to local employment, especially the villages close to the construction site; e.g. Nga Pitat, Nyaung Bin Seik and Mudu. • 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.

TABLE 8.4-2

IMPACTS DURING CONSTRUCTION PHASE AND MITIGATION MEASURES (CONT'D)

Environmental and Social Issue	Impacts	Mitigation Measures
Local Communities (Cont'd)	**Livelihood** The major livelihood effect is adjust fishing ground activities in the new alternative fishing ground and boatyard area. In the early stage, the local people will obstruct to adjust fishing ground activities in the new area.	**Local Economy (Cont'd)** • 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 **Livelihood** • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village).
Community Health, Safety and Security	- Without proper management, the influx of construction workers could pose health risks to the communities in case of communicable diseases such as sexually transmitted diseases - The influx of workers could also pose security risks to the communities in terms of crimes and drug abuses.	**Health Risks** • All recruited workers should receive health examinations for screening of major communicable diseases before employment. Subsequently, annual check-ups should be provided. • Provide health awareness training to workers on hygiene and sanitation, communicable and infectious diseases. **Security Risk** • 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.

TABLE 8.4-3

IMPACTS DURING OPERATION PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	• Affect to village due to gas emission from stack especially NO_2	• The reduction of NO_2 at source using 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.
Wastewaters	Waste Waters of the boil-off gas power plant will come from the following sources: • Domestic sewage • Plant wash water • Strom water	• The wash water contaminated with oil will be segregated for oil removal in an oil separator. The oil-free wash water will then be combined with other wastewater streams for further treatment. • Domestic sewage will be treated in a small treatment plant. The treated effluent will be combined with the effluents from wash water and domestic sewage. • A drainage system will be provided to collect surface runoff and storm water discharged into the sewers or directly into the coastal water. Surface runoff from open areas contaminated by oil will be separately drained into an oil separator before discharging into the main drainage system.
Waste	During the operation phase, the following waste will be generated and need to be controlled: • Lubricating oil from maintenance of the engines • Waste lube oil and spent coolant from maintenance of the power plant	• 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 prohibited. • Provide adequate number of bins or containers with tight covers, collection of liquid waste.

TABLE 8.4-4

IMPACTS DURING DECOMMISSIONING PHASE AND MITIGATION MEASURES

Environmental and Social Issue	Impacts	Mitigation Measures
Air Quality	Dust diffusion during demolition of onshore facilities and land reclamation	Frequent water spraying is normally used to suppress dust and it could reduce as much as 75% of the dust.
Noise	Increase noise level from heavy equipments and vehicles.	• A practical measure is to provide ear muff to workers working in the excessive noise environment. • Temporary sound barrier should be setting during demolition and land reclamation of small port to reduce noise impact to Nga Pitat Village.
Waste Management	• Residue from demolition activities • Hazardous waste • Domestic wastes from site workers	• 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.
Land Reclamation	Land Reclamation	• Developer should design with discuss with concerned authority and local villagers to management on the open land after demolition complete. • Typical utilization on the open land such as mangrove reforestation, develop agriculture land, transfer port and area to local authorities to confirm use.

8.5 OVERALL BUDGET FOR IMPLEMENTTION OF THE EMP

Environmental impact mitigation measures during the pre-construction phase and the construction phase will be included in the contract cost. It is not possible at this project development stage to separate environmental impact mitigation cost from the total contract cost. In the operational phase, environmental impact mitigation measures are also incorporated in the operational procedures. It is also not possible to estimate their costs at this stage.

During the pre-construction and construction phases, a budget of about 147,500 USD will be allocated for monitoring and evaluation of the Project's environmental and social performance over the construction period of 15 months.

During operation phase, budget for monitoring and evaluation will be allocated for period separation (75 years, 50 years operation plus 25 years extensions). The first period will be for the five first year after commissioning and another one for the 6th year throughout the project life (total operation period approx. 75 years). Therefore an annual budget of 128,700 USD (include 10% contingency) will be allocated for the five first year, and an annual budget of 528,550 USD (include 10% contingency) will be allocated from the 6th year throughout the project life. Therefore, total cost during operation phase approx. 657,250 USD (include 10% contingency). The cost detail and schedule are described in ***Appendix 8A***. In addition, the monitoring cost will be adjusted depended on situation and suitability of the project.

8.6 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 8.2.3***. Major aspects of the Owner-CEMP are summarized as follows:

8.6.1 Management and Monitoring Sub-Plans

The following issues will be managed during the pre-construction/construction phase: (1) general construction, (2) mangrove management (3) air quality management, (4)noise, (5) wastewater management, (6) waste management, (7)hazardous waste management, (8) traffic management, (9) OHS management, (10) natural used monitoring plan, (11) social environmental management, and (12) emergency management plan (flood,

tsunami, and cyclone).A sub-management plan for each of the identified issues is prepared and the 12 sub-plans are presented in ***Appendix 8B***.

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.

The location and frequency for monitoring station indicate in management plan are described in ***Table 8.6-1*** and ***Figure 8.6-1***.

TABLE 8.6-1

THE LOCATION AND FREQUENCY FOR MONITORING STATION INDICATE IN MANAGEMENT PLAN DURING PRE-CONSTRUCTION/CONSTRUCTION PHASES

No.	Items	Frequency	Sampling Station
1 Environmental monitoring during the pre- construction/ construction period (15 months)			
1.1	Air Quality (2 stations)	1 time/three months (5 time during pre-construction / construction Phase)	- 2 stations at project site and Nga Pitat Village - Parameter include : PM_{10} and TSP
1.2	Noise Measurement (2 stations)	1 time/three months (5 time during pre-construction / construction Phase)	- 2 stations at project site and Nga Pitat Village - Parameter include : Lmax, Leq 1 hr., Leq 24 hr., Ldn and L_{90}
1.3	Wastewater Measurement (1 station)	1 time/ months (15 time during pre-construction/construction Phase)	- 1 stations at discharge point - Parameter include : pH, oil and grease, BOD, total suspended solid and total nitrogen
1.4	Traffic Flows Measurement (1 stations)	2 times during construction	- 1 station at project and at Nga Pitat Village - Parameter include type and number of vehicles
1.5	Flora and Fauna Field Survey	1 time before site clearance	34 acre of proposed project site
1.6	Waste and Hazardous Waste Management	Every day	Construction Site and Surrounding Area
2	OHS Management Plan	Every day	Construction Site and Surrounding Area
3	Social Development and Livelihood Support for PAPs		
3.1	For Resource Management		
3.1.1	Development at New Alternative Fishing Ground and Boat Yard Area	Every day	at new alternative fishing ground and boat yard area
3.1.2	Attitude Survey at Nga Pitat Village about new fishing ground and boat yard area	1 time per three months	Nga Pitat Village
3.1.3	Attitude Survey at three affected village and Public Consultation	1 time per three months	Nga Pitat , Mudu, and Nyau Biensiek
4	Emergency Management Plan	2 times	Construction Site

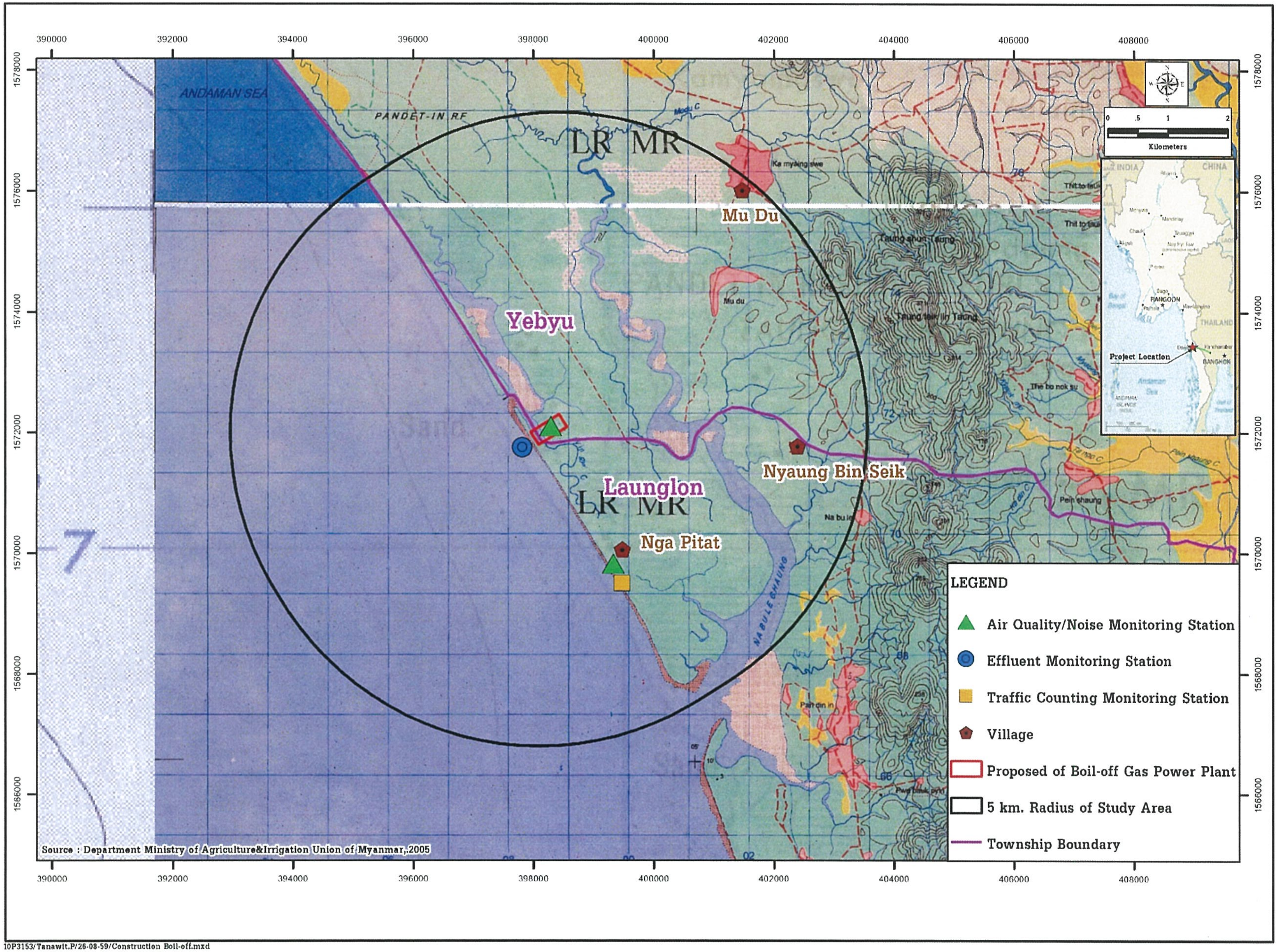

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FIGURE 8.6-1 : MONITORING STATION DURING PRE-CONSTRUCTION / CONSTRUCTION PHASE

8.6.2 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.

8.6.3 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 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.

8.6.4 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.

8.6.5 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 8.6-2*** 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.

8.6.6 Public Consultation and Disclosure

The CEMP proposes a tripartite committee as the main mechanism for public consultation and disclosure. The components and responsibilities of the tripartite committee are defined. A grievance redress process is proposed as mechanism for ensuring that public complaints and concerns related to the construction will be effectively addressed as soon as possible.

8.6.7 Grievance Redress

A grievance redress process will be established and implemented as part of project management by the PMO. The process is shown in a diagram in ***Figure 8.6-3***. Each step of the process is clearly explained in the diagram. The process will enable efficient management of grievance redress or response to complaints related to EHS of the Project construction.

8.6.8 Audit

An audit is proposed at the end of the first year of construction and another audit at project completion.

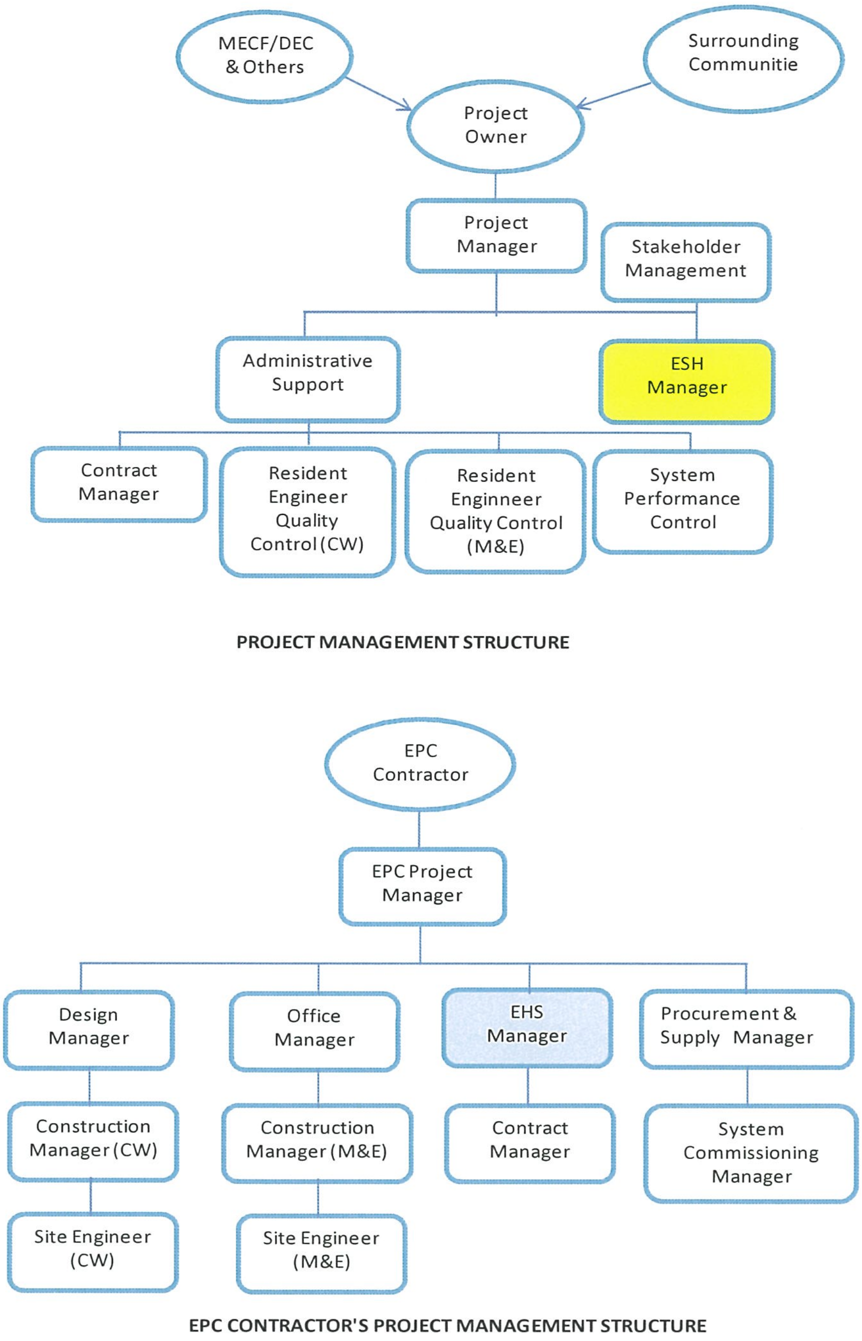

FIGURE 8.6-2 : ORGANIZATION FOR PROJECT CONSTRUCTION

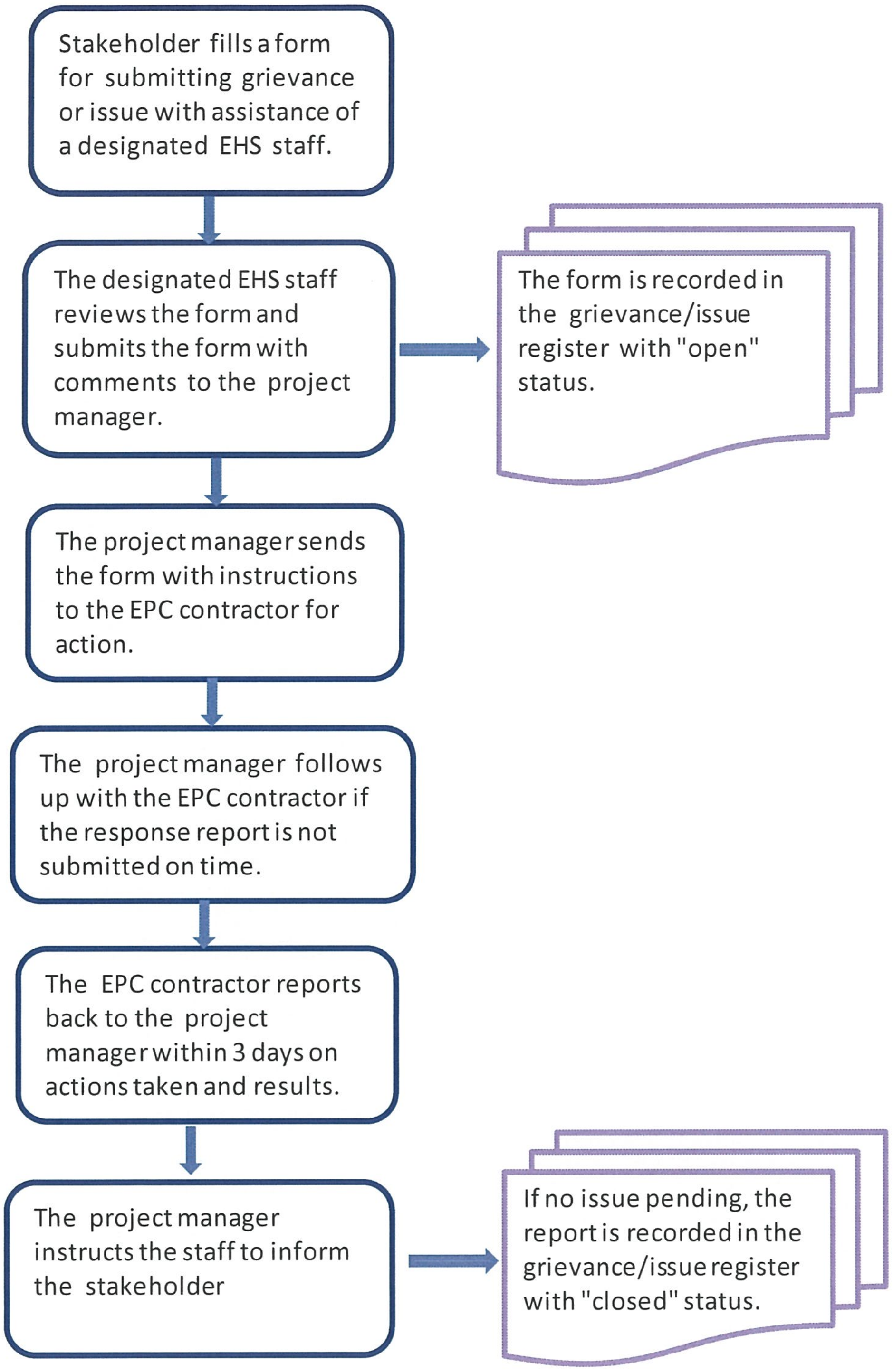

FIGURE 8.6-3 : GRIEVANCE MANAGEMENT PROCESS DURING PRE-CONSTRUCTION/ CONSTRUCTION PHASES

8.7 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:

8.7.1 Mitigation Measures and Plans

The following issues will be managed during the operation phase: (1) mangrove management (2) air quality and greenhouse gas management, (3) noise, (4) wastewater management, (5) waste management, (6) hazardous waste management, (7) traffic management, (8) OSH management (9) social environmental management and CSR Program, (10) operation staff management and (11) emergency management plan (flood, tsunami, and cyclone). A management and monitoring sub-plan is prepared for each subject. The sub-plans are presented in ***Appendix 8C***.

The location and frequency for monitoring station indicate in management plan are described in ***Table 8.7-1*** and ***Figure 8.7-1***.

No management and monitoring sub-plans are proposed for the decommissioning phase as it is still too premature at this stage to prepare such sub-plans.

TABLE 8.7-1

THE LOCATION AND FREQUENCY FOR MONITORING STATION INDICATE IN MANAGEMENT PLAN DURING OPERATION PHASES

No.	Items	Frequency	Sampling Station
1. Environmental monitoring during the operation period (75 years, 50 years operation plus 25 years extensions)			
1.1	Stack Emission	Everyday throughout operation phase	- Stack of Boil-off Power Plant - Parameter include: NOx.
1.2	Air Quality	twice a year during 1st-5th year of operation phase and 1 time per year throughout operation phase	- Closest sensitive receptors include Nga Pitat and Mudu - Parameter include: Particulates (PM 10), Sulfur Dioxide (SO_2), and Nitrogen Dioxide (NO_2)
1.3	Wastewater	twice a year during 1st-5th year of operation phase and 1 time per year throughout operation phase	- 1 stations at discharge point - Parameter include : pH, oil and grease, BOD, total suspended solid and total nitrogen
1.4	Mangrove reforestation, rehabilitation, and maintenance (10 years)	during 1st-10th year of operation phase	at reforestation area
1.5	Support local villagers in rehabilitation activities (10 years)	during 1st-10th year of operation phase	at reforestation area
1.6	Traffic Flows Measurement (2 stations)	twice a year throughout operation phase	- 2 station include at project and at Nga Pitat Village - Parameter include type and number of vehicles
1.7	Waste and Hazardous Waste Management	Every day	Project Site
2	OHS Management Plan	Everyday	Project Site
5	Emergency Plan	Everyday	Project Site
6	Operation Staff	Everyday	Project Site
7	Social development and livelihood support for PAPs		
7.1	Development Fund during 1st-5th year	During 1st-5th of operation phase	at three affected village (Nga Pitat, Mudu, and Nyau Binseik)
7.2	Development Fund during 6th to throughout operation phase	During 6th-throughout operation phase	at three affected village (Nga Pitat, Mudu, and Nyau Binseik)
7.3	Village forum	2 times per year during 1st-5th of operation phase and once a year throughout operation	at three affected village (Nga Pitat, Mudu, and Nyau Binseik)

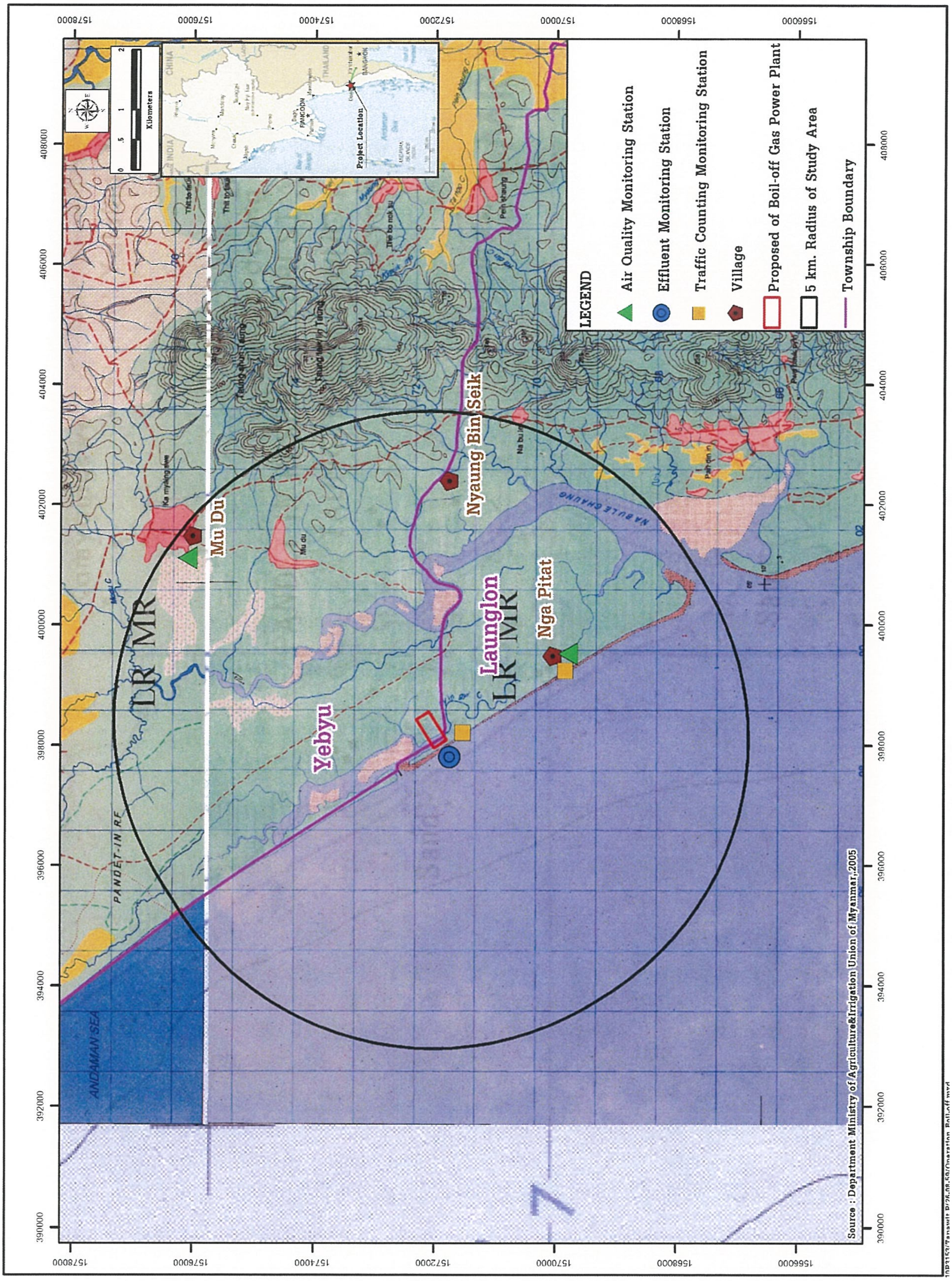

FIGURE 8.7-1 : MONITORING STATION DURING OPERATION PHASE

8.7.2 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 8persons.

8.7.3 Monitoring, Evaluating and Reporting

The MER will include scheduled monitoring of air quality. 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 in the first year of 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.

8.7.4 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.

8.7.5 Organization

As environmental management will be carried out as part of the power plant management, it is a functional unit in the power plant management organization. ***Figure 8.7-2*** 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.

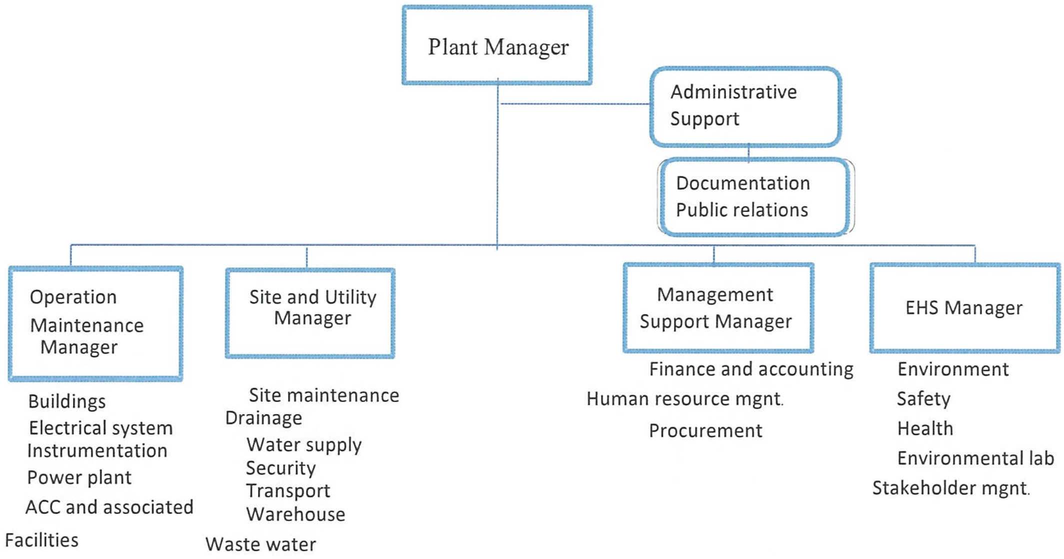

FIGURE 8.7-2 : TENTATIVE ORGANIZATION FOR POWER PLANT O&M AND ENVIRONMENTAL MANAGEMENT

8.7.6 Public Consultation and Disclosure

The tripartite committee established during the construction phase should be maintained. However, its role would be more on providing advice in the implementation of the community support plan. The components and responsibilities of the tripartite committee are defined. A grievance redress process is proposed as mechanism for ensuring that public complaints and concerns related to the power plant operation will be effectively addressed as quick as possible.

8.7.7 Grievance Redress Process

A grievance redress process is proposed as mechanism for ensuring that public complaints and concerns related to the LNG Terminal operation will be effectively addressed as quick as possible. The process is shown in a diagram in ***Figure 8.7-3***.

8.7.8 Audit

An audit is proposed at the end of the first year of operation and thereafter, if necessary.

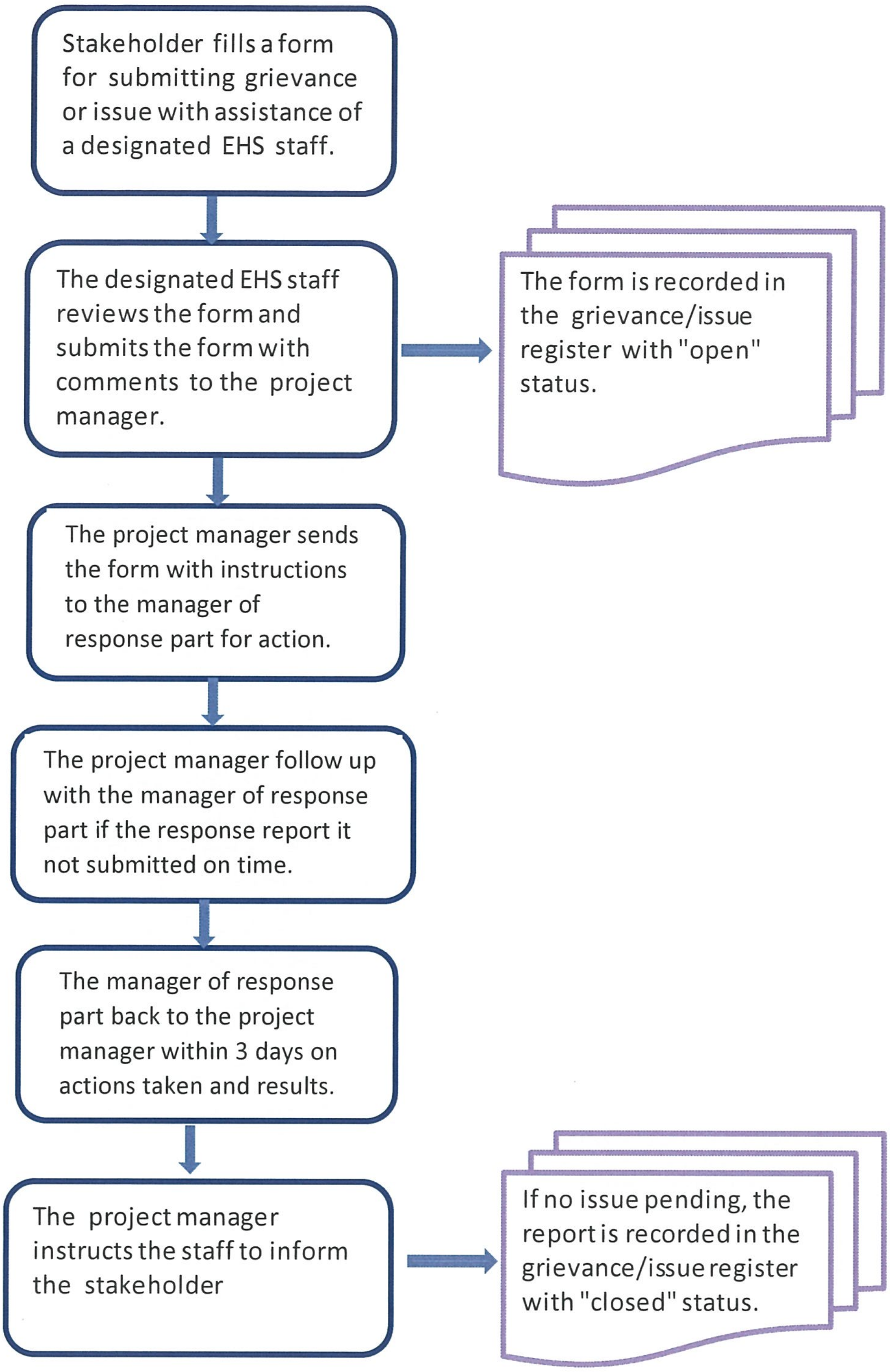

FIGURE 8.7-3 : GRIEVANCE MANAGEMENT PROCESS DURING OPERATION PHASES

8.8 SUMMARY OF EMP DURING DECOMISSION PHASE

The EMP during decommission phase depended on decision of the Concerned Authorities confirm to remove of all components at the end of concession.

Assuming that the Project will be decommissioned after the end of concession, the decommissioning will be carried out in the next 50 years. Apparently, it would not be practical to prepare a decommissioning plan at this ESIA stage considering changes in technologies and environmental legislation that would have taken place in the next 50 years. At this ESIA stage, only a generic decommissioning plan could only be made.

The recommended management plan during decommission phase include:

- Air Quality Management Plan;
- Noise Management Plan;
- Waste Management Plan and;
- Land Reclamation Management Plan.

8.9 EMERGENCY PLAN

According to impact and risk assessment in ***Chapter 6*** of ESIA Report, the emergency plan for flood, cyclone, tsunami and contingency plan must be prepared to protect and minimize impact in case of ship collision and any kind of risk will appear. The detail of each plan are described as follow:

8.9.1 Emergency Plan for Tsunami and Cyclone

Even through the tsunami and cyclone situation have not ever found in the project area, Seismic Hazard Map from Meteorological and Hydrological Department, Myanmar, indicate that the Boil-off Gas Power Plant area is classified as a moderate seismic zone, so impacts from this issue may be low or moderate (Probable range of ground acceleration = 0.1-0.15 g).

With the location near Indian Ocean, the tsunami may occur again similar to the situation in 2004 caused by earthquake in Indian Ocean.

The recommendation about emergency and contingency plan for the Boil-off Gas Power Plant in case of cyclone and tsunami protection include:

- Prepare the detail design of Boil-off Gas Power Plant to withstand the cyclone and tsunami.
- Establish and regularly monitor the warning system for tsunami.
- Set the safety zone for evacuation of staff and people in case of tsunami and cyclone.
- Set up the evacuation plan for tsunami and cyclone and train all staff in Boil-off Gas Power Plant.

Refer to the Tsunami Emergency Planning in Australia, 2010, Tsunami emergency plans should cover strategies to be used in preparedness, response and the initiation of recovery for tsunami.

Table 8.9-1 described the concept details of content considerations which may be included in tsunami and cyclone emergency plans. This concept will be required for Project Proponent and Contractor to prepare an emergency response plan to efficiently and effectively cope with accidents and emergencies which may occur in case of Tsunami Situation.

For flood situation, flash flood or normal flood will be minimized through detailed design on drainage system of project site, to handle with all kinds of flood.

TABLE 8.9-1

CONCEPT DETAILS FOR TSUNAMI AND CYCLONE EMERGENCY PLANS

Phase	Content
Preparedness	• Review of Plans • Establishment and review of tsunami risk assessment / intelligence • Conduct of community education • Establishment and/or maintenance of warning systems
Response	• Control and coordination arrangements • Outline of operational divisions / sectors • Location of operations centres • Warning at-risk communities • Evacuation of at-risk affected communities; including the identification of suitables evacuation routes and shelters • Provision of welfare relief • Pre-deployment of resources to staging areas outside the impact area • Protection of emergency land and marine resources by removing them from likely impact areas • Restriction of access and security of evacuated areas • Reconnaissance / monitoring of potentially affected areas and the undertaking of rapid impact assessments • Rescue of trapped and injured people • Care for sick and injured persons • Disaster victim registration • Disaster victim identification • Establishment of a public enquiry system • Issue of 'all clear'
Recovery	• Initiation of recovery • Recovery coordination • Conduct of after action reviews / debriefs
General	• Description of the risk within the scope of the Plan

Source: Tsunami Emergency Planning in Australia, 2010

8.9.2 Implementation Arrangements

Environmental management on emergency plan 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 power plant management team starting from the testing and commissioning through the operational phase.

The Boil-off Gas Power Plant management organization should have an emergency plan committee to be chaired by the 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 Boil-off Gas 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 power plant, and recommend necessary improvements of the work procedures to ensure the risks are minimized or avoided. ***Figure 8.9-1*** shows the tentative organization chart of emergency responsible team for Boil-off Gas Power Plant Project.

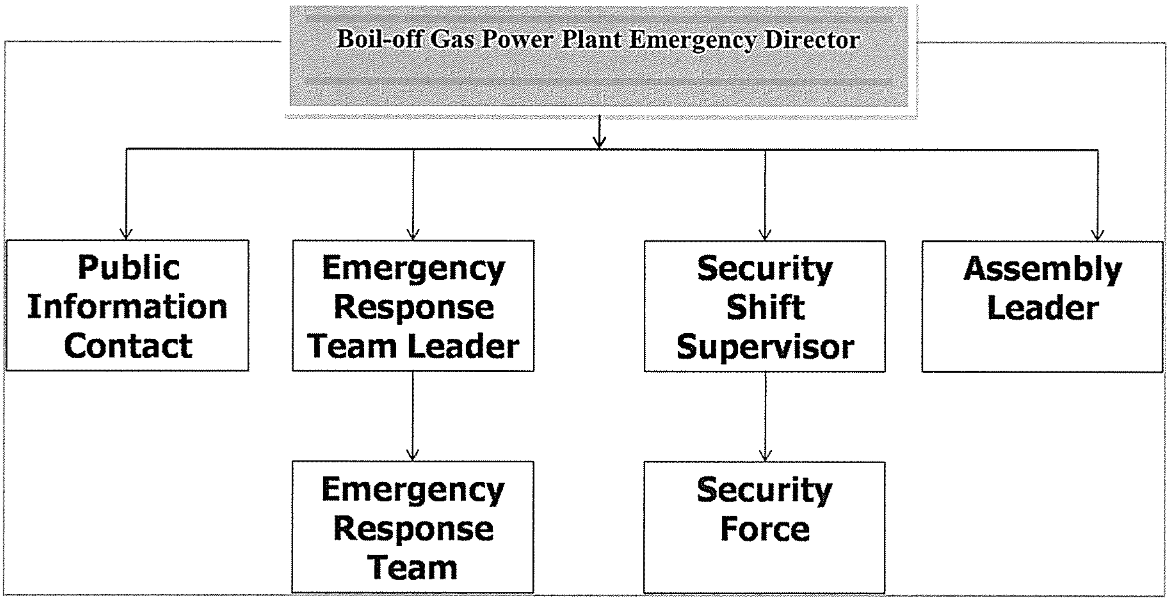

FIGURE 8.9-1: THE TENTATIVE ORGANIZATION CHART OF EMERGENCY RESPONSIBLE TEAM FOR BOIL-OFF GAS POWER PLANT PROJECT

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 periods of consultation were held between 6 to 8 October, 2015 and 1 to 3December, 2015 and 29 March, 2018 respectively. The methodology and approach of public consultation is presented below:

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:

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[1]Administrative Instruction of Environmental Impact Assessment Procedure (2015), the Government of the Union of Myanmar, Ministry of Environmental Conservation and Forestry.

(1) Government Authorities Involved in ESIA 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 ESIA 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: (i) Yebyu Township Administration; and (ii) Launglon 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

(3) General Public

The Project's stakeholders in this category are village committees and individual villagers in the three villages and one community in the study area (5 kilometers radius) in Launglon and Yebyu Townships; namely: Nga Pitat, Nyaung Bin Seik, Mudu which includes Kamyaingswea (see ***Table 9.2.1-1*** and ***Figure 9.2.1-1***). Residents in these villages would have concerns on various potential impacts of the Project during construction and operations such as noise, fugitive dust, stack emissions, wastewater, traffic safety, and degradation of natural resources, especially marine and mangroves resources in two coastal villages of Nga Pitat and Nyaung Bin Seik.

TABLE 9.2.1-1

VILLAGES AND COMMUNITY IN THE STUDY AREA

Township	Village	Approx. km from the Project Site
Launglon	Nga Pitat	2.22 km.
	Nyaung Bin Seik	3.86 km.
Yebyu	Mudu	4.80 km.
	Ka Myaingswea (community in Mudu)	5.10 km.
Total of 2 townships	**3 villages and 1 community**	2.22–5.10 km.

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 results of the public meetings, including the meetings with NGO and key officials of government offices involved in environmental and social management of development projects.

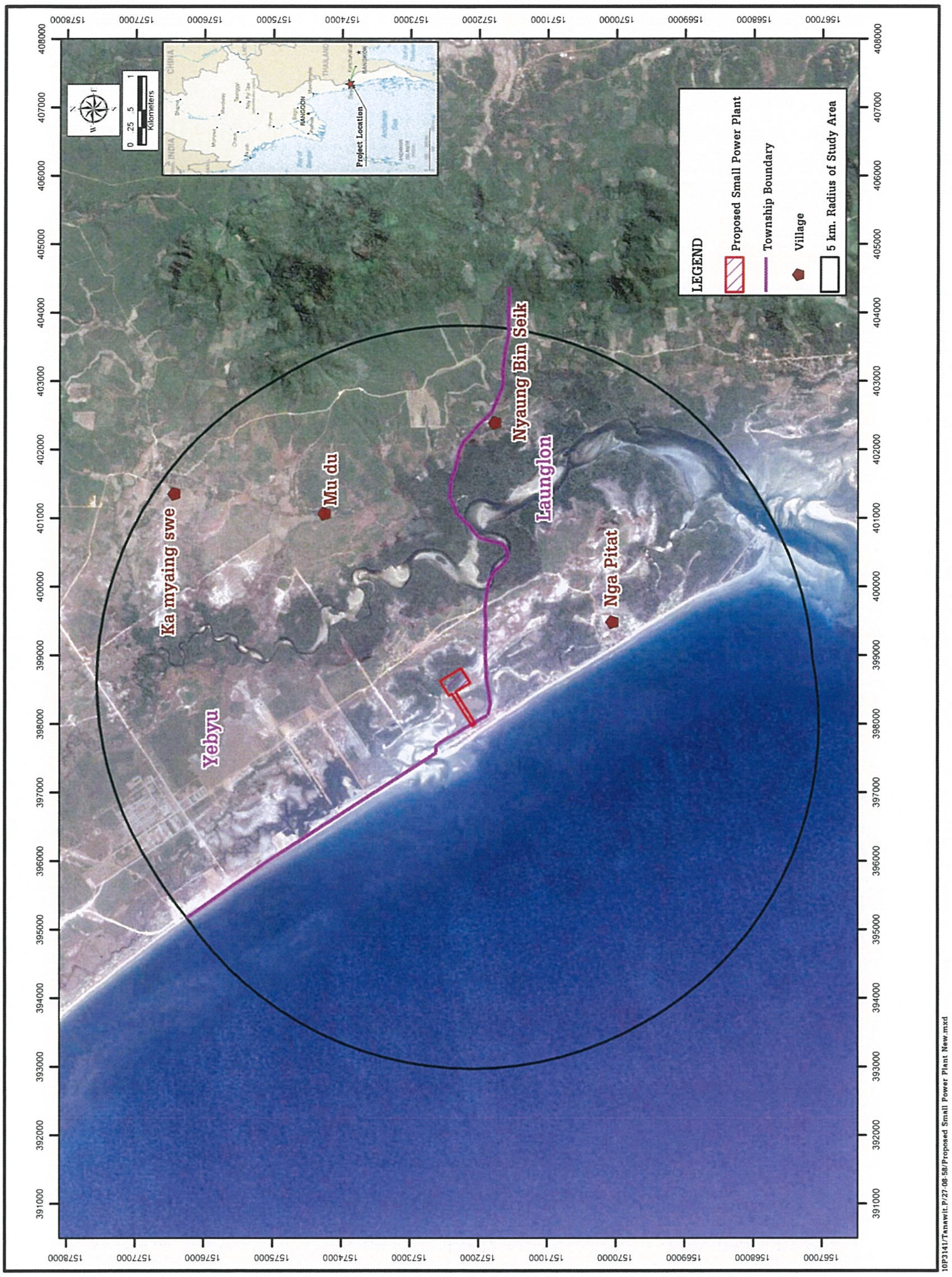


FIGURE 9.2.1-1 : VILLAGES AND COMMUNITY IN THE STUDY AREA

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 and Launglon 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 meeting, following title included 1) electricity, 2) installation of traffic warning sign, 3) problem of fugitive dust, 4) structure of bridges, 5) villagers want to learn new skill to become permanent staff, 6) job opportunities and 7) compensation, 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 the three periods of 6-8 October 2015, 1-3 December 2015 and 29 March, 2018. The meeting dates, names of persons met, the agencies they represented, and venues are given in ***Table 9.3-1*** and ***Table 9.3-2***. Names of villagers in the three villages and one community who attended the consultation meetings in two periods are listed for the record in ***Appendix 9A***.

Photo 9.3-1, ***Photo 9.3-2*** and ***Photo 9.3-3*** show some pictures of the meetings.

TABLE 9.3-1

THE FIRST PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates / time	Name	Position and Organization	Venue
6 October 2015	**SWB-Support Working Group (total of 6 persons)**		
9.00-10.30 hrs.	1. Mr. Aung Kyaw Nyien	Secretary/Myanmar Port Authority	SWB Office
	2. Mr. Aung Hone Than	Officer, Administration Department	
	3. Mr. U Thet Oo	Officer, Labour Department	
	4. Mr. Khin Htun	Officer, Immigration Department	
	5. Mr. Kyaw Min Oo	Chief Officer, Myanmar Police Force	
	6. Mr. Wai Linn Zaw	Officer, Administration Department	
6 October 2015	**Government Authorities at Regional and Local Levels**		
11.30-12.00 hrs.	1.Mr. Daw Let Let Htwe	Head of Yebyu Township Administration (1 person)	Yebyu Township Office
14.00-15.00 hrs.	2. Mr. U Tin Thein	Secretary of Tanintharyi Regional Government Office(1 person)	Tanintharyi Regional Government Office
16.30-17.30 hrs.	3. Mr. U Aung Khine Soe	Deputy Director of Environmental Conservation Department for Tanintharyi Region (1 person)	ECD Office, Dawei
7 October 2015	**The General Public : Local Community Groups**		
9.30-11.00 hrs.	1. Mudu (included Kamyaingswea) Villagers	• Village headman, village committee, community leaders and villagers (total of 73 persons) • U Aung Khine Soe, Deputy Director of Environmental Conservation Department in Dawei (1 person)	At the house of Mudu village headman
8 October 2015	**The General Public : Local Community Groups**		
9.30-11.00 hrs.	1. Nyaung Bin Seik Villagers	Village headman, village committee, community leaders and villagers (total of 40 persons)	The temple of Nyaung Bin Seik Village
14.00-15.30 hrs.	2. Nga Pitat Villagers	Village headman, village committee, community leaders and villagers (total of 67 persons)	Community hall of Nga Pitat Village

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 Dawei District (7 person)	ITD Meeting Hall
	2. Mr. U Htun Wai Oo	Electric Power Corporation of Dawei 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)	
2December 2015	**The General Public : Local Community Groups**		
13.30-15.00 hrs.	1. Nga Pitat Villagers	Village headman, village committee, community leaders and villagers (total of 82 persons)	Community hall of Nga Pitat Village
3December 2015	**The General Public : Local Community Groups**		
9.00-11.00 hrs.	2. Mudu (include Kamyaingswea)	Village headman, village committee, community leaders and villagers (total of 89 persons)	At the public playground of Mudu Village
13.00-15.00 hrs.	3. Villagers Nyaung Bin Seik Villagers	Village headman, village committee, community leaders and villagers (total of 66 persons)	The temple of Nyaung Bin Seik Village
4December 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

Meeting with SWB of DSEZ

Materials Presented to Villagers (in Myanmar Language)

Consultation Meeting at Mudu Village

Consultation Meeting at Nyaung Bin Seik Village

Consultation Meeting at Nga Pitat Village

PHOTO 9.3-1 : THE FIRST CONSULATION MEETINGS WITH CONCERNED AGENCIES AND THE LOCALS

Meeting with SWB and Regional Government Officials at ITD Hall

Materials Presented to Villagers (in Myanmar Language)

Consultation Meeting at Mudu Village

Consultation Meeting at Nyaung Bin Seik Village

Consultation Meeting at Nga Pitat Village

Consultation Meeting with Tavoyan Women's Union

PHOTO 9.3-2 : THE SECOND CONSULATION MEETINGS WITH CONCERNED AGENCIES, THE LOCALS AND NGO

PHOTO 9.3-3 : THE THIRD CONSULATION MEETINGS WITH CONCERNED AGENCIES, THE LOCALS AND NGO

PHOTO 9.3-3 : THE THIRD CONSULATION MEETINGS WITH CONCERNED AGENCIES, THE LOCALS AND NGO (CONT'D)

9.4 SUMMARY OF MAIN COMMENTS RECEIVED FROM STAKEHOLDERS

During the two 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

(1) Government Authorities

Major concerns and comments from the Secretary of Tanintharyi Regional Government Office, Deputy Director of ECD Regional Office, Support Working Body of DSEZ and Head of Yebyu Township Administration, were:

1) Secretary of Tanintharyi Regional Government Office

The Secretary of Tanintharyi Regional Government had suggested the Consultant to organize the village meetings to be in line with the official procedure. He also notified that questions raised by the communities might be influenced by the Non Governmental Organizations (NGOs).

2) Deputy Director of ECD Regional Office

The ECD Deputy Director informed about negative views of civil organizations on the proposed development in Dawei area. He suggested the Consultant to answer all questions raised by communities.

3) Support Working Body of DSEZ - SWB

The SWB Committee had questioned on types of activities carried out between 5-11 October 2015. He asked about the method to protect mangrove forest, and suggested not to be exploited by the project development.They recommended the Consultant to inform the village headmen and ECD officials concerned before the conduct of public consultations and household surveys.

4) Head of Yebyu Township Administration

Head of Yebyu Township Administration had short comment on implementation of the Project activities which must follow official bureaucracy.

(2) Local Communities Groups

Consultation meetings at the village level were conducted between 7-8 October 2015, at three villages of Mudu (including Kamyaingswe), Nyaung Bin Seik and Nga Pitat.

Issues identified by the participating villagers are as follows:

1) Mudu Village

Seventy three (73) villagers from Mudu include Kamyaingswea participated in the meeting. The ECD Deputy Director also joined as observer. The villagers' main concerns were on emission and other negative impacts from the power plant, effectiveness of the monitoring system, and poor conditions of the road link to the monastery nearby.

2) Nyaung Bin Seik Village

Forty villagers (40) participated in the meeting.Most of them were women as men went out for fishing in the sea.Their main concerns were on emission from the power plant, accessibility to mangroves resources and electricity generated by the project including poor conditions of the road.

3) Nga Pitat Village

Seventy three (73) villagers participated in the meeting.Their main concerns were on emission from the power plant and accessibility to natural resource in mangroves forest.

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

(2) Local Communities Groups

Consultation meetings at the village level were conducted between 2-3 December 2015, at three villages of Nga Pitat, Mudu (including Kamyaingswe) and Nyaung Bin Seik.

Issues identified by the participating villagers are as follows:

1) Nga Pitat Village

Eighty two (82) villagers participated in the meeting. Their major concerns were:

- Negative impact from construction might make marine resources declined and limitation of fishing ground
- Employment opportunity with the Project and training for unskilled labour of villagers
- Request to provide electricity to their village, as Nga Pitat is the nearest village to the Project site

2) Mudu Village

Eighty nine (89) villagers from Mudu include Kamyaingswea participated in the meeting.Their major issues were:

- Asking about current status of the ESIA study and its entire procedure
- Asking about organization to monitor the project impacts
- Suggestion to monitor on short and long term impacts from the project implementation

3) Nyaung Bin Seik Village

Sixty six (66) villagers participated in the meeting.Their concern was only on the project impacts during construction and operation periods.

(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 Period Public Consultation Meeting

The third public consultation meeting with relevant government authorities, local media, NGO and local communities was held on 29 March, 2018 in Dawei Special Economic Zone, Auditorium Hall. The summary of attendant is given in ***Table 9.4-1***. Name of relevant government authorities, local media, NGO and local communities are listed for the record in ***Appendix 9A-3***. ***Photo 9.3-3*** shows some pictures of the meeting.

TABLE 9.4-1

THE THIRD PUBLIC CONSULTATION MEETING WITH THE PROJECT'S STAKEHOLDERS

Meeting Date/Time	Attendants	Number
29 March, 2018 10:00-12:00	Relevant government and local media	26
	Villagers	76
	NGOs	-

During the consultation meeting, there were comments and feedbacks from stakeholders. The Project's Proponent and Consultant responded and clarified those comments, as shown in Minute of Meeting both Consultant and DSEZMC in ***Appendix 9B-3***. Questions and answers are shown in ***Table 9.4-2***.

TABLE 9.4.2

QUESTIONS AND ANSWERS FROM THE THIRD CONSULTATION MEETING

No.	Question	Response
1.	**Mr.Kyaw San (Villager of Mu Du)** - Need power plant provide electricity to villagers.	**Dr.Myint San (Vice Chairman-2 of DSEZ Committee) 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 in DSEZ area. - Villages outside of DSEZ, regional government will responsible to get electricity for these villages.
2.	**Mr. Soe Naing (Villager of Ya Laing)** - Warning Sign (traffic sign) need to be installed in every village roads to reduce accident.	**TEAM replied,** - Project developer will install prior to start construction the project starts.
3.	**Mr.Su Nge (Villager of Htain Gyi)** - Na Bu Lal village do not get electricity until now while other villages as Pandainn, Nyaung Pin Sake, and Yayphyu already got electricity. - Recently, there is a lot of dust fugitive from road traffic with high speed. - Accidents are also took place along the road due to the fugitive dust reduce eye visibility. - The structure of bridges are not proper so there are motor-cycle accident at the bridge.	**TEAM replied,** - When the projects start, dust control measures will employ for example speed to car will control (not more than 40km/hr). - All of the road and bridge will be maintained when the project starts.
4.	**Mr.Soe Thein (Villager of Htain Gyi)** - Villagers want to learn new skills. - Villagers want to work as not only temporary staffs but also permanent staffs. - They want to become skillful workers.	**TEAM replied,** - Training and development process will propose for employees.
5.	**Mr. Tun Naing (Villager of Pagaw Zon)** - Villagers want job opportunities in not only construction phase but also operation phase. - Project developer should keep in touch with all villages to know about their difficulties. - When do the compensation will be paid?	**Mr.Thanarat replied** about resettlement and compensation steps including Compensation and Resettlement Committee (attachment 3).

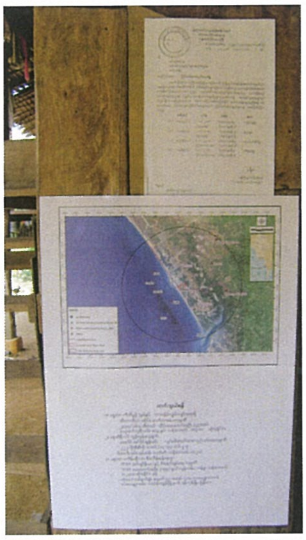
9.5 HOW THESE COMMENTS WERE TAKEN INTO ACCOUNT

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.

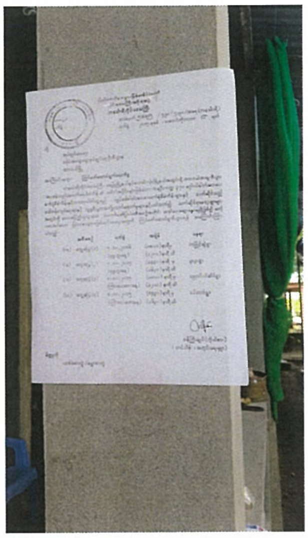
9.6 PROJECT INFORMATION DISCLOSURE

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.

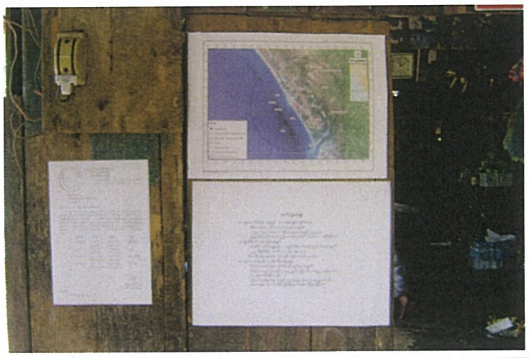
Photo 9.6-1and ***Photo 9.6-2*** show information posting in Nyaung Bin Seik, Mudu and Nga Pitat Villages.



Information Disclosure at Nyaung Bin Seik Village



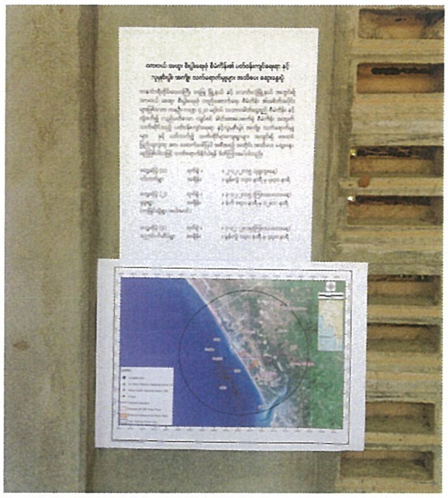
Information Disclosure at Mudu Village



Information Disclosure at Nga Pitat Village

PHOTO 9.6-1 : DISCLOSURE OF THE PROJECT INFORMATION AND INVITATION TO THE FIRST MEETING IN THREE VILLAGES

Information Disclosure at Nyaung Bin Seik Village



Information Disclosure at Mudu Village

Information Disclosure at Nga Pitat Village

PHOTO 9.6-2 : DISCLOSURE OF THE PROJECT INFORMATION AND INVITATION TO THE SECOND MEETING IN THREE VILLAGES

Details of Public consultation and information disclosure at each period are presented as follows:

In each public consultation meeting, objectives of ESIA 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 electricity, installation of traffic warning sign, problem of fugitive dust, structure of bridges, new skill training and permanent staff, job opportunities and compensation were presented prior to 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 disclosed in the third meetings included:

- Installation of traffic warning sign
- Problem of fugitive dust
- Livelihood development plan
- Job opportunities and
- Compensation

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 in ***Sections 8.6*** and ***8.7***.

The Project Proponent has already posted the current status of the Boil-off Power Plant Project ESIA activity in the website link below:

http://www.daweiindustrialestate.com/page_a.php?cid=97&cname=EIA

The ESIA Report will be added in the website by Project Proponent after the ECD Committee's acceptance of the Boil-off Power Plant ESIA Full Report and the website link shall then be promptly stated in the report.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

The ESIA investigation was based on project information, 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 natural gas for fuel with very low sulfur and particulate contents; (ii) use gas engine which low fuel consumption rate (high efficiency); (iii) control emission of NO_x less than standard (Less than 120 ppm at O_2 : 7%); and Boil-off Power Plant do not require water for cooling process.

2) The surrounding areas are largely rural and have no environmentally or ecologically sensitive areas. The nearest village is 2.22 km away namely Nga Pitat village.

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. In case of impact on Britney Creek which is area of local use and mooring area, the developer will provide alternative navigation route at Pan Din In creek which is located in the southern area of Nga Pitat Village

4) During Project operation, NO_x emission loads will be less than standard even through the cumulative impacts with the Initial Phase Power Plant (420 MW). The noise level also within standard due to the distance of project site far from closet village and project also design the noise level at 125 m. (outside the guard house) about 65 dB (A). The wastewater inside the project will be treat at oil-water separator and measure before discharged into the sea. The discharged water will have no impact on seawater quality and the marine ecosystem.

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. Their concerns are on impact to sea water quality and marine ecology and access electricity produced by nearby village.

8) The three villages that public consultation meetings were held did not oppose to the Project. They have concerns on limitation of fishing ground due to the project, participatory monitoring system, and requesting to provide electricity into their village.

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) Filling of the Project site be carried out in phases, if possible, and started as soon as possible to minimize the traffic load.

3) The proposed tri-partite committee be set up as soon as possible to serve as a means for continuing public consultation and disclosure.

4) Developer should be investigate livelihood of villagers and local fishermen in the alternative navigation route at Pan Din In creek.

APPENDIX 2A

NAME OF MEMBERS OF THE ESIA STUDY TEAM

TABLE 1
SUMMARY OF TEAM COMPOSITION FOR ESIA OF BOIL-OFF GAS POWER PLANT PROJECT

	Name of Key Personnal	Firm Acrynym	Area of Expertise	Position Assigned	Task Assigned	International or National Expert	Citizenship	Employment Status with Firm (full-time, or other)	Education/Degree (Year/Institution)	No. of Years of Relevant Project Experience
1.	Dr.Sirinimit Boonyuen	TEAM	Env. Ecology	Environmental Expert	Overall EIA Study Management	National Expert	Thailand	Full Time	Ph.D. in Environmental Biology , Ohio State University , Ohio, USA, 1986 M.S. in Environmental Studies , Ohio University , Ohio, USA, 1982 B.S. in Biology, Chulalongkorn University, Bangkok, 1980	34
2.	Dr. Sermpol Rattasuk	TEAM	EIA Expert	EIA Expert	Quality Control	National Expert	Thailand	Full Time	Ph.D. in Environmental Engineering , University of Newcastle upon Tyne , U.K. , 1971 M.Eng. in Environmental Engineering , Asian Institute of Technology , 1968 B.Sc. (Hons.) in Chemical Engineering, Chulalongkorn University, 1965	48
3.	Mr. Plian Maneeya	TEAM	Human Use Value and Resettlement	Project Manager/ Resettlement Expert	EIA Study Management/Project Description	National Expert	Thailand	Full Time	M.Sc. in Agriculture Science (Soil Science), Chiang Mai University, 1994 B.Sc. in Science (Agriculture), Chiang Mai University, 1988	26
4.	Dr.Siriluck Sirisup	TEAM	Social/Public Consultation	Senior Socio-Economic Public Consultation Specialist	Socio-Economic / Public Consultation	National Expert	Thailand	Full Time	Ph.D. (Agricultural Geography), Department of Geography, University of Durham, U.K., 2001 M.Sc. (Rural-Regional Development Planning), AIT ,1988 B. Sc.(Agriculture), Kasetsart University, 1973	41
5.	Ms. Chalida Nieobubpa	TEAM	Environmetal Scientist	Project Coordinator / Senior Environment Scientist	Project Coordinator/ Impact Assessment	National Expert	Thailand	Full Time	M.Sc. In Aqaculture, Kasetsart University, 1995 B.Sc. (Second Hons.) In Animal Science , King Mongkut's Institute of Technology, 1989 B. Sc. Public Health (Occupational Health and Safety) ,Sukhothai Thammathirat Open University , 2013	24
6.	Ms. Netchanok Tapinta	TEAM	Air/Noise/Vibration	Air Quality / Noise /Vibration Specialist	Air Quality / Noise/Vibration	National Expert	Thailand	Full Time	M.Sc. Environmental Science, Thammasat University, 2003 B.Sc. Environmental Science, Thammasat University, 1997	17
7.	Ms. Narachan Pimsuca	TEAM	Risk Assessment	Air Quality / Noise Specialist	Air Quality / Noise	National Expert	Thailand	Full Time	M.Sc. (Environmental Technology and Management), Environmental Engineering and Management, Asian Institute of Technology, 2013 B Sc. (Environmental Health Sciences) Faculty of Public Health, Mahidol University, 2005	8
8.	Mr.Nipat Somkleeb	TEAM	Marine Ecology	Water Quality Specialist / Marine Ecologist	Water Quality Specialist / Marine Ecology	National Expert	Thailand	Full Time	M.S. (Marine biology), Chulalongkorn University, 2003 B.S. (Marine Science), Chulalongkorn University, 1999	14
9.	Mr.Apichai Horcharoensap	TEAM	Terrestrial Ecology	Terrestrial Ecologist	Terrestrial Ecology	National Expert	Thailand	Full Time	B.S. (Agriculture), Rajabha Pranakorn Institute, 2003	11
10.	Mr.Prasit Akkakraisee	TEAM	Water Resource	Senior Water Resource Engineer	Water Resource / Flood	National Expert	Thailand	Full Time	M. Eng. (Water Resources), Khon Kaen University, 1997 B. Eng. (Agriculture Engineering), Khon Kaen University, 1986	28
11.	Mr.Wirat Ongprasert	TEAM	Oceanography	Senior Coastal Engineer / Model Expert	Coastal / Model	National Expert	Thailand	Full Time	M. Eng. (Coastal Engineering) Asean Institute Technology , 1983 B. Eng. (Civil Engineering) Chulalongkorn University, 1979	13
12.	Mr.Thanaphon Deepunya	TEAM	Land Use	Land Use Expert	Land Use	National Expert	Thailand	Full Time	B.Sc. in Science (Architecture), Rajabhat Phanakhorn University, 2000	13
13.	Mr.Charnchai Gowgirdwibool	TEAM	Transportation	Senior Transportation Engineer	Transportation	National Expert	Thailand	Full Time	B.Eng. (Civil Engineering) Kasetsart University, 1980	35
14.	Mr. Natt Dumkum	TEAM	Environmetal Scientist	Environment Scientist	Waste Management/Infrastructure	National Expert	Thailand	Full Time	Master's Degree of National Center of Excellence for Hazardous Waste Management, Chulalongkorn University, 2008 B.S. in Environmental Technology, SIIT, Thammasart University, 2005	11
15.	Ms.Datchanee Kongsiriwattana	TEAM	Env. Engineering	Senior Environmental Engineer	Environmental Engineering	National Expert	Thailand	Full Time	M.Eng., Environmental Engineering Chulalongkorn University, 1992 B.Eng., Civil Engineering, Chiangmai University, Thailand, 1986	27
16.	Dr.Benjaporn Boonyapookana	TEAM	Public Health	Public Health Specialist	Public Health	National Expert	Thailand	Full Time	D.Tech.Sci (Environmental Toxicology, Technology and Management), AIT, 2004 M.Sc. (Environmental Biology), Mahidol University, 2000 B.Sc. (Environmental Science), Thammasat University, 1996	19

APPENDIX 3A

THE DETAIL OF THE CORPORATE GOVERNANCE POLICY, 2015

CORPORATE GOVERNANCE ITALIAN-THAI

2015

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CORPORATE GOVERNANCE PHILOSOPHY

The Company adheres to the six following principles of Good Corporate Governance Philosophy:

1) Responsibility
2) Accountability
3) Fairness and Integrity
4) Transparency
5) Creation of Long-term Value to all Stakeholders
6) Promotion of Best Practices

The Company has three core components to enhance this Philosophy, as follows

1) Professionalism such as knowledgeable, capable and proficient in fulfilling their own responsibilities, honest, disciplined, accountable and willing to accept improvement and able to respond to changes

2) Good Internal Control System

3) Fair and equal fiduciary duties toward all stakeholders

This **"ITD Corporate Governance"** includes policies and guidelines for directors, management, and employees to use as a reference and a set standard of their practices.

The Company shall adhere to this Corporate Governance in all of its domestic and abroad operations and shall operate in accordance with the law and local culture of the country in which ITD operates.

The Company has the duty to report on corporate governance practices in the annual report. The report is expected to create investors and public confidence that any aspect of ITD operation can be audit, treats all stakeholders equally, and operates with professionalism.

POLICY STATEMENT OF GOOD CORPORATE GOVERNANCE

The Company has realized the importance of good corporate governance. The Board of Directors therefore initially implements the policy as follows:-

1. The Rights of the Shareholders

1.1 The Company shall respect the right of shareholders according to the law.

1.2 The remuneration of the Directors shall be proposed at the shareholder's meeting for consideration.

1.3 When electing Directors, the Company shall propose the candidate for the consideration and vote by the shareholders.

1.4 The Company shall give in advance the shareholders an opportunity to propose the agenda for the Annual General Meeting of Shareholders.

1.5 The Company shall recognize the importance of the shareholder's meeting invitation notice and the minutes of that meeting.

1.6 The Board of Director and the President must participate in the shareholder's meetings except in the case of force majeure preventing attendance.

1.7 All shareholders, including the institutional shareholders, have been continuously encouraged to participate and vote in the shareholders meeting on material matters that may affect their interests. In addition to the meeting invitation letter, the Company also facilitates collection of the proxy form and supporting documents in case the shareholders cannot attend the meeting.

2. The Treatment to the Shareholders with Equality

2.1 Each shareholder has as many votes as he/she owns shares.

2.2 The Company shall establish an effective inside information control system.

2.3 The Related Transaction of the Company shall comply with the rules and regulations of the Stock Exchange of Thailand and the Securities and Exchange Commission.

2.4 A proxy form shall be send together with the shareholder's meeting invitation notice and care taken to ensure that the shareholders have sufficient and complete information to understand the proxy method and meeting procedure to maintain their rights

2.5 The Company shall announce the shareholder's meeting invitation notice, with important details, on the Company's website thirty days prior to the Meeting day, or earlier.

2.6 The Company allows the shareholders to nominate persons for election as Directors in the Annual General Meeting of Shareholders by informing them in advance through the knowledge resources of the Stock Exchange of Thailand and the Company's website.

2.7 The Company will stipulate that the Directors and the Senior Management are to report the Board of Directors one day prior to the Company's stock trading.

3. The Rights of the Stakeholders

3.1 The Company shall set up a clear policy relating to the welfare, safety, benefit, provident fund and training of the employees, as disclosed in the topic of Employee Skill Development Policy, showing the solid practice and the average hours of training per year.

3.2 The Company shall implement a policy regarding the treatment of customers, partners, creditors and its corporate social responsibility. The Corporate Social Responsibility Report is disclosed in the Annual Report of the Company.

3.3 The Company shall provide a communication channel for all stakeholders to enable the exchange of information, opinions and advice through direct mail to the Independent Director of the Corporate Service Department.

4. Information Disclosure and Transparency

4.1 The shareholding structure of the Company shall be transparently disclosed.

4.2 The information disclosed in the Annual Report must correct and clear.

4.3 The Related Party Transaction and the Management's trading of the Company's stock shall comply with the rules and regulations of the Stock Exchange of Thailand and the Securities and Exchange Commission.

4.4 The Company shall appoint the the independent auditors who are qualified by the Securities and Exchange Commission.

4.5 The Company shall provide several communication channels to the investor such as the Annual Report, website, analyst meetings and press release.

4.6 The Board of Directors and the Management are responsible for reporting on matters of interest to the Chairman.

4.7 The Company discloses the number of shares held by Directors and their spouse in the Annual Registration Statement (Form 56-1).

5. The Responsibilities of the Directors

5.1 Director: The Directors and Independent Directors may take office as a director in not more than five other listed companies

5.2 Sub-committee: To appoint sub-committees to study in detail and filter the work according to its necessities and suitability, as follows:

- Board of Management
- Audit Committee
- Risk Management Committee

To implement limits and responsibilities of sub-committees and report the results of the Sub-Committees at every Board of Directors' meetings.

5.3 Balance of power of Non-Executive Directors : The structure of Company Directors consists of a Director appointed from each group of shareholders, independent director and executive director by assigning an Independent Director, which accounts for 1 in 3 of the total number of Directors on the Board, to get involved with the Sub-committees. The appointment of Directors will be made during shareholder's meetings.

5.4 Aggregation and segregation of positions: The titles and authority of the Board's chairman and head of management team shall be clearly separated.

5.5 Board of Directors' meetings: To maintain regular Board of Directors' meetings, they shall be held at least once every quarter, to follow and monitor the results of the company's business operations and other related issues. All Directors should attend all Board of Directors' meetings, or inform the Secretary of the Company in writing in case of inability to attend a meeting. Each Director's attendance record is disclosed in the Company's Annual Report.

The number of Directors' attendance shall constitute the quorum for every meeting of the Board of Directors, of not less than 2 in 3 of the total number of Directors at that time.

5.6 Leadership and vision: There is a clear separation of duties and responsibilities between the Board of Directors and the Board of Management so as to demonstrate independently their leadership and vision in decision making for the utmost benefit of the Company and shareholders.

5.7 Conflicts of interest: The Committee Directors, the management and the shareholders should solve problems of conflict of interests carefully, honestly, reasonably and independently within the code of ethics and fully disclose information for the benefit of the Company.

5.8 Committee Remuneration: Remuneration of the committee members shall be disclosed. Remuneration to other sub-committee members e.g. Audit Committee shall be increased according to the resolutions of the Annual General Meeting of Shareholders.

5.9 The self-assessment of the Directors: The Board of Directors shall conduct an annual self-assessment of the effectiveness of their performances.

5.10 Continuous Knowledge Development :The Company promotes training of staff at all levels in various courses to develop of its personnel to be knowledgeable and up to date with the current developments, for example SET, CSR Club, IOD and so on.

5.11 The Secretary of the Company : The Company shall appoint a person to be the secretary of the Company who shall be responsible to advise the Directors on laws and regulations, support the Director's activities, and coordinate with other entities to comply with the resolutions of the Board of Directors.

THE POLICY ON THE RIGHTS AND EQUALITY OF THE SHAREHOLDERS

The Company has established good practice guidelines to protect shareholders' rights and ensure the equitable treatment of all shareholders.

1. The Company will protect the basic rights of the shareholders, as follows;

   1.1 The right to secure registration of ownership, share transfer and obtains relevant information on the corporation on a timely and regular basis.

   1.2 The right to participate and vote in the General Shareholder Meetings.

   1.3 The right to elect members of the Board of Directors and approve the appointment of Auditors. .

   1.4 The right to share in the profits of the company.

   1.5 The right to be equally treated in a share buyback by the Company .

2. The Company will facilitate and encourage the using of the rights of the shareholders including the institutional shareholders, in the Shareholders Meetings.

   2.1 Delivering the meeting invitation notice with details of the agenda together with supporting documents and the method of vote casting to all shareholders with equality.

   2.2 Facilitating the shareholders, as well as the institutional shareholders, to participate in the Shareholders Meetings with appropriate time and place to collect the proxy and supporting documents in case they cannot attend the meeting.

   2.3 The procedure of the Shareholders Meetings must fair and not violate the rights of minority shareholders.

   2.4 The Chairman the Board of Directors, The Chairman of the Audit Committee, and the Director shall participate in the Shareholders Meetings to answer any enquiries.

   2.5 The Company shall publish the Meeting approvals of all proposed agenda items .

3. The Company will stipulate that the Directors and the Senior Management are to report the Board of Directors one day prior to the Company's stock trading.

THE POLICY ON STAKEHOLDERS TREATMENT

The Company's Policy on Stakeholders Treatment as follows :

1. Shareholders: the Company shall operate the business with the management's best knowledge and skills, honesty and fairness to both major and minor shareholders for the maximum benefits of all shareholders. In addition, the Company shall reveal the Company's operating information regularly, accurately and truthfully.

2. Employees: the Company shall give fair remuneration to employees , provide a safe working environment to protect employees' life and assets, and give priority to developing employees' potential equally and consistently. In addition, the Company shall strictly follow the rules and laws regarding employees, and avoid any actions that are prejudiced and might affect the job security of employees, and all acts toward the employees shall be with politeness and respects.

3 . Clients : the Company undertakes to offer products and services with quality, to the highest standards and at reasonable prices. The Company shall strictly protect the confidential information of all clients, try to continuously increase benefits to clients, and to firmly the client s' commitments.

4. Partners and Creditors: the Company shall not defraud partners or creditors, and commits to strictly follow all the stipulated conditions agreed with them.

5. Competitors: the Company shall operate its business competition transparently and shall not seek competitors' confidential information through deception or destroy the competitors' reputation without facts or evidence.

6 . Public: the Company shall not take any action which would damage the general public, natural resources and the environment. In addition, the Company shall to look for opportunities to support the creative activities of communities and actively build up the spirit of social responsibility by all employees at all levels, on continuous and sincere basis. Moreover, the Company shall strictly follow or oversee compliance with the intent of laws and rules issued by supervising authorities.

Whistle-Blowing Policy

The company has provided notification channels for treating the stakeholders fairly and equally according to the corporate governance, and when any misconduct, fraudulent act or corruption is found by the stakeholders, they may report directly to Corporate Service Division via telephone +66 (0) 2716-1600 extension 3800-4, or via email at cccs@itd.co.th .

All information received by the Company shall be kept strictly confidential, safe and secure in order to protect against the potential negative impact of any disclosure. Any such occurrence shall be investigated by the Company Secretary and the Internal Audit Division which shall authorize further action.

CODE OF ETHICAL CONDUCT

The Company deems it appropriate to provide this Code of Ethical Conduct , as guidelines for behavior and proper action, so that all Directors, Executives, Management, and employees are aware of the compliance standards anticipated by the Company and Shareholders. For easy consideration, the contents are divided into two Sections as follows:

1. Compliance Rules for Executives
2. Compliance Rules for Employees

1. Compliance Rules for Executives

1.1 Executives to Shareholders

- To perform their duties with honesty and to make decisions in good faith and fairness to major and minor shareholders for the maximum benefit of all shareholders.
- To manage the organization with care and forethought.
- To perform their duties by always applying their knowledge and skills in management to the best of their abilities.
- To supervise and manage any assets of the organization in such a way that they shall not be depreciated or lost without reasonable cause.
- To report the status of the organization timely, completely and truthfully.
- To equally inform every shareholder about the future prospects of the organization in both positive and negative aspects based on projections with the support of sufficient data.
- Not to seek benefits for themselves, or closely connected persons, by using any information that is not available to the public.
- Not to divulge any confidential information to outsiders, especially to competitors.
- Not to proceed with any undertakings that might cause conflict of interest against the organization.

1.2 Executives to Employees

- To give fair remuneration to employees.

- To keep the working environment safe for employees' life and property.

- To promote and transfer employees, including giving reward and punishment, based on the loyalty, knowledge, ability and merits of each employee.
- To give priority to the development of the knowledge and ability of employees by giving them the equal opportunities and listen to the comments and suggestions of the employees based on their professional knowledge.
- To strictly follow the laws and regulations which relate to employees
- To execute works in such a manner to avoid any unfair action that might affect the job security of employees.
- To avoid any unfair action that might threaten or cause mental stress to employees.
- To treat employees politely and with respect as to his/her individuality and humanity.
- To encourage employees to observe the highest code of ethics and conduct and to promote ethical behavior throughout the organization.
- To give opportunities to employees to report illegal deeds within the organization.

1.3 Executives to Clients

- To produce goods and to render services of good quality.
- To give appropriate warranties for the goods and services.
- To strictly and continually maintain the client's confidentiality and not to unjustly use the client's secrets for their own interests or that of closely connected persons.
- To exercise effort to minimize production costs, provided that standard and quality of goods and services are maintained at all times.
- To find the ways to continuously increase the clients' benefits.
- To strictly follow the stipulated conditions agreed with the clients.
- In case any conditions cannot be fulfilled, to inform the clients in advance in order to find mutually accepted solutions.
- Not to take unreasonable profits in relation to the quality of the goods or services and not to set unfair trading terms.

1.4 Executives to Partners and/or Creditors

- Not to solicit for, or take, or give any benefits in bad faith in dealing with the business with the partners and/or creditors.
- If there is any record of soliciting, taking or paying of any benefits in bad faith, a detailed report there of should be given to the partners and/or creditors and such matters mutually resolved on a fair and timely basis.
- To strictly follow the stipulated conditions agreed with the creditors,

no matter whether they concern expense spending, repayment, quality control, security guarantees and other matters agreed with the creditors.

- In Case any condition cannot be fulfilled, to inform the creditors in advance to find mutually accepted solutions.
- To provide correct and punctual financial reports to the creditors.

1.5 Executives to the Competitors

- To operate the Company's business under transparent competition
- Not to seek for competitors' confidential information through deception
- Not to destroy competitors' reputation without fact or evidence

1.6 Executives to the Public

- Not to do anything which damages natural resources and the environment
- To return a certain part of the organization profits to the activities of social creativity on a regular basis.
- To implant the spirit of social responsibility by all employees at all levels on a continuous and sincere basis.
- To strictly follow or oversee compliance with the intent of laws and rules issued by supervising authorities.
- Not to help or support or condone actions which avoid compliance with the applicable laws or regulations.
- To cooperate with the supervising authorities and report to them any violation or non-compliance of any applicable laws and regulations.

2. Compliance Rules for Employees

- To perform their duties with honesty and perseverance.
- To keep strictly confidential the secret information of the customers, partners and organizations.
- To respect fellow employees within the organization.
- To tender due care and assistance to keep a clean, safe and pleasant work environment.
- Not to accuse executives and other employees without truthful grounds.
- To inform relevant authorities if the Company has committed any misconduct.
- To observe and to jointly create unity and harmony among employees.
- To sincerely and strictly undertake any activities that will increase the size, the efficiency and the development the organization to improve its excellence.

Punishment for ethical violation

Violators shall be disciplined beginning with a written warning, cutting wages, cutting benefits, temporary suspension without pay or removal from office. However, the punishment shall be varied depending on the seriousness of the offense as some cases may be punishable by law.

THE POLICY ON CONFLICT OF INTEREST

The policy on conflict of interest is based on the concept that any decision made about the company business must solely be for the maximum benefit of the Company and the shareholders. This policy covers 2 aspects; the Connected Transaction and other conflict of interest situations.

1. The connected transaction

The Stock Exchange of Thailand has defined "Connected Transaction" are any transaction between a listed company or a subsidiary company and the listed company's connected persons; or any transaction between a subsidiary company and its connected persons. The "connected person" means the following:

1) The management, major shareholders, controlling persons or persons to be nominated as the management or controlling persons of a listed company or a subsidiary company including related persons and close relatives of such persons

2) Any juristic person having a major shareholder or a controlling person as the following persons of a listed company or a subsidiary:

(a) the management

(b) major shareholder

(c) controlling person

(d) person to be nominated as the management or a controlling person

(e) related persons and close relatives of persons from (a) to (d)

3) Any person whose behavior can be indicated as an acting person or under a major influence of persons from (1) to (2) when making decision, determining policy, handling management or operation; or other persons the Stock Exchange of Thailand deems as having the same manner.

The Connected transactions can be divided into six categories as follows:

(1) Normal business transaction;
(2) Supporting normal business transaction;
(3) Transaction regarding rental or lease of immovable property of not exceeding 3 years;
(4) Transaction relating to assets or service;
(5) Transaction regarding offer or receipt of financial assistance;

(6) Other connected transactions other than transaction in (1)-(5).

The Company will carefully consider before decide to enter into a connected transaction. The prices and conditions of the connected transaction are the same as would apply in normal third party "arm's length" transactions. In the case of the connected transaction is under the Notification of the Board of Governors of the Stock Exchange of Thailand RE: Disclosure of Information and Other Acts of Listed Companies Concerning the Connected Transactions, 2003, the Company will proceed according to the requirements stated in the said notification, then report to the Board of Director and disclose the important details of the Connected Transactions in the annual report and Form56-1 for transparency.

2. Other conflict of interest situations

The Company has the measures to prevent the conflict of interest in other situation, as follow;

2.1 General investment

The Company's personnel, at all levels, who are the shareholder or receive any benefit from competing companies or suppliers/traders, dealings with the Company, can not participate in business decision with the said company/ suppliers/ traders except they has permitted by the President.

Buying shares of listed companies, or investing in investment funds, or stock options is not considered a conflict of interest, as long as there is no impact on work performance at the Company.

2.2 Gifts acceptance

The Company's personnel, at all levels, should not accept gifts, transportation tickets, sports passes, entertainment, holiday offers, accommodation or any other personal favors etc., which is related to the employee responsibility in the Company, if it would lead Company into any contractual commitment or being at a disadvantage.

2.3 Accepting academic projects, participating in public services and accepting any other position.

The Company's personnel, at all levels, can ask the permission from the line Vice President to accept work in a professional institute, a lecturer position, joining in public services, or accepting any other position, such as the Board of Directors and the consultants, if it can increase personnel's vision and experience. The employee who has been approved must be aware that he/she should not involve the Company or his own position in the Company in outside activities, except when approval has been granted.

Inside Information Control

1. Inside Information Disclosure

There are occasions in which the Directors, management, employees, and/or sub-contractors will be working with information and documents that cannot be disclosed to outsiders and/or trade secrets, such as confidential information on concessions, plans, data, formulas or inventions under ITD rights. Protection of this data confidentiality is of utmost importance to ITD success in the future, and also to the security of all employee careers.

It is the duty of all employees to be aware of the security control procedures that have been developed to protect confidential information, and to adhere to these security control procedures to prevent any unintentional disclosure.

1.1 Degree of confidentiality

Trade secrets are internal information that must be protected from being disclosed to outsiders. The confidentiality of the information can be graded by the secresy of the information, in ascending order, such as information that can be disclosed, protected information, confidential information, and extremely confidential information.

When sharing internal information, the sharing must be practiced within the framework of duty and responsibility as assigned.

1.2 Information disclosure to outsiders

Any information to disclose to the public must be approved by the President, and only the President or a staff member assigned by the President is authorized to disclose the information. The information related to joint ventures must also be prior approved by the joint partners.

The Corporate Service Department is responsible for disclosing information to the public by coordinating with the activity owner to prepare fact sheets and concluding the information which has to be approved by the President prior to disclosure.

1.3 Opinions expressed to outsiders

All employees shall not disclose or express any opinion when asked by outsiders except if it is the duty to answer such questions; if not, refuse to answer them politely, and recommend that they should contact the Corporate Service Department instead.

2. Compliance Rules for the use of the inside information.

Directors and executives have the duty to report their holdings and each transaction of purchase, sale or transfer of their security holdings in the Company to the Securities Exchange Commission in accordance with the rules and regulations of the Securities Exchange Commission and the Stock Exchange of Thailand, and then submit a copy of acquisition report to the Board of Directors.

2.1 The use of the inside information

As the Company is a listed company in the Stock Exchange of Thailand, it obligated to ensure that all shareholders are treated equally and fairly. The Company prohibits personnel, at all levels, and his/her family who possess, or may possess, any non-public or inside information, personally or through brokers, trading or inducing others to trade, or offering the shares of the Company, when that information has not been made public in order to protect the said personnel from any illegal actions. The Company and the Stock Exchange of Thailand observe that such trading is speculative or takes advantages, at the expenses of others, for a certain group of investors.

2.2 Preventive Measures

The Company has preventive measures to ensure that the Inside Information Policy is adhered to, as follows;

1) To limit access to non public, inside information only to the top executives and Company officers on a "need to know" basis and advise them the confidential nature of the information and the restrictions applying to its use.
2) To set up an office security system to safeguard information files and confidential documents.
3) It becomes the responsibility of the non public or inside information owner to ensure that all parties concerned strictly adhere to the security measures.

2.3 Penalty

Any violators will be penalized under the Company's rules and regulations, admonition in writing/ allowance reduction/ wage reduction/ suspension/ fire and/or legally prosecute, as the case may be.

POLICY ON INTERNAL CONTROL SYSTEM

The Company has implemented efficient internal control system which comprises of the five following components:

1) Control Environment

The Company has set priority to maintain a good environment as important factors in its internal control as follows;

- Determine clear policies, goals, operational direction and performance evaluation of the Company.
- Issuance of the Code of Ethical Conduct as guiding principles for directors, management, and employees in discharging their duties.
- Establish an organization structure and administration with appropriate roles and functions.
- Setting clear Job Description and Work Manual to help the performance of all departments to be in line and full compliance.
- Establish the Audit Committee to oversee the good corporate governance practices and act on the matters as directed by the Board of Directors.
- Establish the Internal Audit Division to audit the operations of all business and supporting units to ensure an adequacy and efficiency of the internal control systems.

2) Risk Management

The Company has assessed both inside and outside risks with the aim to provide appropriate and effective risk management to prevent or reduce risk impacts.

3) Control Activities

The Company has established the policies, plans, and budgets together with guidelines and the relating regulations with clear accountability and authorization to ensure that the managements and staffs carry out their duties correctly and in compliance with the Company's risk responses.

4) Information and Communications

- The company has set the efficient computerized Information and Communications system especially via email to ensure right, adequate, and timely flow of information to support the decision making, so that the managements and staffs can readily achieve work objectives with efficient.
- For external communications, the Company has established The Corporate Service Department, taking the role of Investor Relations, to communicate with shareholders and investors and to ensure that the shareholders and investors can access the disclosed information covering the Company's financial report or the information which reflects the share price of the Company.

5) Monitoring

The Internal Audit Division is responsible for internal auditing and reports directly to the Audit committee and the Management. If they find any risks which may significantly affect the Company, they will report to the Management for providing measures to control its effects.

POLICY ON INFORMATION DISCLOSURE AND INVESTOR RELATION

Policy on Information Disclosure and Investor Relation

The Company has been highly concerned to disclose all material information which important for investors' investment decisions with accuracy, sufficiency, timeliness and in accordance with the rule and regulation of the Stock Exchange of Thailand. Therefore, the Company has established the Policy on Information Disclosure and Investor Relation as a guideline for all related parties to practice as follow;

1. The Company will disclose all material information regarding the operations of the Company and its subsidiaries in line with procedures and period specified by the Stock Exchange of Thailand to ensure that all investors are provide with equal access to such information.

2. In case the Company know all sort of rumor related to the Company and its subsidiaries, it will be promptly disclose the fact because the said rumor may be likely to have a significant effect on the market price of the its securities or important for investors' investment decisions.

3. In case the movement of market price of the Company's securities is abnormal, the Company will consider that it's proceeding the business activities which likely to have a significant effect on the market price of its securities or not. If not, the Company will disclose that it have no significant changes on its business and operation which over than disclosed to the Stock Exchange of Thailand or the Company can not explain the causes of abnormal price movement.

4. The Company will refrain from any unwarranted promotional activities, such as using inappropriate wording in its news release and issuing an exaggerated report or prediction, which may mislead investors and cause unreasonable movements in the price and trading volume of the its securities.

5. The Corporate Services Division of the Company is responsible for investor relation activities. They will provide information and activity news directly to investors, shareholders, analysts, and the public under the rules and regulations of the Stock Exchange of Thailand.

POLICY ON OCCUPATIONAL SAFETY, HEALTH, AND WORKING ENVIRONMENT

The Company recognizes an important of occupational safety, health, and working environment which affect to 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 cooperative 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 an important 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

POLICY ON CORPORATE SOCIAL RESPONSIBILITY

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.

RISK MANAGEMENT POLICY

The Company significantly emphasized the importance of risk management since effective risk management is essential for the achievement of the Company objectives, including good corporate governance and related working processes. All the processes are based on the standards of risk management which are defined by the Stock Exchange of Thailand.

The Company has evaluated the internal and external risks which could possibly occur in the future to ensure the balanced growth and profitability of the Company at an acceptable risk level.

ANTI-CORRUPTION POLICY

Anti-Corruption Policy

The Company has extended the importance of the anti-corruption scheme by setting the proper behavioral platforms for the Directors, the Management and the employees in the Code of Business Ethics and Code of Conducts. This includes compliance with the "Corporate Governance" of the Company.

Moreover, the Company has launched the Anti-Corruption Schemes which are as follows;

- Embedding the organizational culture in terms of honesty and fairness.
- Providing the employees the training courses to encourage their morality.
- Refusing the improper payments.
- Cooperating with the governmental sectors by committing the mutual agreement between the construction sites and the governmental sectors to reveal the statement of receipts and payments to the National Anti-Corruption Commission (NACC).
- Authoring the Company Secretary and the Internal Audit Manager to implement good corporate governance.

APPENDIX 4A

INFORMATION ON THE FIRST PHASE DEVELOPMENT OF DSEZ

INFORMATION ON THE FIRST PHASE DEVELOPMENT OF DSEZ

A. BACKGROUND ON THE DSEZ

The Dawei Special Economic Zone was conceived by ITD and the Government of Myanmar granted a 75-year concession to ITD in November 2010. The DSEZ as originally conceived covers is a comprehensive development on a coastal area of 250 km^2. The development was to cover a deep sea port, an industrial estate for heavy industries, petrochemical complexes, and light industries; a township, a four-lane highway from DSEZ to the border of Thailand at Phu Nam Ron, Karnchanaburi Province, a total distance of about 132 km., and 19 –km Main Road within the DSEZ, connecting the Transborder Corridor Link to the coastline. ITD was solely responsible for carrying out the development. The development will be under the DSEZ law and the DSEZ Authority.

In July 2012, the DSEZ development management was restructured by the Government of Myanmar in collaboration with the Government of Thailand and the two governments jointly formed Dawei Special Economic Zone Development Corporation (DSEZDC), a special purpose vehicle (SPV) registered in Thailand in June 2013. The two governments will take equal shares with ITD as a shareholder.

The original development plan was revised and The Dawei SEZ Initial Phase Development Plan (IPDP) was prepared for implementation. The IPDP will cover the development of 27 km^2 industrial estate with modern infrastructure and unities needed for its efficient operation. The layout of IPDP is shown in a map below. The IPDP will be implemented in phases over a period of 8 years as follows: Phase A (Y2016-2017), Phase B (Y2018-2019), Phase C (Y2020-2021) and Phase D (Y2022-2023).The first phase, Phase A, will cover 7 km^2 aiming at labor intensive and medium industries which are environmental friendly.

Finally, The Dawei SEZ Initial Phase Development Project will be managed by the Company who is awarded by the DSEZ Management Committee ("DSEZMC") to undertake its Project under each relevant concession agreement.

B. INFORMATION ON EXISTING FACILITIES

Reservoir

The existing water reservoir which is associated facilities as the initial raw water resource to supply raw water to the water treatment plant and sufficiently operate the initial industrial estate phase for phase A is The Pa Yain Byu storage reservoir. The Pa Yain Byu Reservoir is located on the right bank of Dawei River in the DSEZ. A weir is a compacted earth fill which storage capacity is 8.54 MCM.

Resettlement Site

ITD has completed the construction of relocation houses for Project Affected People from Initial Industrial Estate Project in the Bawah resettlement site. Bawah Relocation Village located northwards along the coast of the Dawei SEZ demarcation which already completed the construction of 480 resettlement houses and public facilities, such as primary school, clinic, market, monastery, power, and water supply. The utilities are already completed and functional facilities are already to support the affected villagers.

Small Port

The Small Port is a small scale private service port located on the north bank of the Pan Din In river mouth at approximately 3 kilometres southward from the Dawei Special Economic Zone ("DSEZ") area. 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, and equipment related to its operation.

Presently, the coastal road to small port and the small port's first berth has already constructed, yet some construction items still need to be carried out in order to get full port service condition. Such construction items are lighting system on first berth, dredging of the navigation channel, breakwater and revetment, cargo storage yard, office and facilities and improving the coastal road.

Road Link

The existing Road Link is 132 km serve to connect the Sea Port and Dawei Industrial Estate to Phu Nam Ron Checkpoint in Kanchanaburi province. The Road Link starts at Na Bu Le village just before the Dawei River runs eastward through villages and forests and across rivers to Hti Khee village adjacent to the Phu Nam Ron Checkpoint. The Road Link could be defined to consist of 3 sections, namely: Section 1 connecting from DSEZ to Myitta District, Section 2 and Section 3 links from Myitta to the Myanmar-Thailand Border at Hti Khee, Myanmar and Phu Nam Ron, Kanchanaburi Province, Thailand.

C. PROPOSED DEVELOPMENT UNDER PHASE A OF THE IPDP

Road Upgrading (Two Lane Road)

The existing two-lane, unpaved road from the Thai border to DSEZ will need to be upgraded to meet Class 4 Highway Design Standards of the Department of Highways (DOH), Thailand. The road upgrading will cover the entire length of 138 km with two 3.5 m wide traffic lanes (7 m. of carriage roadway width), 1 m pave shoulder (7 metres traffic lanes (2@3.50) on 9.0 metres (2@1.0) single surface treatment paved surface shoulder), and 40 m right of way. The upgrading will start from DSEZ at Sta. 18+500 to Sta.156+500 at the Thai-Myanmar border. The upgrading works will include:

- Road pavement with asphalt
- Re-alignment and improvement of some sections
- Construction of bridges and structures crossing water courses
- Construction of road drainage and structures for protection of erosion and land/rock slide at vulnerable sections
- Rest and service areas and toll booths on each end of the road

LNG Terminal

Liquefied Natural Gas (LNG) will be imported to support the IPDP. The LNG will be used for power generation as well as for industrial fuel supply. An LNG terminal will be located in the north of the small port development site.

The LNG terminal will include the following facilities:

- Berthing for LNG carriers;
- Facilities for unloading LNG from the carrier to a temporary storage;
- Vaporization plant for converting LNG to gas state-the boil-off gas will be delivered to the boil-off gas power plant
- Send-out of the vaporized LNG into the downstream pipeline networks supplying gas to power plant and other industrial customers.

Boil-Off Gas Power Plant

The Boil-off Gas Power Plant will consist of two 7.7 MW. The use of 2 generators will allow operational flexibility in handling variations in the volume of boil-off gas from the 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 Power Plant will be operational at the same time as the LNG Terminal.

The Initial Phase Power Plant

The Initial Phase Power Plant Project is combined cycle and Gas Engine power plant designed to be the major power generation source for the power demand from the Initial Phase Development. The capacity of the power plant is 370 MW approximately and provides energy conversion service to the customers in industrial estate inside DSEZ.

Temporary Power Plant Project;

The Temporary Power Plant will consist of multiple units of 1 MW containerized gas generator, associated electrical equipment and system, multiple units of 40 m^2 LNG storage tanks and gas distribution station, which include but are not limited to multiple units of LNG transfer pump, multiple units of ambient air vaporizer, associated control and safety systems in order to convert Liquefied Natural Gas (LNG) back to natural gas and supply to gas generator set to generate power. Individual unit of 1 MW containerized gas generator will be added to the power plant as demand rises. At the peak power generation (15MW), there will be 3 complete units of back up Gas Gen online in order to ensure 100% reliability at 15MW as well as to handle any peak load during the day. The Concessionaire may provide additional units of 1 MW containerized gas generators in excess of 15 MW, subject to the submission of any EIA report (if required). The Temporary Power Plant will be operative in order to provide support during the construction period and will be removed after the Boil-Off Gas Power Plant starts to operate.

Initial Township / Residential Area Development Project;

The Initial Township / Residential Area Development Project has been planned into 2 separated locations to serve different lifestyles of tenants. Initial Township is designed to accumulate the workforce generated by the Initial Industrial Estate and is located between KM 17 and KM 18 south of the Main Road. Another is Residential Area (North point) which is prepared mainly for the accommodation of high level managers and executive who come and work in DSEZ. The site location is located the northern tip of DSEZ's coastal area.

Water Reservoir Project

The water reservoir which is designed for providing raw water supply, water treatment plant, water transmission and distribution facilities collectively called "Water networks" for phase A of the initial industrial estate phase is The Pa Yain Byu storage reservoir, the existing.

For the other phases and expansion of the industrial estate, we consider to develop the Ta Laing Gya area to build the small regulating weir to supply raw water to the water treatment plant for operating the initial industrial estate for Phase B, C and D onwards.

Landline Telecommunications Project

The development of Telecommunications Landline will consist of the fixed line network using the FTTx (Fiber to the Home) technology with the following services,

- Telephone Services
- High Speed Communication Services
- Telecommunication Network Services
- Value Added Services such as Cable TV, Point to Point Video Conference.

The Telecommunication services will go along with the development for the Initial Phase of the industrial estate. The services will provide for the industrial estate area and also provide the Telecommunication services to cover other services such as: Township, Small Port, Water Reservoir and Water Treatment Plant, Two Lane Road, Small Power Plant, and other supporting Facilities.

APPENDIX 5A

RESULTS OF SOIL QUALITY

Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : sarawoot_s@team.co.th

Project Name : ESIA for Dawei SEZ initial phase(435 MW :main facility and 97 MW:back up facility)
Location : Myanmar
P/O :
Receipt No :
CC Email. :

Lot ID: 156542
Date Received : Feb 06, 2015
Date Reported : Mar 25, 2015
Report Number : 546776-1

Reference Number	156542-1
Sampling Date	Jan 21, 2015
Sample Description	Soil at Nga Pitat Village (UTM 399518E, 1571408N)
Location	Myanmar
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Feb 07, 2015

Analyte		**Unit**	**LOD**	**Result**	**Method**
Chemical Testing					
Chloride		mg/kg	-	305	ISE Application
Conductivity	aqueous phase 20% (w/v)	micromhos/cm	-	248	Based on APHA (2012), 2510 B
Nitrate		mg/kg	-	<1.0	Based on APHA (2012), 4500-NO3 E
Oil & Grease		mg/kg	-	649	Based on US EPA, 9071 B
Organic matter		%	-	0.63	Dichromate Titration
pH	aqueous phase 20% (w/v)		-	5.2	Based on US EPA, Method 9040 B
Phosphate		mg/kg	-	<1.0	Based on APHA (2012), 4500-P
Salinity		ppt	-	0.12	Based on APHA (2012), 5210 B
Sulfate		mg/kg	-	101	Based on APHA (2012), 4110 B
Total Organic Carbon		%	-	0.19	Based on US EPA, Method 9060
Metals Testing					
Arsenic		mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Cadmium		mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium		mg/kg	-	<1.00	Based on US EPA, Method 3050B and 6010B
Copper		mg/kg	-	<1.00	Based on US EPA, Method 3050B and 6010B
Iron		mg/kg	-	88.9	Based on US EPA, Method 3050B and 6010B
Lead		mg/kg	-	<1.00	Based on US EPA, Method 3050B and 6010B

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Narin Saiseng
Supervisor

ALS

Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	ESIA for Dawei SEZ initial phase(435 MW :main facility and 97 MW:back up facility)	**Lot ID: 156542**
Attn :	Patravut Tadsuan	**Location :**	Myanmar	Date Received : Feb 06, 2015
Phone :	0-2509-9000	**P/O :**		Date Reported : Mar 25, 2015
Fax :	0-2509-9047	**Receipt No :**		Report Number : 546776-1
Email :	patravut_ta@team.co.th	**CC Email. :**		
Cc.Email :	sarawoot_s@team.co.th			

Reference Number	156542-1
Sampling Date	Jan 21, 2015
Sample Description	Soil at Nga Pitat Village (UTM 399518E, 1571408N)
Location	Myanmar
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Feb 07, 2015

Analyte	Unit	LOD	Result	Method
Metals Testing				
Zinc	mg/kg	-	3.26	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Sand	Hydrometer
Sand	%	-	94.1	Hydrometer
Silt		-	4.0	Hydrometer
Clay	%	-	1.9	Hydrometer

Note:

This Analysis test report is reissued to supersede report No. 531338-1 Rev. No.1 Date Reported : Mar 13, 2015

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Narin Saiseng
Supervisor

Analysis / Test Report

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Email : patravut_ta@team.co.th
Cc.Email : sarawoot_s@team.co.th

Project Name : ESIA for Dawei SEZ initial phase(435 MW :main facility and 97 MW:back up facility)
Location : Myanmar
P/O :
Receipt No :
CC Email. :

Lot ID: 156542
Date Received : Feb 06, 2015
Date Reported : Mar 25, 2015
Report Number : 546776-1

Reference Number	156542-2
Sampling Date	Jan 21, 2015
Sample Description	Soil at Mudu Village (UTM 401429E, 1576778N)
Location	Myanmar
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Feb 07, 2015

Analyte		**Unit**	**LOD**	**Result**	**Method**
Chemical Testing					
Chloride		mg/kg	-	32.4	ISE Application
Conductivity	aqueous phase 20% (w/v)	micromhos/cm	-	20.5	Based on APHA (2012), 2510 B
Nitrate		mg/kg	-	6.1	Based on APHA (2012), 4500-NO3 E
Oil & Grease		mg/kg	-	470	Based on US EPA, 9071 B
Organic matter		%	-	3.58	Dichromate Titration
pH	aqueous phase 20% (w/v)		-	5.2	Based on US EPA, Method 9040 B
Phosphate		mg/kg	-	<1.0	Based on APHA (2012), 4500-P
Salinity		ppt	-	0.02	Based on APHA (2012), 5210 B
Sulfate		mg/kg	-	11.0	Based on APHA (2012), 4110 B
Total Organic Carbon		%	-	2.08	Based on US EPA, Method 9060
Metals Testing					
Arsenic		mg/kg	-	1.04	Based on US EPA, Method 3050B and 6010B
Cadmium		mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium		mg/kg	-	14.8	Based on US EPA, Method 3050B and 6010B
Copper		mg/kg	-	<1.00	Based on US EPA, Method 3050B and 6010B
Iron		mg/kg	-	12262	Based on US EPA, Method 3050B and 6010B
Lead		mg/kg	-	22.3	Based on US EPA, Method 3050B and 6010B

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Narin Saiseng
Supervisor

Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : sarawoot_s@team.co.th

Project Name : ESIA for Dawei SEZ initial phase(435 MW :main facility and 97 MW:back up facility)
Location : Myanmar
P/O :
Receipt No :
CC Email. :

Lot ID: 156542
Date Received : Feb 06, 2015
Date Reported : Mar 25, 2015
Report Number : 546776-1

Reference Number	156542-2
Sampling Date	Jan 21, 2015
Sample Description	Soil at Mudu Village (UTM 401429E, 1576778N)
Location	Myanmar
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Feb 07, 2015

Analyte	Unit	LOD	Result	Method
Metals Testing				
Zinc	mg/kg	-	28.0	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Clay Loan	Hydrometer
Sand	%	-	40.2	Hydrometer
Silt		-	21.9	Hydrometer
Clay	%	-	37.9	Hydrometer

Note:
This Analysis test report is reissued to supersede report No. 531338-1 Rev. No.1 Date Reported : Mar 13, 2015

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

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Narin Saiseng
Supervisor

APPENDIX 5B

RESULTS OF THE AIR QUALITY MEASUREMENTS

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co., Ltd.

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant

PROJECT NO. : 10P3153

MEASURED POINT : Mudu Village (UTM 402425E 1576727N)

MEASURED DATE : 21-24/01/2015

MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan

ANALYSIS NO. : WS-WD58001-1/2

TIME \ DATE	21-22 January 2015		22-23 January 2015		23-24 January 2015	
	WS	WD	WS	WD	WS	WD
06.00-07.00 PM	1.3	WNW	2.2	NW	0.4	WNW
07.00-08.00 PM	0.4	W	0.4	WNW	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	0.4	E	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	0.4	ENE	0.0	Calm
07.00-08.00 AM	0.0	Calm	0.4	NE	0.0	Calm
08.00-09.00 AM	0.4	ESE	0.4	E	0.0	Calm
09.00-10.00 AM	0.4	E	0.4	E	0.0	Calm
10.00-11.00 AM	0.4	ENE	0.4	NE	0.4	NE
11.00-12.00 AM	0.9	NE	0.4	NE	0.9	NE
12.00 AM-01.00 PM	0.4	NE	0.4	NE	0.4	NE
01.00-02.00 PM	0.4	ENE	0.4	NW	0.4	NW
02.00-03.00 PM	0.4	NE	1.3	WNW	0.4	WNW
03.00-04.00 PM	0.4	WNW	0.9	WNW	0.8	WNW
04.00-05.00 PM	1.3	WNW	0.9	W	1.1	WNW
05.00-06.00 PM	2.2	NW	1.8	WNW	1.7	WNW

Remark : WS = Wind Speed (m/s) WD = Wind Direction Calm = <0.4 m/s

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(MR. SARAWOOT SINGPROMMA)	(MR. PATRAVUT TADSUAN)
ANALYST SIGNATURE	AUTHORIZED SIGNATURE
13/02/2015	13/02/2015

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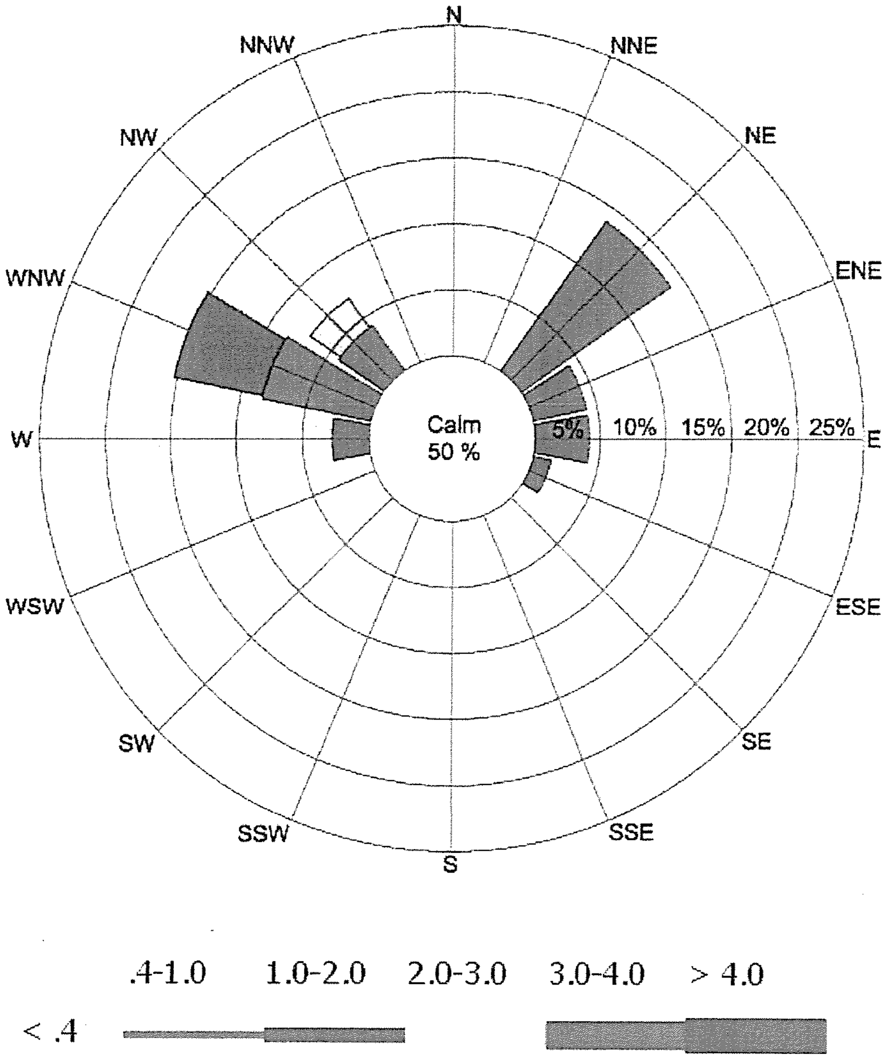
ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
PROJECT NO.	:	10P3153
MEASURED POINT	:	Mudu Village (UTM 402425E 1576727N)
MEASURED DATE	:	21-24/01/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD58001-1/2

WIND ROSE PLOT



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AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant

MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan

CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 16/02/2015

MEASURED DATE : 21-24/01/2015

MEASURED POINT : Myanmar

PROJECT NO : P3153

ANALYSIS NO. : A58001-1/1-2

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		TOTAL SUSPENDED PARTICULATES (TSP), 24 HRS. (µg/m^3)	PARTICULATE MATTER LESS THAN 10 mm (PM-10), 24 HRS. (µg/m^3)
Nga Pitat Village (UTM 399344E 1569815N)	21-22/01/2015	102.58	38.31
	22-23/01/2015	110.81	40.82
	23-24/01/2015	93.55	33.94
Mudu Village (UTM 402425E 1576727N)	21-22/01/2015	86.51	17.91
	22-23/01/2015	94.86	34.73
	23-24/01/2015	103.46	29.46
STANDARD		330	120
ANALYSIS METHOD@		GRAVIMETRIC METHOD	GRAVIMETRIC METHOD

REF:@ 1. METHOD OF AIR SAMPLING AND ANALYSIS 2ND ED., 1872

2. METHOD OF AIR SAMPLING AND ANALYSIS 3RD ED., 1989

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

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Sau
....
(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
16/02/2015

....
(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
16/02/2015

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AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
MEASURED POINT : Myanmar.
ANALYSIS NO. : SO2NO258001-1/1-2
CONTRACTED BY : Mr. Natt Dumkum
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 399344E 1569815N)	21-22/01/2015	<0.02*	<0.01**
	22-23/01/2015	<0.02*	<0.01**
	23-24/01/2015	<0.02*	<0.01**
Mudu Village (UTM 402425E 1576727N)	21-22/01/2015	<0.02*	<0.01**
	22-23/01/2015	<0.02*	<0.01**
	23-24/01/2015	<0.02*	<0.01**
STANDARD		0.12	-
ANALYSIS METHOD@		PARAROSANILINE METHOD (1)	SODIUM ARSENITE METHOD (2)

REF: (1) METHOD OF ASTM D2914-78 (2) US.EPA EQN-1277-026

REMARK : * Less than 50 μg/m^3 ** Less than 18 μg/m^3

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

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13/02/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

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ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
PROJECT NO.	:	10P3153
MEASURED POINT	:	Nga Pitat Village (UTM 399344E, 1569815N)
MEASURED DATE	:	21-24/01/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD58001-1/1

WIND ROSE PLOT

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co., Ltd.

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant

PROJECT NO. : 10P3153

MEASURED POINT : Nga Pitat Village (UTM 399344E, 1569815N)

MEASURED DATE : 21-24/01/2015

MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan

ANALYSIS NO. : WS-WD58001-1/1

DATE / TIME	21-22 January 2015		22-23 January 2015		23-24 January 2015	
	WS	WD	WS	WD	WS	WD
01.00-02.00 PM	3.8	W	3.4	WNW	3.9	W
02.00-03.00 PM	3.7	WNW	2.7	WNW	3.9	W
03.00-04.00 PM	2.5	WNW	2.5	WNW	3.4	WNW
04.00-05.00 PM	2.9	WNW	2.7	NW	2.4	WNW
05.00-06.00 PM	2.3	WNW	1.8	NW	1.9	NW
06.00-07.00 PM	0.9	NNE	0.9	N	1.2	NNW
07.00-08.00 PM	0.8	ESE	1.4	ENE	0.8	NNE
08.00-09.00 PM	1.1	ENE	1.0	NE	1.2	NE
09.00-10.00 PM	1.0	NE	0.9	NNE	0.8	NE
10.00-11.00 PM	0.9	NNE	0.9	NNE	1.0	NE
11.00-12.00 PM	1.0	NE	0.9	NNE	0.9	NE
12.00 PM-01.00 AM	1.0	NE	0.9	NNE	0.9	NNE
01.00-02.00 AM	1.0	NE	1.4	NE	0.8	NNE
02.00-03.00 AM	1.3	NE	1.8	NE	1.0	NE
03.00-04.00 AM	1.3	NNE	1.8	NE	1.0	NE
04.00-05.00 AM	1.1	NE	1.6	NE	1.1	NE
05.00-06.00 AM	1.0	NE	1.6	NE	1.0	NE
06.00-07.00 AM	0.9	NE	1.5	NE	1.1	NE
07.00-08.00 AM	1.8	ENE	1.7	NE	1.9	NE
08.00-09.00 AM	2.0	ENE	2.0	NE	2.2	NE
09.00-10.00 AM	1.9	ENE	1.9	NE	1.9	ENE
10.00-11.00 AM	1.5	ENE	1.9	W	1.6	NE
11.00-12.00 AM	2.0	WSW	3.4	W	2.7	WSW
12.00 AM-01.00 PM	4.0	W	4.2	W	4.5	W

Remark : WS = Wind Speed (m/s) WD = Wind Direction Calm = <0.4 m/s

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ANALYST SIGNATURE
13/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
PROJECT NO.	:	10P3153
MEASURED POINT	:	Existing Small Port (UTM 400846E 1567838N)
MEASURED DATE	:	25-28/01/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patavut Tadsuan
ANALYSIS NO.	:	WS-WD58002/1

WIND ROSE PLOT

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ANALYSIS REPORT

CLIENT NAME	:	TEAM Consulting Engineering and Management Co., Ltd.
PROJECT NAME	:	ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
PROJECT NO.	:	10P3153
MEASURED POINT	:	Existing Small Port (UTM 400846E 1567838N)
MEASURED DATE	:	25-28/01/2015
MEASURED BY	:	Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
ANALYSIS NO.	:	WS-WD58002/1

TIME \ DATE	25-26 January 2015		26-27 January 2015		27-28 January 2015	
	WS	WD	WS	WD	WS	WD
02.00-03.00 PM	3.3	WSW	5.2	WNW	4.9	WNW
03.00-04.00 PM	3.0	WSW	5.0	WNW	5.1	WNW
04.00-05.00 PM	3.1	W	5.0	WNW	5.3	WNW
05.00-06.00 PM	2.5	NW	4.6	WNW	3.8	NW
06.00-07.00 PM	1.7	N	3.7	NW	1.9	NNE
07.00-08.00 PM	1.3	ENE	1.6	NE	1.3	NE
08.00-09.00 PM	1.0	ENE	1.3	NE	0.9	ENE
09.00-10.00 PM	1.3	NE	1.3	E	1.2	NE
10.00-11.00 PM	2.0	NNE	0.5	ESE	1.9	NE
11.00-12.00 PM	2.3	N	1.0	NE	2.3	N
12.00 PM-01.00 AM	2.3	NE	1.5	NNE	1.8	N
01.00-02.00 AM	2.3	NNE	1.4	NNW	2.2	NNE
02.00-03.00 AM	2.3	N	1.5	N	2.2	NNE
03.00-04.00 AM	2.2	NNE	1.7	NNE	1.8	N
04.00-05.00 AM	2.9	NE	1.7	N	3.9	NNE
05.00-06.00 AM	2.8	NE	1.6	N	5.4	NNE
06.00-07.00 AM	2.2	NNE	1.6	NE	5.3	NNE
07.00-08.00 AM	2.3	NE	1.7	NE	4.0	NNE
08.00-09.00 AM	2.2	NE	2.2	NE	4.3	NNE
09.00-10.00 AM	2.7	NNE	2.8	NE	4.1	NNE
10.00-11.00 AM	2.2	NE	2.0	NE	3.1	NNE
11.00-12.00 AM	3.4	WSW	2.1	SW	3.7	ESE
12.00 AM-01.00 PM	4.6	W	3.9	W	3.6	SW
01.00-02.00 PM	5.0	WNW	4.4	W	3.3	WSW

Remark : WS = Wind Speed (m/s) WD = Wind Direction Calm = <0.4 m/s

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13/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

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AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED BY : Mr.Pornchai Chu-en and Mr.Patravut Tadsuan
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 16/02/2015
MEASURED DATE : 25-28/01/2015
MEASURED POINT : Myanmar
PROJECT NO : P3153
ANALYSIS NO. : A58002/1-2

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		TOTAL SUSPENDED PARTICULATES (TSP), 24 HRS. ($\mu g/m^3$)	PARTICULATE MATTER LESS THAN 10 mm (PM-10), 24 HRS. ($\mu g/m^3$)
Existing Small Port (UTM 400846E 1567838N)	25-26/01/2015	52.61	22.91
	26-27/01/2015	58.86	25.57
	27-28/01/2015	59.90	29.06
Scaan Tae Village (UTM 402275E 1567348N)	25-26/01/2015	68.41	26.80
	26-27/01/2015	72.70	29.90
	27-28/01/2015	79.28	32.50
STANDARD		330	120
ANALYSIS METHOD@		GRAVIMETRIC METHOD	GRAVIMETRIC METHOD

REF:@ 1. METHOD OF AIR SAMPLING AND ANALYSIS 2ND ED., 1872
2. METHOD OF AIR SAMPLING AND ANALYSIS 3RD ED., 1989

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ANALYST SIGNATURE
16/02/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
16/02/2015

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AMBIENT AIR ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Scaan Tae Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 13/02/2015
MEASURED DATE : 25-28/01/2015
PROJECT NO. : P3153
ANALYSIS NO. : SO2NO258003/1-2
MEASURED BY : Mr.Patravut Tadsuan

SAMPLING LOCATION	SAMPLING DATE	PARAMETERS	
		SULFUR DIOXIDE (SO_2) 24 HRS. (ppm)	NITROGEN DIOXIDE (NO_2) 24 HRS. (ppm)
Existing Small Port (UTM 400846E 1567838N)	25-26/01/2015	<0.02*	<0.01**
	26-27/01/2015	<0.02*	<0.01**
	27-28/01/2015	<0.02*	<0.01**
Scaan Tae Village (UTM 402275E 1567348N)	25-26/01/2015	<0.02*	<0.01**
	26-27/01/2015	<0.02*	<0.01**
	27-28/01/2015	<0.02*	<0.01**
STANDARD		0.12	-
ANALYSIS METHOD@		PARAROSANILINE METHOD[1]	SODIUM ARSENITE METHOD[2]

REF: (1) METHOD OF ASTM D2914-78 (2) US.EPA EQN-1277-026

REMARK : * Less than 50 μg/m^3 ** Less than 18 μg/m^3

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

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ANALYST SIGNATURE
13/02/2015

(MR.PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
13/02/2015

APPENDIX 5C

RESULTS OF THE NOISE AND VIBRATION MEASUREMENTS

NOISE MEASUREMENT

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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	:	ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
PROJECT LOCATION	:	Myanmar.
MEASURED SOURCE	:	Ambient Noise.
MEASURED POINT	:	1. Nga Pitat Village, Myanmar. (UTM 399344E 1569815N) 2. Mudu Village, Myanmar. (UTM 402425E 1576727N)
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.	:	N58002-1/1-2

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REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

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ISO 9001:2008 CERTIFIED

AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Mudu Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
ANALYSIS NO. : N58002-1/2
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
Mudu Village (UTM 402425E 1576727N)	21-22/01/2015	10.00 PM-11.00 PM	52.0	88.1	40.0
		11.00 PM-12.00 PM	43.8	66.0	38.7
		12.00 PM-01.00 AM	47.2	73.6	38.6
		01.00 AM-02.00 AM	46.6	75.3	39.3
		02.00 AM-03.00 AM	48.3	76.9	40.3
		03.00 AM-04.00 AM	56.6	96.6	41.5
		04.00 AM-05.00 AM	53.1	86.1	41.5
		05.00 AM-06.00 AM	49.2	78.8	43.1
		06.00 AM-07.00 AM	43.9	65.6	41.3
		07.00 AM-08.00 AM	48.4	70.8	38.4
		08.00 AM-09.00 AM	49.7	73.2	36.1
		09.00 AM-10.00 AM	51.7	67.3	49.6
		10.00 AM-11.00 AM	51.3	60.1	48.1
		11.00 AM-12.00 AM	50.9	64.0	45.5
		12.00 AM-01.00 PM	46.6	55.9	30.9
		01.00 PM-02.00 PM	33.5	53.2	30.6
		02.00 PM-03.00 PM	35.9	63.5	29.7
		03.00 PM-04.00 PM	40.4	59.3	27.9
		04.00 PM-05.00 PM	44.9	65.0	41.8
		05.00 PM-06.00 PM	53.4	85.6	40.0
		06.00 PM-07.00 PM	49.9	75.7	41.6
		07.00 PM-08.00 PM	53.8	77.6	41.4
		08.00 PM-09.00 PM	52.9	83.7	43.4
		09.00 PM-10.00 PM	50.2	88.9	41.8
		24 Hours Measured	**62.5**	**96.6**	**42.2**
		Ldn	**69.2**	-	-

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Mudu Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
ANALYSIS NO. : N58002-1/2
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	22-23/01/2015	10.00 PM-11.00 PM	52.2	90.3	39.6
		11.00 PM-12.00 PM	47.1	72.3	39.0
		12.00 PM-01.00 AM	44.4	64.0	39.0
		01.00 AM-02.00 AM	47.9	69.8	43.2
		02.00 AM-03.00 AM	57.9	71.1	44.3
		03.00 AM-04.00 AM	60.3	72.7	59.5
		04.00 AM-05.00 AM	54.8	74.3	50.8
		05.00 AM-06.00 AM	52.9	71.8	51.0
		06.00 AM-07.00 AM	47.9	64.1	42.7
		07.00 AM-08.00 AM	43.5	59.1	42.5
		08.00 AM-09.00 AM	43.1	64.9	41.1
		09.00 AM-10.00 AM	42.0	74.0	40.4
		10.00 AM-11.00 AM	41.7	53.9	40.7
		11.00 AM-12.00 AM	41.9	59.5	40.8
		12.00 AM-01.00 PM	41.0	53.9	40.2
		01.00 PM-02.00 PM	41.6	54.7	40.5
		02.00 PM-03.00 PM	41.6	61.7	40.2
		03.00 PM-04.00 PM	42.2	59.9	40.5
		04.00 PM-05.00 PM	44.9	62.6	38.8
		05.00 PM-06.00 PM	54.0	86.0	40.2
		06.00 PM-07.00 PM	47.8	76.8	39.8
		07.00 PM-08.00 PM	49.9	77.8	40.7
		08.00 PM-09.00 PM	50.7	72.9	42.3
		09.00 PM-10.00 PM	49.5	84.7	43.5
		24 Hours Measured	**51.4**	**90.3**	**47.7**
		Ldn	**54.8**	-	-

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Mudu Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
ANALYSIS NO. : N58002-1/2
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	23-24/01/2015	10.00 PM-11.00 PM	51.4	85.6	43.2
		11.00 PM-12.00 PM	45.7	69.1	38.5
		12.00 PM-01.00 AM	46.3	71.4	38.4
		01.00 AM-02.00 AM	55.7	69.6	43.6
		02.00 AM-03.00 AM	60.1	72.7	59.2
		03.00 AM-04.00 AM	56.6	78.7	43.4
		04.00 AM-05.00 AM	53.1	73.4	50.4
		05.00 AM-06.00 AM	52.9	70.7	50.8
		06.00 AM-07.00 AM	53.4	65.9	51.0
		07.00 AM-08.00 AM	52.5	69.3	51.4
		08.00 AM-09.00 AM	52.7	61.0	51.3
		09.00 AM-10.00 AM	52.4	67.0	51.2
		10.00 AM-11.00 AM	52.2	57.1	51.0
		11.00 AM-12.00 AM	51.2	59.7	50.2
		12.00 AM-01.00 PM	51.5	55.0	50.3
		01.00 PM-02.00 PM	51.3	54.9	49.8
		02.00 PM-03.00 PM	51.7	64.1	50.0
		03.00 PM-04.00 PM	51.1	67.4	40.8
		04.00 PM-05.00 PM	46.0	67.4	40.5
		05.00 PM-06.00 PM	60.0	97.1	39.5
		06.00 PM-07.00 PM	55.9	89.0	41.7
		07.00 PM-08.00 PM	50.0	72.0	40.9
		08.00 PM-09.00 PM	53.8	82.5	44.4
		09.00 PM-10.00 PM	52.6	85.6	41.3
		24 Hours Measured	**54.0**	**97.1**	**49.8**
		Ldn	**60.4**	-	-

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
12/2/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
12/2/2015

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Nga Pitat Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
ANALYSIS NO. : N58002-1/1
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
Nga Pitat Village (UTM 399344E 1569815N)	21-22/01/2015	02.00 PM-03.00 PM	58.0	88.3	48.5
		03.00 PM-04.00 PM	60.5	89.4	48.7
		04.00 PM-05.00 PM	54.9	81.1	49.4
		05.00 PM-06.00 PM	53.8	83.6	50.1
		06.00 PM-07.00 PM	55.5	78.2	52.9
		07.00 PM-08.00 PM	55.6	69.7	52.3
		08.00 PM-09.00 PM	52.7	61.9	50.0
		09.00 PM-10.00 PM	51.1	67.3	49.8
		10.00 PM-11.00 PM	50.5	67.0	49.5
		11.00 PM-12.00 PM	51.4	67.1	50.4
		12.00 PM-01.00 AM	51.6	63.4	50.1
		01.00 AM-02.00 AM	52.0	58.5	50.1
		02.00 AM-03.00 AM	51.6	56.1	50.0
		03.00 AM-04.00 AM	51.4	71.1	49.7
		04.00 AM-05.00 AM	53.3	73.0	46.8
		05.00 AM-06.00 AM	57.9	85.3	44.3
		06.00 AM-07.00 AM	60.5	90.7	44.7
		07.00 AM-08.00 AM	54.2	78.3	49.6
		08.00 AM-09.00 AM	54.7	83.0	48.5
		09.00 AM-10.00 AM	53.6	75.4	46.5
		10.00 AM-11.00 AM	50.8	73.7	45.1
		11.00 AM-12.00 AM	57.3	84.3	45.3
		12.00 AM-01.00 PM	56.6	80.5	46.0
		01.00 PM-02.00 PM	57.0	81.9	46.9
		24 Hours Measured	**55.5**	**90.7**	**49.1**
		Ldn	**61.5**	-	-

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Nga Pitat Village, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 21-24/01/2015
PROJECT NO. : 10P3153
ANALYSIS NO. : N58002-1/1
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	22-23/01/2015	02.00 PM-03.00 PM	54.8	85.5	47.7
		03.00 PM-04.00 PM	54.7	85.7	48.0
		04.00 PM-05.00 PM	54.4	82.5	49.2
		05.00 PM-06.00 PM	56.9	84.3	50.7
		06.00 PM-07.00 PM	56.1	85.0	52.3
		07.00 PM-08.00 PM	55.1	74.9	52.9
		08.00 PM-09.00 PM	55.0	67.1	51.4
		09.00 PM-10.00 PM	51.8	65.1	49.6
		10.00 PM-11.00 PM	50.7	70.8	49.7
		11.00 PM-12.00 PM	50.5	66.4	49.5
		12.00 PM-01.00 AM	50.8	62.1	49.4
		01.00 AM-02.00 AM	52.5	61.5	50.4
		02.00 AM-03.00 AM	52.5	66.7	51.0
		03.00 AM-04.00 AM	52.3	71.1	50.9
		04.00 AM-05.00 AM	53.9	72.6	47.1
		05.00 AM-06.00 AM	57.2	85.0	42.7
		06.00 AM-07.00 AM	58.0	86.6	43.1
		07.00 AM-08.00 AM	56.8	87.6	49.1
		08.00 AM-09.00 AM	54.0	85.7	49.2
		09.00 AM-10.00 AM	53.4	75.3	47.7
		10.00 AM-11.00 AM	55.5	81.2	46.3
		11.00 AM-12.00 AM	59.7	76.3	49.3
		12.00 AM-01.00 PM	60.9	86.7	49.1
		01.00 PM-02.00 PM	57.9	80.8	47.9
		24 Hours Measured	**55.7**	**87.6**	**49.5**
		Ldn	**60.9**	-	-

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 12/02/2015

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015

PROJECT NO. : 10P3153

MEASURED POINT : Nga Pitat Village, Myanmar.
ANALYSIS NO. : N58002-1/1

CONTRACTED BY : Mr. Natt Dumkum
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	23-24/01/2015	02.00 PM-03.00 PM	56.3	86.8	49.4
		03.00 PM-04.00 PM	54.6	77.9	49.4
		04.00 PM-05.00 PM	56.0	83.2	49.8
		05.00 PM-06.00 PM	53.8	74.4	51.4
		06.00 PM-07.00 PM	53.9	74.8	52.6
		07.00 PM-08.00 PM	56.9	82.6	52.5
		08.00 PM-09.00 PM	54.8	59.7	53.2
		09.00 PM-10.00 PM	55.5	60.6	53.3
		10.00 PM-11.00 PM	53.3	65.8	51.6
		11.00 PM-12.00 PM	53.1	66.3	51.7
		12.00 PM-01.00 AM	53.2	67.1	51.7
		01.00 AM-02.00 AM	54.1	68.1	52.2
		02.00 AM-03.00 AM	54.0	67.5	52.2
		03.00 AM-04.00 AM	55.2	73.4	53.4
		04.00 AM-05.00 AM	56.2	74.1	53.0
		05.00 AM-06.00 AM	56.4	81.2	45.8
		06.00 AM-07.00 AM	56.3	79.8	45.9
		07.00 AM-08.00 AM	57.5	84.4	49.6
		08.00 AM-09.00 AM	57.3	85.5	50.1
		09.00 AM-10.00 AM	55.8	77.4	50.0
		10.00 AM-11.00 AM	53.7	75.3	47.5
		11.00 AM-12.00 AM	59.3	81.7	46.6
		12.00 AM-01.00 PM	55.8	81.7	49.6
		01.00 PM-02.00 PM	57.2	84.8	48.3
		24 Hours Measured	**55.7**	**86.8**	**51.0**
		Ldn	**61.5**	-	-

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
12/2/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
12/2/2015

ORL/LAB/99999/RT560014/P3153_N58002-1/1

A Member of TEAM GROUP

12-02-2015

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Existing Small Port, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 25-28/01/2015
PROJECT NO. : P3153
ANALYSIS NO. : N58004/1
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
Existing Small Port (UTM 400846E 1567838N)	25-26/01/2015	03.00 PM-04.00 PM	58.5	90.7	50.2
		04.00 PM-05.00 PM	64.6	82.0	49.7
		05.00 PM-06.00 PM	58.8	78.7	47.9
		06.00 PM-07.00 PM	49.0	67.2	48.0
		07.00 PM-08.00 PM	49.3	55.4	48.5
		08.00 PM-09.00 PM	49.1	57.8	48.3
		09.00 PM-10.00 PM	48.3	62.5	47.6
		10.00 PM-11.00 PM	48.5	55.7	47.8
		11.00 PM-12.00 PM	49.3	57.0	48.2
		12.00 PM-01.00 AM	50.6	61.9	49.3
		01.00 AM-02.00 AM	52.7	65.5	51.1
		02.00 AM-03.00 AM	53.1	60.6	51.5
		03.00 AM-04.00 AM	52.2	67.3	50.1
		04.00 AM-05.00 AM	52.2	71.8	49.0
		05.00 AM-06.00 AM	46.2	59.4	39.6
		06.00 AM-07.00 AM	52.9	72.1	39.7
		07.00 AM-08.00 AM	47.6	70.3	34.3
		08.00 AM-09.00 AM	54.0	88.5	51.1
		09.00 AM-10.00 AM	55.0	70.0	51.5
		10.00 AM-11.00 AM	51.6	78.4	46.7
		11.00 AM-12.00 AM	72.5	88.1	47.8
		12.00 AM-01.00 PM	78.2	91.5	64.5
		01.00 PM-02.00 PM	78.9	93.6	63.5
		02.00 PM-03.00 PM	73.8	91.4	59.1
		24 Hours Measured	**69.0**	**93.6**	**54.9**
		Ldn	**69.3**		

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12-02-2015

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Existing Small Port, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 25-28/01/2015
PROJECT NO. : P3153
ANALYSIS NO. : N58004/1
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	26-27/01/2015	03.00 PM-04.00 PM	71.4	90.0	60.5
		04.00 PM-05.00 PM	70.7	88.9	58.6
		05.00 PM-06.00 PM	65.9	89.1	53.1
		06.00 PM-07.00 PM	60.3	85.8	48.3
		07.00 PM-08.00 PM	50.4	68.8	48.6
		08.00 PM-09.00 PM	49.8	53.9	48.6
		09.00 PM-10.00 PM	49.0	63.2	47.6
		10.00 PM-11.00 PM	48.4	54.0	47.3
		11.00 PM-12.00 PM	49.3	59.7	48.4
		12.00 PM-01.00 AM	49.5	66.2	48.0
		01.00 AM-02.00 AM	50.0	59.8	48.8
		02.00 AM-03.00 AM	51.7	60.1	50.7
		03.00 AM-04.00 AM	52.5	62.4	50.1
		04.00 AM-05.00 AM	50.2	56.4	49.5
		05.00 AM-06.00 AM	50.1	72.2	40.2
		06.00 AM-07.00 AM	44.8	67.9	38.5
		07.00 AM-08.00 AM	60.6	81.2	38.5
		08.00 AM-09.00 AM	61.4	95.1	48.8
		09.00 AM-10.00 AM	55.5	77.9	51.2
		10.00 AM-11.00 AM	54.4	78.0	49.9
		11.00 AM-12.00 AM	60.9	80.0	47.3
		12.00 AM-01.00 PM	71.2	85.8	51.4
		01.00 PM-02.00 PM	74.9	88.8	56.5
		02.00 PM-03.00 PM	73.9	89.3	61.0
		24 Hours Measured	66.4	95.1	53.3
		Ldn	66.7		

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12-02-2015

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AMBIENT NOISE

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED POINT : Existing Small Port, Myanmar.
CONTRACTED BY : Mr. Natt Dumkum

REPORT DATE : 12/02/2015
MEASURED DATE : 25-28/01/2015
PROJECT NO. : P3153
ANALYSIS NO. : N58004/1
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING LOCATION	SAMPLING DATE	SAMPLING TIME	LAeq	LAmax	L90
	27-28/01/2015	03.00 PM-04.00 PM	74.0	90.5	57.8
		04.00 PM-05.00 PM	71.0	91.4	56.0
		05.00 PM-06.00 PM	59.3	83.5	49.7
		06.00 PM-07.00 PM	52.0	65.0	49.1
		07.00 PM-08.00 PM	49.0	64.7	48.0
		08.00 PM-09.00 PM	48.3	60.1	47.3
		09.00 PM-10.00 PM	48.5	53.8	47.7
		10.00 PM-11.00 PM	48.8	63.2	47.7
		11.00 PM-12.00 PM	48.3	60.4	47.5
		12.00 PM-01.00 AM	48.1	55.4	47.2
		01.00 AM-02.00 AM	48.4	62.5	47.6
		02.00 AM-03.00 AM	50.9	66.6	48.1
		03.00 AM-04.00 AM	50.7	61.7	48.7
		04.00 AM-05.00 AM	59.8	78.2	48.9
		05.00 AM-06.00 AM	68.1	86.1	54.6
		06.00 AM-07.00 AM	66.0	84.4	53.7
		07.00 AM-08.00 AM	65.5	83.9	50.4
		08.00 AM-09.00 AM	62.0	84.6	51.5
		09.00 AM-10.00 AM	60.3	89.2	50.5
		10.00 AM-11.00 AM	57.0	78.8	47.6
		11.00 AM-12.00 AM	64.3	88.1	47.6
		12.00 AM-01.00 PM	62.1	79.8	47.2
		01.00 PM-02.00 PM	68.1	87.6	49.2
		02.00 PM-03.00 PM	61.0	79.2	45.2
		24 Hours Measured	64.6	91.4	50.9
		Ldn	68.7		

(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
12/2/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
12/2/2015

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VIBRATION MEASUREMENT

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015
PROJECT NO. : P3153
MEASURED POINT : Nga Pitat Village, Myanmar. (UTM 399344E 1569815N)
ANALYSIS NO. : V58001/1
CONTRACTED BY : Mr. Natt Dumkum
MEASURED BY : Mr.Pornchai Chu-en

MEASURED DATE	RESULT			
	TIME	PEAK PARTICLE VELOCITY* (mm/s)	FREQUENCY (Hz)	SOUND LEVEL PRESSURE (pa/dB)
21-22 January 2015	11:37:38 AM	0.83 (Long)	14.0	1.50A
22-23 January 2015	11:57:06 PM	0.73 (Vert)	13.0	7.70A
23-24 January 2015	01:48:51 PM	0.65 (Vert)	18.0	3.00A

Remark : * Peak Particle Velocity; Vert = Vertical, Long = Longitudinal. Tran = Transverse.

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REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

(MR. SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
13/02/2015

(MR. PATRAVUT TADSUAN
AUTHORIZED SIGNATURE
13/02/2015

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015
PROJECT NO. : P3153
MEASURED POINT : Nga Pitat Village, Myanmar. (UTM 399344E 1569815N)
ANALYSIS NO. : V58001/1
CONTRACTED BY : Mr. Natt Dumkum
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING DATE	SAMPLING TIME	TIME OF VIBRATION	PEAK PARTICLE VELOCITY* (mm/sec)	FREQUENCY (Hz)	SOURSE OF VIBRATION
21-22/01/2015	02.00-03.00 PM	02:43:47 PM	0.60 (Tran)	85.0	CAR
	03.00-04.00 PM	03:04:22 PM	0.64 (Tran)	73.0	CAR
	04.00-05.00 PM	04:14:02 PM	0.46 (Vert)	73.0	CAR
	05.00-06.00 PM	-	<0.25	-	-
	06.00-07.00 PM	06:11:47 PM	0.40 (Vert)	85.0	CAR
	07.00-08.00 PM	-	<0.25	-	-
	08.00-09.00 PM	08:21:28 PM	0.41 (Tran)	85.0	CAR
	09.00-10.00 PM	-	<0.25	-	-
	10.00-11.00 PM	10:44:40 PM	0.81 (Long)	15.0	CAR
	11.00-12.00 PM	11:25:12 PM	0.76 (Long)	14.0	CAR
	12.00 PM-01.00 AM	12:44:59 AM	0.60 (Long)	15.0	CAR
	01.00-02.00 AM	-	<0.25	-	-
	02.00-03.00 AM	-	<0.25	-	-
	03.00-04.00 AM	-	<0.25	-	-
	04.00-05.00 AM	-	<0.25	-	-
	05.00-06.00 AM	05:49:12 AM	0.44 (Tran)	73.0	CAR
	06.00-07.00 AM	06:26:13 AM	0.56 (Long)	73.0	CAR
	07.00-08.00 AM	07:17:23 AM	0.44 (Tran)	73.0	CAR
	08.00-09.00 AM	08:18:18 AM	0.59 (Tran)	85.0	CAR
	09.00-10.00 AM	09:04:15 AM	0.41 (Tran)	73.0	CAR
	10.00-11.00 AM	10:15:40 AM	0.49 (Tran)	85.0	CAR
	11.00-12.00 AM	11:37:38 AM	0.83 (Long)	14.0	CAR
	12.00 AM-01.00 PM	12:01:49 PM	0.49 (Tran)	15.0	CAR
	01.00-02.00 PM	-	<0.25	-	-

Remark :

- * Tran = Transverse Geophone
- Vert = Vertical Geophone
- Long = Longitudinal
- N/A = Not Applicable

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015
PROJECT NO. : P3153
MEASURED POINT : Nga Pitat Village, Myanmar. (UTM 399344E 1569815N)
ANALYSIS NO. : V58001/1
CONTRACTED BY : Mr. Natt Dumkum
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING DATE	SAMPLING TIME	TIME OF VIBRATION	PEAK PARTICLE VELOCITY* (mm/sec)	FREQUENCY (Hz)	SOURSE OF VIBRATION
22-23/01/2015	02.00-03.00 PM	02:36:36 PM	0.41 (Long)	73.0	CAR
	03.00-04.00 PM	03:56:10 PM	0.37 (Tran)	85.0	CAR
	04.00-05.00 PM	04:00:20 PM	0.41 (Vert)	73.0	CAR
	05.00-06.00 PM	05:06:32 PM	0.59 (Tran)	73.0	CAR
	06.00-07.00 PM	06:20:52 PM	0.37 (Tran)	73.0	CAR
	07.00-08.00 PM	-	<0.25	-	-
	08.00-09.00 PM	-	<0.25	-	-
	09.00-10.00 PM	-	<0.25	-	-
	10.00-11.00 PM	10:59:30 PM	0.35 (Tran)	17.0	CAR
	11.00-12.00 PM	11:57:06 PM	0.73 (Vert)	13.0	CAR
	12.00 PM-01.00 AM	12:30:30 AM	0.57 (Long)	12.0	CAR
	01.00-02.00 AM	01:12:54 AM	0.37 (Vert)	13.0	CAR
	02.00-03.00 AM	-	<0.25	-	-
	03.00-04.00 AM	-	<0.25	-	-
	04.00-05.00 AM	-	<0.25	-	-
	05.00-06.00 AM	05:50:46 AM	0.29 (Long)	85.0	CAR
	06.00-07.00 AM	06:27:26 AM	0.35 (Long)	73.0	CAR
	07.00-08.00 AM	07:29:57 AM	0.38 (Tran)	64.0	CAR
	08.00-09.00 AM	08:53:03 AM	0.38 (Tran)	85.0	CAR
	09.00-10.00 AM	09:43:16 AM	0.33 (Long)	64.0	CAR
	10.00-11.00 AM	-	<0.25	-	-
	11.00-12.00 AM	11:59:05 AM	0.30 (Long)	23.0	CAR
	12.00 AM-01.00 PM	12:35:25 PM	0.33 (Vert)	16.0	CAR
	01.00-02.00 PM	-	<0.25	-	-

Remark :

* Tran = Transverse Geophone
Vert = Vertical Geophone
Long = Longitudinal
N/A = Not Applicable

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ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 13/02/2015
PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
MEASURED DATE : 21-24/01/2015
PROJECT NO. : P3153
MEASURED POINT : Nga Pitat Village, Myanmar. (UTM 399344E 1569815N)
ANALYSIS NO. : V58001/1
CONTRACTED BY : Mr. Natt Dumkum
MEASURED BY : Mr.Pornchai Chu-en

SAMPLING DATE	SAMPLING TIME	TIME OF VIBRATION	PEAK PARTICLE VELOCITY* (mm/sec)	FREQUENCY (Hz)	SOURSE OF VIBRATION
23-24/01/2015	02.00-03.00 PM	-	<0.25	-	-
	03.00-04.00 PM		<0.25	-	-
	04.00-05.00 PM	-	<0.25	-	-
	05.00-06.00 PM	-	<0.25	-	-
	06.00-07.00 PM	-	<0.25	-	-
	07.00-08.00 PM	-	<0.25	-	-
	08.00-09.00 PM	-	<0.25	-	-
	09.00-10.00 PM	-	<0.25	-	-
	10.00-11.00 PM	-	<0.25	-	-
	11.00-12.00 PM	-	<0.25	-	-
	12.00 PM-01.00 AM	-	<0.25	-	-
	01.00-02.00 AM	-	<0.25	-	-
	02.00-03.00 AM	-	<0.25	-	-
	03.00-04.00 AM	-	<0.25	-	-
	04.00-05.00 AM	-	<0.25	-	-
	05.00-06.00 AM	-	<0.25	-	-
	06.00-07.00 AM	-	<0.25	-	-
	07.00-08.00 AM	-	<0.25	-	-
	08.00-09.00 AM	08:49:05 AM	0.25 (Tran)	85.0	CAR
	09.00-10.00 AM	09:19:29 AM	0.44 (Tran)	17.0	CAR
	10.00-11.00 AM	-	<0.25	-	-
	11.00-12.00 AM		<0.25		
	12.00 AM-01.00 PM	12:41:37 PM	0.38 (Vert)	19.0	CAR
	01.00-02.00 PM	01:48:51 PM	0.65 (Vert)	18.0	CAR

Remark : * Tran = Transverse Geophone; Vert = Vertical Geophone; Long = Longitudinal; N/A = Not Applicable

(MR. SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
13/02/2015

(MR. PATRAVUT TADSUAN)
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13/02/2015

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APPENDIX 5D

RESULTS OF SEAWATER QUALITY

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 18/02/2015

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
RECEIVED DATE : 27/01/2015

SAMPLING SOURCE : Coastal water
ANALYTICAL DATE : 28/01-13/02/2015

SAMPLING BY : Mr.Nipat Somkleeb and Mr.Sutiphot Gampetch
PROJECT NO. : 10P3153

SAMPLING METHOD : GRAB
ANALYSIS NO. : W58001-1/1-6

CONTRACTED BY : Mr. Natt Dumkum

PARAMETERS/ITEM	UNITS	ANALYSIS METHOD@	SW1	SW2	SW3	SW4
ANALYSIS NO.			W58001/1	W58001/2	W58001/3	W58001/4
SAMPLING DATE			21/1/2015	21/1/2015	21/1/2015	21/1/2015
SAMPLING TIME			10.30 AM	12.00 AM	01.07 PM	02.20 PM
SAMPLING LOCATION			Station 1	Station 2	Station 3	Station 4
DEPTH	m	-	11.0	11.5	16.6	7.2
pH	-	4500-H^+(B)	8.16	8.19	8.18	8.16
TRANSPARENCY	m	-	5.50	5.00	7.80	3.40
WATER TEMPERATURE	°C	2550(B)	26.5	27.0	27.4	27.1
CONDUCTIVITY	mS/cm	2510(B)	48.11	42.92	49.48	49.02
DISSOLVED OXYGEN	mg/L	4500-O(G)	7.26	6.68	5.99	6.85
SALINITY	ppt	2520(B)	30.5	30.6	30.9	30.6
TURBIDITY	NTU	2130(B)	1.2	1.1	1.1	1.0
SUSPENDED SOLIDS	mg/L	2540(D)	<5.0	<5.0	<5.0	<5.0
TOTAL DISSOLVED SOLIDS	mg/L	2540(C)	63653.8	54587.8	56317.5	47080.0
OIL & GREASE	mg/L	5520(D)	<5.0	<5.0	<5.0	<5.0

REF:@ STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER 22nd ED.,2012.(APHA-AWWA-WEF)

Remark : SW1 - Andaman Sea, Dawei, Myanmar (UTM 395675E, 1573545N) ; Lightly

SW2 - Andaman Sea, Dawei, Myanmar (UTM 397446E, 1570914N) ; Lightly

SW3 - Andaman Sea, Dawei, Myanmar (UTM 396298E, 1569482N) ; Lightly

SW4 - Andaman Sea, Dawei, Myanmar (UTM 399529E, 1567402N) ; Lightly

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY

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(MR.SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
18/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
18/02/2015

A Member of TEAM GROUP

Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : mit_tapab@hotmail.com ; natthaphong_c@te

Project Name : Natural Water and Soil
Location : โครงการ Power Plant
P/O :
Receipt No :

CC Email. :

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533147-1

Reference Number	152298-7
Sampling Date	Jan 27, 2015
Sample Description	น้ำทะเล (3141) Seawater 1
Condition of Sample	contained in four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte		Unit	LOD	Result	Method
Metals Testing					
Arsenic		mg/L	0.002	<0.005	Based on APHA (2012), 3125
Iron		mg/L	0.001	0.21	Based on APHA (2012), 3125
Lead		mg/L	0.001	Not Detected	Based on APHA (2012), 3125
Water Testing					
BOD (5 days at 20 degree C)		mg/L	-	<2	Based on APHA (2012), 5210 B
COD		mg/L	1.5	44	Based on APHA (2012), 5220 B
Cyanide	as CN	mg/L	0.002	Not Detected	Based on APHA (2012), 4500-CN (C),(E)

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

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Sawitree Noisangiam
Section Head

Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :** Natural Water and Soil	**Lot ID: 152298**
Attn :	Patravut Tadsuan	**Location :** โครงการ Power Plant	Date Received : Jan 27, 2015
Phone :	0-2509-9000	**P/O :**	Date Reported : Feb 11, 2015
Fax :	0-2509-9047	**Receipt No :**	Report Number : 533148-1
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Reference Number 152298-8
Sampling Date Jan 27, 2015
Sample Description น้ำทะเล (3141) Seawater 2
Condition of Sample contained in four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis Jan 29, 2015

Analyte		Unit	LOD	Result	Method
Metals Testing					
Arsenic		mg/L	0.002	<0.005	Based on APHA (2012), 3125
Iron		mg/L	0.001	0.16	Based on APHA (2012), 3125
Lead		mg/L	0.001	Not Detected	Based on APHA (2012), 3125
Water Testing					
BOD (5 days at 20 degree C)		mg/L	-	<2	Based on APHA (2012), 5210 B
COD		mg/L	1.5	53	Based on APHA (2012), 5220 B
Cyanide	as CN	mg/L	0.002	Not Detected	Based on APHA (2012), 4500-CN (C),(E)

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

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Sawitree Noisangiam
Section Head

ALS

Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
		Location :	โครงการ Power Plant
		P/O :	
Attn :	Patravut Tadsuan	**Receipt No :**	
Phone :	0-2509-9000		
Fax :	0-2509-9047		
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298

Date Received : Jan 27, 2015

Date Reported : Feb 11, 2015

Report Number : 533149-1

Reference Number	152298-9
Sampling Date	Jan 27, 2015
Sample Description	น้ำทะเล (3141) Seawater 3
Condition of Sample	contained in four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte		**Unit**	**LOD**	**Result**	**Method**
Metals Testing					
Arsenic		mg/L	0.002	<0.005	Based on APHA (2012), 3125
Iron		mg/L	0.001	0.08	Based on APHA (2012), 3125
Lead		mg/L	0.001	Not Detected	Based on APHA (2012), 3125
Water Testing					
BOD (5 days at 20 degree C)		mg/L	-	<2	Based on APHA (2012), 5210 B
COD		mg/L	1.5	61	Based on APHA (2012), 5220 B
Cyanide	as CN	mg/L	0.002	Not Detected	Based on APHA (2012), 4500-CN (C),(E)

Remark :

1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

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Sawitree Noisangiam
Section Head

Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : mit_tapab@hotmail.com ; natthaphong_c@te

Project Name : Natural Water and Soil
Location : โครงการ Power Plant
P/O :
Receipt No :

CC Email. :

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533150-1

Reference Number 152298-10
Sampling Date Jan 27, 2015
Sample Description น้ำทะเล (3141) Seawater 4
Condition of Sample contained in four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis Jan 29, 2015

Analyte		Unit	LOD	Result	Method
Metals Testing					
Arsenic		mg/L	0.002	<0.005	Based on APHA (2012), 3125
Iron		mg/L	0.001	0.15	Based on APHA (2012), 3125
Lead		mg/L	0.001	Not Detected	Based on APHA (2012), 3125
Water Testing					
BOD (5 days at 20 degree C)		mg/L	-	<2	Based on APHA (2012), 5210 B
COD		mg/L	1.5	44	Based on APHA (2012), 5220 B
Cyanide	as CN	mg/L	0.002	Not Detected	Based on APHA (2012), 4500-CN (C),(E)

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any from without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by Sawitree N.
Sawitree Noisangiam
Section Head

APPENDIX 5E

RESULTS OF GROUNDWATER QUALITY

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : TEAM Consulting Engineering and Management Co.,Ltd.
REPORT DATE : 18/02/2015

PROJECT NAME : ESIA for Dawei Small Port, LNG terminal and Boil off Power Plant
RECEIVED DATE : 27/01/2015

SAMPLING SOURCE : Coastal water
ANALYTICAL DATE : 28/01-13/02/2015

SAMPLING BY : Mr.Nipat Somkleeb and Mr.Sutiphot Gampetch
PROJECT NO. : 10P3153

SAMPLING METHOD : GRAB
ANALYSIS NO. : W58001/1-6

CONTRACTED BY : Mr. Natt Dumkum

PARAMETERS/ITEM	UNITS	ANALYSIS METHOD@	GW1	GW2
ANALYSIS NO.			W58001/5	W58001/6
SAMPLING DATE			27/1/2015	23/1/2015
SAMPLING TIME			01 40 PM	03.10 PM
SAMPLING LOCATION			Station 1	Station 2
DEPTH	m	-	4.50	4.50
pH	-	4500-H^+(B)	6.92	5.01
WATER TEMPERATURE	°C	2550(B)	26.6	25.70
CONDUCTIVITY	uS/cm	2510(B)	132.2	25.50
SALINITY	ppt	2520(B)	0.10	<0.10
TURBIDITY	NTU	2130(B)	0.10	0.10
CHLORIDE	mg/L	4500-Cl(B)	11.00	13.0
TOTAL HARDNESS	mg/L	2340 (C)	45.10	109.8
SUSPENDED SOLIDS	mg/L	2540(D)	<5.0	<5.0
TOTAL DISSOLVED SOLIDS	mg/L	2540(C)	36.8	947.5
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 : GW1 - Well of Nga Pitat School, Dawei, Myanmar (UTM 399504E, 1570128N) , Lightly
GW2 - Well of Mu Du School, Dawei, Myanmar (UTM 401599E, 1575318N) ; Lightly

REPORTED RESULTS REFER TO SUBMITTED SAMPLES ONLY
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(MR SARAWOOT SINGPROMMA)
ANALYST SIGNATURE
18/02/2015

(MR. PATRAVUT TADSUAN)
AUTHORIZED SIGNATURE
18/02/2015

A Member of TEAM GROUP

Analysis / Test Report

TESTING
No.0009

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil	**Lot ID: 156199**	
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant	Date Received	: Feb 04, 2015
Phone :	0-2509-9000	**P/O :**		Date Reported	: Feb 12, 2015
Fax :	0-2509-9047	**Receipt No :**		Report Number	: 530601-1
Email :	patravut_ta@team.co.th				
Cc.Email :	sarawoot_s@team.co.th				

Reference Number	156199-1
Sampling Date	Feb 04, 2015
Sample Description	น้ำใต้ดิน (3141) GW-1
Condition of Sample	contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Feb 05, 2015

Analyte		Unit	LOD	Result	Method
Metals Testing					
Arsenic		mg/L	0.00005	0.0006	Based on APHA (2012), 3125
Iron		mg/L	0.0001	0.21	Based on APHA (2012), 3125
Lead		mg/L	0.00005	0.0004	Based on APHA (2012), 3125
Water Testing					
Nitrate	as N	mg/L	0.06	2.2	Based on APHA (2012), 4110 B
Nitrite *	as N	mg/L	0.03	Not Detected	Based on APHA (2012), 4110 B
Cyanide	as CN	mg/L	0.002	<0.005	Based on APHA (2012), 4500-CN (C),(E)

Remark :

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2. "<" : Lower than LOQ (Limit of Quantitation)
3. Analyte(s) marked * is/are not included in scope of Accreditation.

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Approved by

Narin Saiseng
Supervisor

LABORATORY ACCREDITATION
BLA-DSS

TESTING
No.0009

Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : mit_tapab@hotmail.com ; natthaphong_c@te

Project Name : Natural Water and Soil
Location : โครงการ Power Plant
P/O :
Receipt No :

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533151-1

Reference Number	152298-11
Sampling Date	Jan 27, 2015
Sample Description	น้ำใต้ดิน (3141) GW-2
Condition of Sample	contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte		Unit	LOD	Result	Method
Metals Testing					
Arsenic *		mg/L	0.00005	Not Detected	Based on APHA (2012), 3125
Iron *		mg/L	0.0001	0.04	Based on APHA (2012), 3125
Lead *		mg/L	0.00005	0.001	Based on APHA (2012), 3125
Water Testing					
Nitrate	as N	mg/L	0.06	Not Detected	Based on APHA (2012), 4110 B
Nitrite *	as N	mg/L	0.03	Not Detected	Based on APHA (2012), 4110 B
Cyanide	as CN	mg/L	0.002	Not Detected	Based on APHA (2012), 4500-CN (C),(E)

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)
3. Analyte(s) marked * is/are not included in scope of Accreditation.

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Sawitree Noisangiam
Section Head

APPENDIX 5F

RESULTS OF SEDIMENT QUALITY

Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant
Phone :	0-2509-9000	**P/O :**	
Fax :	0-2509-9047	**Receipt No :**	
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298

Date Received : Jan 27, 2015

Date Reported : Feb 11, 2015

Report Number : 533143-1

Reference Number	152298-3
Sampling Date	Jan 27, 2015
Sample Description	Soil (3141) Sediment 1
Location	ตะกอนดิน
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte	**Unit**	**LOD**	**Result**	**Method**
Chemical Testing				
Oil & Grease	mg/kg	-	296	Based on US EPA, 9071 B
Organic matter	%	-	0.30	Dichromate Titration
Total Organic Carbon	%	-	0.31	Based on US EPA, Method 9060
Metals Testing				
Arsenic	mg/kg	-	4.96	Based on US EPA, Method 3050B and 6010B
Cadmium	mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium	mg/kg	-	14.7	Based on US EPA, Method 3050B and 6010B
Copper	mg/kg	-	5.88	Based on US EPA, Method 3050B and 6010B
Iron	mg/kg	-	10056	Based on US EPA, Method 3050B and 6010B
Lead	mg/kg	-	4.87	Based on US EPA, Method 3050B and 6010B
Zinc	mg/kg	-	46.5	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Sand	Hydrometer
Sand	%	-	95.2	Hydrometer
Silt		-	2.7	Hydrometer
Clay	%	-	2.1	Hydrometer

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Analysis / Test Report

Report to : TEAM Consulting Engineering and Management Co., Ltd.
151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230
Attn : Patravut Tadsuan
Phone : 0-2509-9000
Fax : 0-2509-9047
Email : patravut_ta@team.co.th
Cc.Email : mit_tapab@hotmail.com ; natthaphong_c@te

Project Name : Natural Water and Soil
Location : โครงการ Power Plant
P/O :
Receipt No :
CC Email. :

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533143-1

Remark :
1. LOD : Limit of Detection
2. "<" : Lower than LOQ (Limit of Quantitation)

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Sawitree Noisangiam
Section Head

ALS

Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant
Phone :	0-2509-9000	**P/O :**	
Fax :	0-2509-9047	**Receipt No :**	
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533144-1

Reference Number	152298-4
Sampling Date	Jan 27, 2015
Sample Description	Soil (3141) Sediment 2
Location	ตะกอนดิน
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte	Unit	LOD	Result	Method
Chemical Testing				
Oil & Grease	mg/kg	-	475	Based on US EPA, 9071 B
Organic matter	%	-	0.20	Dichromate Titration
Total Organic Carbon	%	-	0.17	Based on US EPA, Method 9060
Metals Testing				
Arsenic	mg/kg	-	1.92	Based on US EPA, Method 3050B and 6010B
Cadmium	mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium	mg/kg	-	7.20	Based on US EPA, Method 3050B and 6010B
Copper	mg/kg	-	3.98	Based on US EPA, Method 3050B and 6010B
Iron	mg/kg	-	4566	Based on US EPA, Method 3050B and 6010B
Lead	mg/kg	-	2.95	Based on US EPA, Method 3050B and 6010B
Zinc	mg/kg	-	44.6	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Sand	Hydrometer
Sand	%	-	96.0	Hydrometer
Silt		-	1.9	Hydrometer
Clay	%	-	2.1	Hydrometer

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Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant
Phone :	0-2509-9000	**P/O :**	
Fax :	0-2509-9047	**Receipt No :**	
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533144-1

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Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil	**Lot ID: 152298**
		Location :	โครงการ Power Plant	Date Received : Jan 27, 2015
		P/O :		Date Reported : Feb 11, 2015
Attn :	Patravut Tadsuan	**Receipt No :**		Report Number : 533145-1
Phone :	0-2509-9000			
Fax :	0-2509-9047			
Email :	patravut_ta@team.co.th	**CC Email. :**		
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te			

Reference Number	152298-5
Sampling Date	Jan 27, 2015
Sample Description	Soil (3141) Sediment 3
Location	ตะกอนดิน
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte	Unit	LOD	Result	Method
Chemical Testing				
Oil & Grease	mg/kg	-	506	Based on US EPA, 9071 B
Organic matter	%	-	0.09	Dichromate Titration
Total Organic Carbon	%	-	1.77	Based on US EPA, Method 9060
Metals Testing				
Arsenic	mg/kg	-	4.56	Based on US EPA, Method 3050B and 6010B
Cadmium	mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium	mg/kg	-	7.27	Based on US EPA, Method 3050B and 6010B
Copper	mg/kg	-	5.10	Based on US EPA, Method 3050B and 6010B
Iron	mg/kg	-	18591	Based on US EPA, Method 3050B and 6010B
Lead	mg/kg	-	4.96	Based on US EPA, Method 3050B and 6010B
Zinc	mg/kg	-	15.2	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Sand	Hydrometer
Sand	%	-	96.3	Hydrometer
Silt		-	1.6	Hydrometer
Clay	%	-	2.1	Hydrometer

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Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant
Phone :	0-2509-9000	**P/O :**	
Fax :	0-2509-9047	**Receipt No :**	
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298

Date Received : Jan 27, 2015

Date Reported : Feb 11, 2015

Report Number : 533145-1

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Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
Attn :	Patravut Tadsuan	**Location :**	โครงการ Power Plant
Phone :	0-2509-9000	**P/O :**	
Fax :	0-2509-9047	**Receipt No :**	
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533146-1

Reference Number	152298-6
Sampling Date	Jan 27, 2015
Sample Description	Soil (3141) Sediment 4
Location	ตะกอนดิน
Condition of Sample	packed in two glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)
Date of Analysis	Jan 29, 2015

Analyte	Unit	LOD	Result	Method
Chemical Testing				
Oil & Grease	mg/kg	-	987	Based on US EPA, 9071 B
Organic matter	%	-	0.13	Dichromate Titration
Total Organic Carbon	%	-	0.11	Based on US EPA, Method 9060
Metals Testing				
Arsenic	mg/kg	-	1.94	Based on US EPA, Method 3050B and 6010B
Cadmium	mg/kg	-	<0.50	Based on US EPA, Method 3050B and 6010B
Chromium	mg/kg	-	6.05	Based on US EPA, Method 3050B and 6010B
Copper	mg/kg	-	1:88	Based on US EPA, Method 3050B and 6010B
Iron	mg/kg	-	4477	Based on US EPA, Method 3050B and 6010B
Lead	mg/kg	-	2.33	Based on US EPA, Method 3050B and 6010B
Zinc	mg/kg	-	17.9	Based on US EPA, Method 3050B and 6010B
Mercury	mg/kg	-	<0.10	Based on US EPA, Method 7471B
PHYSICAL PARAMETERS				
Soil Texture		-	Sand	Hydrometer
Sand	%	-	95.3	Hydrometer
Silt		-	2.6	Hydrometer
Clay	%	-	2.1	Hydrometer

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Analysis / Test Report

Report to :	TEAM Consulting Engineering and Management Co., Ltd. 151, Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok Thailand 10230	**Project Name :**	Natural Water and Soil
		Location :	โครงการ Power Plant
		P/O :	
Attn :	Patravut Tadsuan	**Receipt No :**	
Phone :	0-2509-9000		
Fax :	0-2509-9047		
Email :	patravut_ta@team.co.th	**CC Email. :**	
Cc.Email :	mit_tapab@hotmail.com ; natthaphong_c@te		

Lot ID: 152298
Date Received : Jan 27, 2015
Date Reported : Feb 11, 2015
Report Number : 533146-1

Remark :
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Sawitree Noisangiam
Section Head

APPENDIX 5G

QUESTIONNAIRE

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

RESULTS OF THE INTERVIEWS

Table 1 No. of Household

Villages	Nga Pitat	Nyaung Bin Seik	Mudu	Total
No. of household	180	75	684	939

Table 2 Population

Population	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Male	477	157	1,313	1,947
Female	434	213	1,341	1,988
Total	**911**	**370**	**2,654**	**3,935**

Table 3 Population Changes in 2014

Population Changes	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Birth	10	3	20	33
Death	2	N/A	5	7
In-migration	6	N/A	10	16
Out-migration	4	N/A	700	704
Total	**22**	**3**	**735**	**760**

Table 4 Education level

Education level (%)	Nga Pitat	Nyaung Bin Seik	Mudu	Average
Children before school	6	12	5	8
Pre school	0	0	0	0
Primary School	79	73	77	76
Secondary and High School	2	1	6	3
University	1	0	1	1
Monastic	11	14	10	12
Never attended	1	0	1	1
Total %	**100**	**100**	**100**	**100**

Table 5 Vulnerable Group

Vulnerable (Household)	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Disabled	3	1	10	14
Headman over 60	20	20	133	173
Headwomen	13	3	50	66
One person in Household	6	2	4	12
Homeless	0	0	0	0
Total	**42**	**26**	**197**	**265**

Table 6 Ethnic Minorities / Religious

Ethnic minorities (Household)	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Dawei	179	73	677	929
Mon	0	1	2	3
Bamars	0	1	4	5
Rakaim	1	0	1	2
Total	**180**	**75**	**684**	**939**

Table 7 Main Occupation

Occupation (%)	Nga Pitat	Nyaung Bin Seik	Mudu	Average
Agriculture	0	7	50	**19**
Fishery	40	93	5	**46**
Agriculture & Fishery	42	0	0	**14**
Trade	9	0	3	**4**
Government Officer	0	0	0	**0**
General wagelabour	7	0	26	**11**
Employee	0	0	15	**5**
Unemployed person	2	0	0	**1**
Total %	**100**	**100**	**100**	**100**

Table 8 Employment and Wage Rate

Categories	Nga Pitat	Nyaung Bin Seik	Mudu	Average
Boy	6,000	N/A	7,000	**6,500**
Girl	5,000	N/A	5,000	**5,000**
Male	6,000	N/A	10,000	**8,000**
Female	5,000	N/A	8,000	**6,500**
Eldery Male	N/A	N/A	N/A	**N/A**
Eldery Female	N/A	N/A	N/A	**N/A**

Table 9 Number of Villagers Working Outside the Village

Item	Nga Pitat	Nyaung Bin Seik	Mudu	Average
No. of Persons	100	150	700	**317**

Table 10 Village Resources

Area (acres)	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Land resources				
Total village area	580	750	6,400	**7,730**
Residential area	70	35	600	**705**
Paddy field	0	0	500	**500**
Orchard land	460	715	5,000	**6,175**
Pasture area	50	N/A	N/A	**50**
Public area	0	N/A	N/A	**0**
Idle land	0	N/A	300	**300**
Forest resources	0	N/A	1,500	**1,500**
Mangroves resources	Public mangroves of about 3,500 acres		0	**3,500**

Table 11 No. of Household Having Livestock Raising

Type of livestock	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Pig	5	30	100	**135**
Poultry	180	50	80	**310**
Cattle	20	20	20	**60**

Table 12 Annual Average Household Income and Expenses in Year 2014 (kyats/year)

Income	Nga Pitat	Nyaung Bin Seik	Mudu	Average
Income per Household				
Average	4,763,126	1,100,000	8,994,000	**4,952,375**
Maximun	11,326,253	1,600,000	10,000,000	**7,642,084**
Minimm	1,800,000	800,000	3,006,000	**1,868,667**
Expenses per Household				
Average	4,763,126	1,100,000	6,000,000	**3,954,375.33**
Maximun	11,326,253	1,600,000	10,000,000	**7,642,084.33**
Minimm	1,800,000	800,000	2,300,000	**1,633,333.33**

Table 13

Distance to Health Service (km)

Type of service	Nga Pitat	Nyaung Bin Seik	Mudu
Hospital	7	10	17
Health care centre	N/A	N/A	10

Table 14

Availability of Infrastructure and Social Facilities in the Village

Infrastructure/Facilities	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Market	N/A	N/A	N/A	N/A
Factory	N/A	N/A	N/A	NA
Pre-school	N/A	N/A	N/A	N/A
Primary School	1	1	1	3
Middle School	N/A	N/A	1	1
Temple	1	1	3	5
Cemetery	1	1	1	3
Health Center	N/A	N/A	N/A	N/A
Pharmacy	N/A	N/A	2	2
Village meeting hall	1	1	N/A	2
Transmission line	N/A	N/A	N/A	N/A
Electricity	N/A	N/A	N/A	N/A
Pipeline	N/A	N/A	N/A	N/A

Table 15

Existing of Unexploded Ordnance in the Vicinity of the Village Area

Social Facilities	Nga Pitat	Nyaung Bin Seik	Mudu	Total
Unexploded Ordnance	N/A	N/A	N/A	N/A

APPENDIX 5I

RESULTS OF TRAFFIC COUNTRY

Table 1

Result of Traffic Counting at TC1 (Sunday, 25 January 2015)

Type of Vehicle	Direction	6.00 - 7.00 a.m.	7.00 - 8.00 a.m.	8.00 - 9.00 a.m.	9.00 - 10.00 a.m.	10.00 - 11.00 a.m.	11.00 - 12.00 a.m.	12.00 a.m. - 1.00 p.m.	1.00 - 2.00 p.m.	2.00 - 3.00 p.m.	3.00 - 4.00 p.m.	4.00 - 5.00 p.m.	5.00 - 6.00 p.m.	Total (vehicle/day)
Motercycle	out	3	-	-	4	1	2	2	2	1	3	2	3	23
	in	1	1	5	3	3	3	3	1	5	2	3	2	32
Bicycle and Tricycle	out	-	-	-	-	-	-	1	2	-	-	1	2	6
	in	-	-	-	1	1	-	-	-	-	-	1	2	5
Car/Taxi	out	-	-	1	-	-	-	-	-	-	1	-	-	2
	in	2	-	1	-	-	-	-	3	-	1	-	-	7
Ligth Bus	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	1	-	-	1
Medium Bus	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Rough Terrain Crane, Motorgrader	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Light Truck	out	1	-	-	-	-	-	-	-	-	-	-	-	1
	in	-	-	-	1	-	-	1	-	-	1	-	-	3
Six-wheeled Truck	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	1	-	-	-	-	-	-	-	-	-	-	1
Ten-wheeled Truck	out	-	-	-	1	-	-	-	-	-	-	-	-	1
	in	-	2	1	1	-	1	-	-	-	1	-	-	6
Heavy Truck including Trailer	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Total (No. of vehicle/hour)		7	4	8	11	5	6	7	8	6	10	7	9	88

Table 2

Result of Traffic Counting at TC2 (Sunday, 25 January 2015)

Type of Vehicle	Direction	6.00 - 7.00 a.m.	7.00 - 8.00 a.m.	8.00 - 9.00 a.m.	9.00 - 10.00 a.m.	10.00 - 11.00 a.m.	11.00 - 12.00 a.m.	12.00 a.m. - 1.00 p.m.	1.00 - 2.00 p.m.	2.00 - 3.00 p.m.	3.00 - 4.00 p.m.	4.00 - 5.00 p.m.	5.00 - 6.00 p.m.	Total (vehicle/day)
Motercycle	out	3	-	1	2	4	3	3	3	3	6	3	4	35
	in	-	1	-	-	3	2	2	1	2	-	2	1	14
Bicycle and Tricycle	out	-	-	-	-	-	-	-	1	2	-	-	1	4
	in	-	-	-	-	-	1	-	-	-	-	-	1	2
Car/Taxi	out	-	-	-	-	-	-	-	-	1	-	-	-	1
	in	2	-	-	-	1	-	-	-	-	-	1	1	5
Ligth Bus	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	1	-	1
Medium Bus	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Rough Terrain Crane, Motorgrader	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Light Truck	out	-	-	-	1	-	-	-	-	-	-	-	-	1
	in	-	-	-	1	1	-	-	-	1	-	1	1	5
Six-wheeled Truck	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	1	-	-	-	-	-	-	1
Ten-wheeled Truck	out	-	-	-	-	-	-	-	-	-	-	3	-	3
	in	-	-	1	-	-	-	-	-	-	-	-	-	1
Heavy Truck including Trailer	out	-	-	-	-	-	-	-	-	-	-	-	-	0
	in	-	-	-	-	-	-	-	-	-	-	-	-	0
Total (No. of vehicle/hour)		5	1	2	4	9	7	5	5	9	6	11	9	73

APPENDIX 6A

CALCULATION OF DISPERSION OF FUGITIVE DUST

APPENDIX 6.A

CALCULATION OF DISPERSION OF FUGITIVE DUST

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. (for worst case)

w = average wind speed = 2.1 m/s.

m = average Daytime Mixing Height = 1,500 m

A = area of construction activities

= 34 acres

Q = the quantity of dust dispersion into ambient air = 47,222.22 milligrams per sec

C = (47,222.22)/ (250*2.1*1,500)

= 0.059965 mg/m^3

= 59.97 µg/m^3

The calculations were made in two cases-No Control Case and Control Case. The background ambient TSP of 110.81 µg/m^3 was used in the calculations. This background TSP was 24-hr average TSP measured at Nga Pitat Villages during the period from January 2015. The results of calculations are presented below:

Emission Rate, mg/s	TSP at Site, µg/m^3	Total TSP combined with NgaPitat Village, µg/m^3
No Control	59.97	170.78
Control 75% suppression	14.99	125.70

It can be seen that even without control the total ambient TSP level will be much lower than the control target of not exceeding 230 µg /m^3.

As the nearest receptors in Nga Pitat Village is about 2,220 m away to the South of the construction site, the impact of fugitive dust on the receptors will be smaller than the level at the perimeter of the construction site.

APPENDIX 6B

PREDICTED NOISE LEVEL AT THE RECEPTORS DURING SITE PREPARATION

APPENDIX 6.B

PREDICTED NOISE LEVESL AT THE RECEPTORS DURING SITE PREPARATION

The noise level at the receptors due to the noise source can be calculated using the following equation:

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) \quad \ldots\ldots 1)$$

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 2,220 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:

$$\text{Total noise level} \quad Lp_{total} = 10 \log \left(\sum_{i=1}^{n} 10^{Lpi/10} \right) \quad \ldots\ldots 2)$$

The ambient noise level measured during January 21-24 and October 7-10, 2015 was 54.5-60.7 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 47.6 to 72.7 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 6.5-3 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 bull dozer will result in 89.77 dB(A) compared to 85 dB(A) for one machine.

The calculated ambient noise levels at the receptors clearly indicate that without control, the noise control targets will met the standard in case noise level at 24 hr. (Leq 24 hr.). However, in case low combine noise will be not met the standard. Therefore, the mitigation measure should be proposed to protect impact from noise level during site preparation.

G. Recommended Mitigation Measures

Physical Measures

(1) The noise reduction at the perimeter could be achieved using an temporary 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.

Control Case

Table 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 between 70-90 dB(A). The EPC contractor will prepare a design of sound barrier using appropriate materials, and construct the sound barrier as part of the construction contract. The sound barrier could be designed for permanent use as the perimeter walls of the Boil-off Power Plant Site. This requirement will have to be prescribed in the contract. ***Table 1*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

TABLE 1
CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR

Nga Pitat village

Receptor, r2	2,220	m	
Noise source,r1	15	m	
Log (r2/r1)	2.17		
Noise level at r2, Lp1	Source-20x(Log(r2/r1)		
Ambient noise level,Lp2	60.7 dB(A) Leq-24 hr.		
-Low	47.6 dB(A) Leq-1 hr.		
-High	72.7 dB(A) Leq-1 hr.		
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))		
Noise level of sources			
Bull Dozer	85	89.77	Assume 3 simultaneous operations

PARTICULARS	NO CONTROL	CONTROL LEVEL					STANDARD
Impact-Leq-24 hr.							
LP0-ambient	60.7	60.7	60.7	60.7	60.7	60.7	
LP1-Source	89.8	70.0	75.0	80.0	85.0	90.0	
LP2-Effect of Source	46.4	26.6	31.6	36.6	41.6	46.6	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.4	1.5	1.6	1.6	1.7	
Combined Noise Level	60.9	60.7	60.7	60.7	60.8	60.9	70.0
Impact-Leq-1 hr							
High Combined Noise Level	72.7	72.7	72.7	72.7	72.7	72.7	
Increase	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	50.0	47.6	47.7	47.9	48.6	50.1	
Increase	2.4	0.0	0.1	0.3	1.0	2.5	3.0

APPENDIX 6C

CALCULATION OF CONSTRUCTION MATERIAL

Appendix 6C

Calculation of Construction Material Quantity

Area of concrete slab	13.76	ha
	137,600	m2
Assume slab thickness	8	in.
	25	cm
Total concrete volume	34,950	m3
	45,687	cubic yard 1 cubic yard=0.765 m3
Concrete ratio	1:2:4	
Roughly, it takes 42 cu.ft of materials to make 1 cubic yard of concrete		
Volume of materials required	1,918,845	ft3
cement	274,121	ft3
fine aggregrate (sand)	548,242	ft3
coarse aggregrate	1,096,483	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	11,686	tonnes
Total weight of sand , tonnes	24,864	tonnes
Total weight of coarse aggregrate , tonnes	49,727	tonnes
Total weight of materials	86,277	tonnes
Concreting period	3	months
	958.63	tonnes/day
	4.79	trips/hour
Water volume required	0.126	ft3/ft3 of materials
	241,775	ft3
	6,846	m3

APPENDIX 6D

AIR EMISSION RESULTS FROM AERMOD MODEL

Results	BOIL-OFF NO.1		
	NO_2 (µg/m^3)		
	1-hr	24-hr	1-yr
In the entire study area			
-maximum incremental increase in concentration	8.48	3.02	0.39
-% of ambient air quality standard	4.24	2.01	0.98
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	42.48	21.02	0.39
-% of ambient air quality standard	21.24	14.01	0.98
In only sensitive areas			
-ranges of concentrations	1.66-2.26	0.14-0.18	0.01-0.02
-% of ambient air quality standard	0.83-1.13	0.09-0.12	0.03-0.05
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	35.66-36.26	18.14-18.18	0.01-0.02
-% of ambient air quality standard	17.83-18.13	12.09-12.12	0.03-0.05
Standard	**200**	**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, 2

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

Results	BOIL-OFF NO.2		
	NO_2 (µg/m^3)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	8.50	3.05	0.39
-% of ambient air quality standard	4.25	2.03	0.98
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	42.50	21.05	0.39
-% of ambient air quality standard	21.25	14.03	0.98
In only sensitive areas			
-ranges of concentrations	1.66-2.24	0.14-0.18	0.01-0.02
-% of ambient air quality standard	0.83-1.12	0.09-0.12	0.03-0.05
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	35.66-36.24	18.14-18.18	0.01-0.02
-% of ambient air quality standard	17.83-18.12	12.09-12.12	0.03-0.05
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, 2

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

Results	BOIL-OFF NO. 1+2		
	NO_2 (µg/m^3)		
	1-hr	**24-hr**	**1-yr**
In the entire study area			
-maximum incremental increase in concentration	16.97	6.07	0.70
-% of ambient air quality standard	8.49	4.05	1.75
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397907.31E, 1571824.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	875/ W	1,116/W	979/W
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	50.97	24.07	0.7
-% of ambient air quality standard	25.49	16.05	1.75
In only sensitive areas			
-ranges of concentrations	3.31-4.50	0.27-0.36	0.02-0.04
-% of ambient air quality standard	1.66-2.25	0.18-0.24	0.05-0.10
-location of the maximum value	Nga Pitat Village	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	37.31-38.50	18.27-18.36	0.02-0.04
-% of ambient air quality standard	18.66-19.25	12.18-12.24	0.05-0.10
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, 2

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

Results	CUMULATIVE (BOIL-OFF_NO. 1+2 +IPP_PHASE 5)		
	NO_2 (µg/m^3)		
	1-hr	24-hr	1-yr
In the entire study area			
-maximum incremental increase in concentration	75.28	26.28	4.31
-% of ambient air quality standard	37.64	17.52	10.78
-location of the maximum value	DSEZ Area	ANDAMAN SEA	DSEZ Area
-Coordinate (UTM(WGS84))	398307.31E, 1572624.37N	397707.31E, 1571924.37N	399107E, 1572324N
-Distance (meter) /direction from project site	331/N	979/W	555/ E
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	109.28	44.28	4.31
-% of ambient air quality standard	54.64	29.52	10.78
In only sensitive areas			
-ranges of concentrations	23.91-42.53	1.18-4.27	0.13-0.54
-% of ambient air quality standard	11.96-21.27	0.79-2.85	0.33-1.35
-location of the maximum value	Mudu Village /A1	Ka Myaing Swea	Nyaung Bin Seik Village
-maximum concentration of background level	34	18	NA
-net maximum concentration including background level	57.91-76.53	19.18-22.27	0.13-0.54
-% of ambient air quality standard	28.96-38.27	12.79-14.85	0.33-1.35
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, 2

[2/] Thermal Power: Guidelines for New Plants, Pollution Prevention and Abatement Handbook, World Bank Group, July 1998

Results	BOIL-OFF NO.1		BOIL-OFF NO.2		BOIL-OFF NO.1+2	
	SO_2 (μg/m³)		SO_2 (μg/m³)		SO_2 (μg/m³)	
	24-hr	1-yr	24-hr	1-yr	24-hr	1-yr
In the entire study area						
-maximum incremental increase in concentration	0.55	0.07	0.55	0.07	1.10	0.14
-% of ambient air quality standard	0.44	0.09	0.44	0.09	0.88	0.18
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397607.31E, 1571824.37N	397707.31E, 1571924.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	1,116/W	979/W	1,116/W	979/W	1,116/W	979/W
-maximum concentration of background level	50	NA	50	NA	50	NA
-net maximum concentration including background level	50.55	0.07	50.55	0.07	51.10	0.14
-% of ambient air quality standard	40.44	0.09	40.44	0.09	40.88	0.18
In only sensitive areas						
-ranges of concentrations	0.025-0.033	0.001-0.004	0.025-0.033	0.001-0.004	0.049-0.066	0.003-0.005
-% of ambient air quality standard	0.020-0.026	0.001-0.005	0.020-0.026	0.001-0.005	0.039-0.053	0.004-0.009
-location of the maximum value	Ka Myaing Swea Community	Nyaung Bin Seik Village	Ka Myaing Swea Community	Nyaung Bin Seik Village	Ka Myaing Swea Community	Nyaung Bin Seik Village
-maximum concentration of background level	50	NA	50	NA	50	NA
-net maximum concentration including background level	50.025-50.033	0.001-0.004	50.025-50.033	0.001-0.004	50.049-50.066	0.003-0.005
-% of ambient air quality standard	40.020-40.026	0.001-0.005	40.020-40.026	0.001-0.005	40.039-40.053	0.004-0.009
Standard	**125**[1/]	**80**[2/]	**125**[1/]	**80**[2/]	**125**[1/]	**80**[2/]

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

Results	BOIL-OFF STACK NO.1		BOIL-OFF STACK NO.2		BOIL-OFF STACK NO.1+2	
	PM-10 (μg/m³)		PM-10 (μg/m3)		PM-10 (μg/m3)	
	24-hr	1-yr	24-hr	1-yr	24-hr	1-yr
In the entire study area						
-maximum incremental increase in concentration	0.55	0.07	0.55	0.07	1.10	0.14
-% of ambient air quality standard	0.37	0.10	0.37	0.10	0.73	0.20
-location of the maximum value	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA	ANDAMAN SEA
-Coordinate (UTM(WGS84))	397607.31E, 1571824.37N	397707.31E, 1571924.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N	397607.31E, 1571824.37N	397707.31E, 1571924.37N
-Distance (meter) /direction from project site	1,116/W	979/W	1,116/W	979/W	1,116/W	979/W
-maximum concentration of background level	40.82	NA	40.82	NA	40.82	NA
-net maximum concentration including background level	41.37	0.07	41.37	0.07	41.92	0.14
-% of ambient air quality standard	27.58	0.10	27.58	0.10	27.95	0.20
In only sensitive areas						
-ranges of concentrations	0.025-0.033	0.001-0.004	0.025-0.033	0.001-0.004	0.049-0.066	0.003-0.007
-% of ambient air quality standard	0.017-0.022	0.001-0.006	0.017-0.022	0.001-0.006	0.033-0.044	0.003-0.007
-location of the maximum value	Ka Myaing Swea Community	Nyaung Bin Seik Village	Ka Myaing Swea Community	Nyaung Bin Seik Village	Ka Myaing Swea Community	Nyaung Bin Seik Village
-maximum concentration of background level	40.82	NA	40.82	NA	40.82	NA
-net maximum concentration including background level	40.837-40.842	0.001-0.004	40.837-40.842	0.001-0.004	40.869-40.886	0.003-0.007
-% of ambient air quality standard	27.224-27.228	0.001-0.006	27.224-27.228	0.001-0.006	27.246-27.257	0.003-0.007
Standard	**150**[1/]	**70**[1/]	**150**[1/]	**70**[1/]	**150**[1/]	**70**[1/]

Remark: [1/] Environmental, Health, and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation (IFC), World Bank Group, 2007

1. NO_2–BOIL-OFF

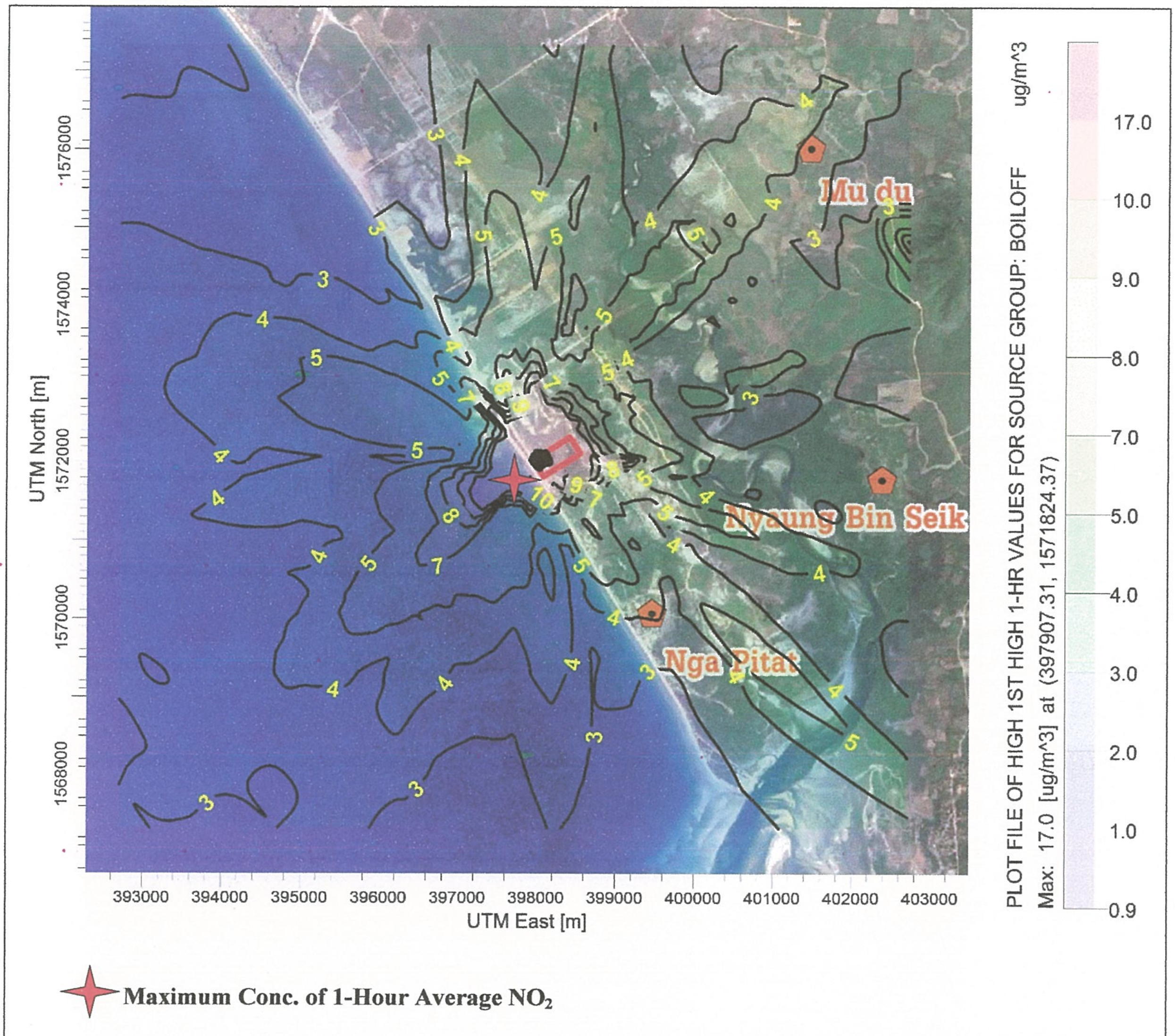

FIGURE 1: ISOPLETE OF 1-HOUR AVERAGE CONCENTRATION OF NO_2 (BOIL-OFF)

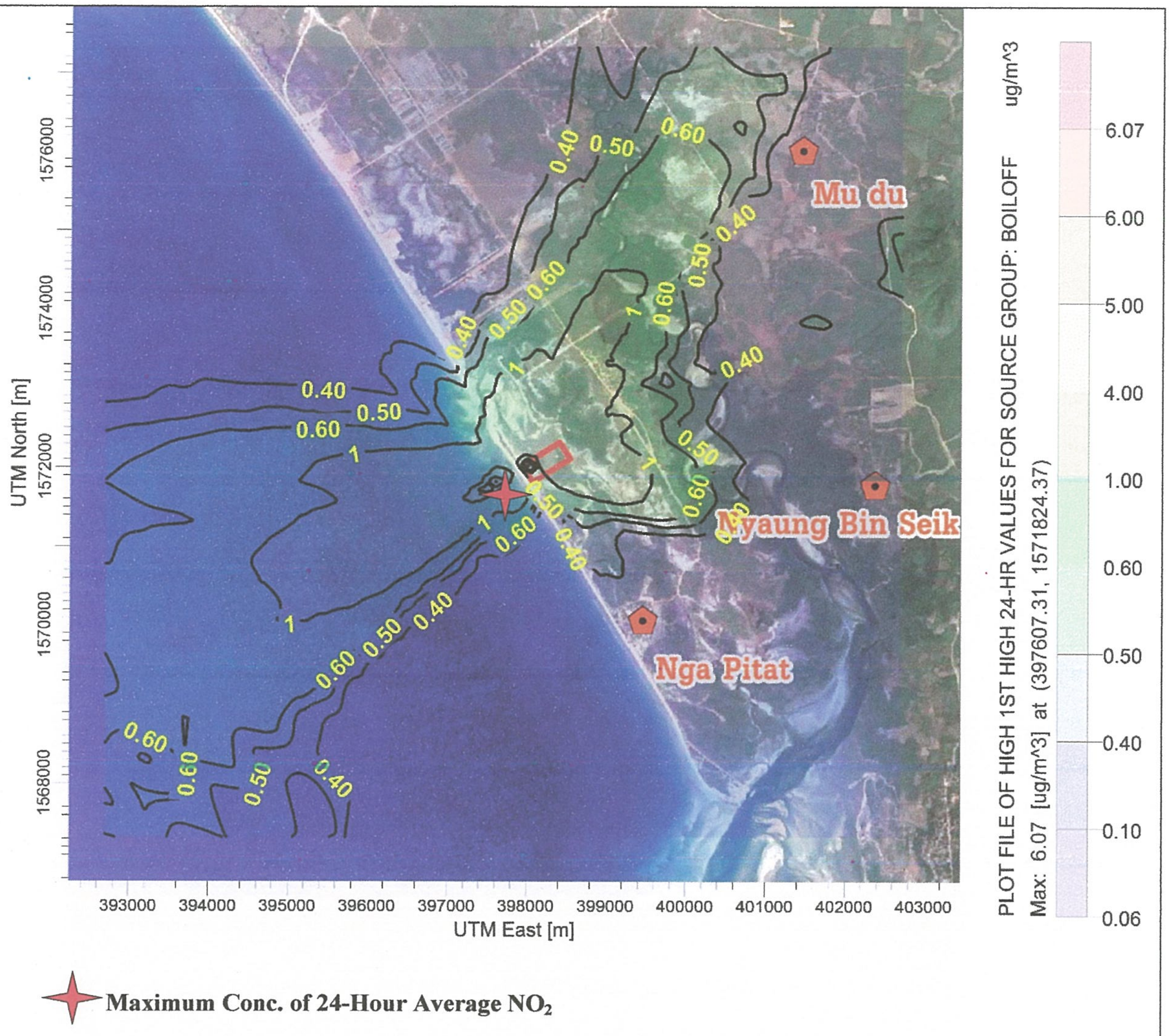

FIGURE 2: ISOPLETE OF 24-HOUR AVERAGE CONCENTRATION OF NO_2 (BOIL-OFF)

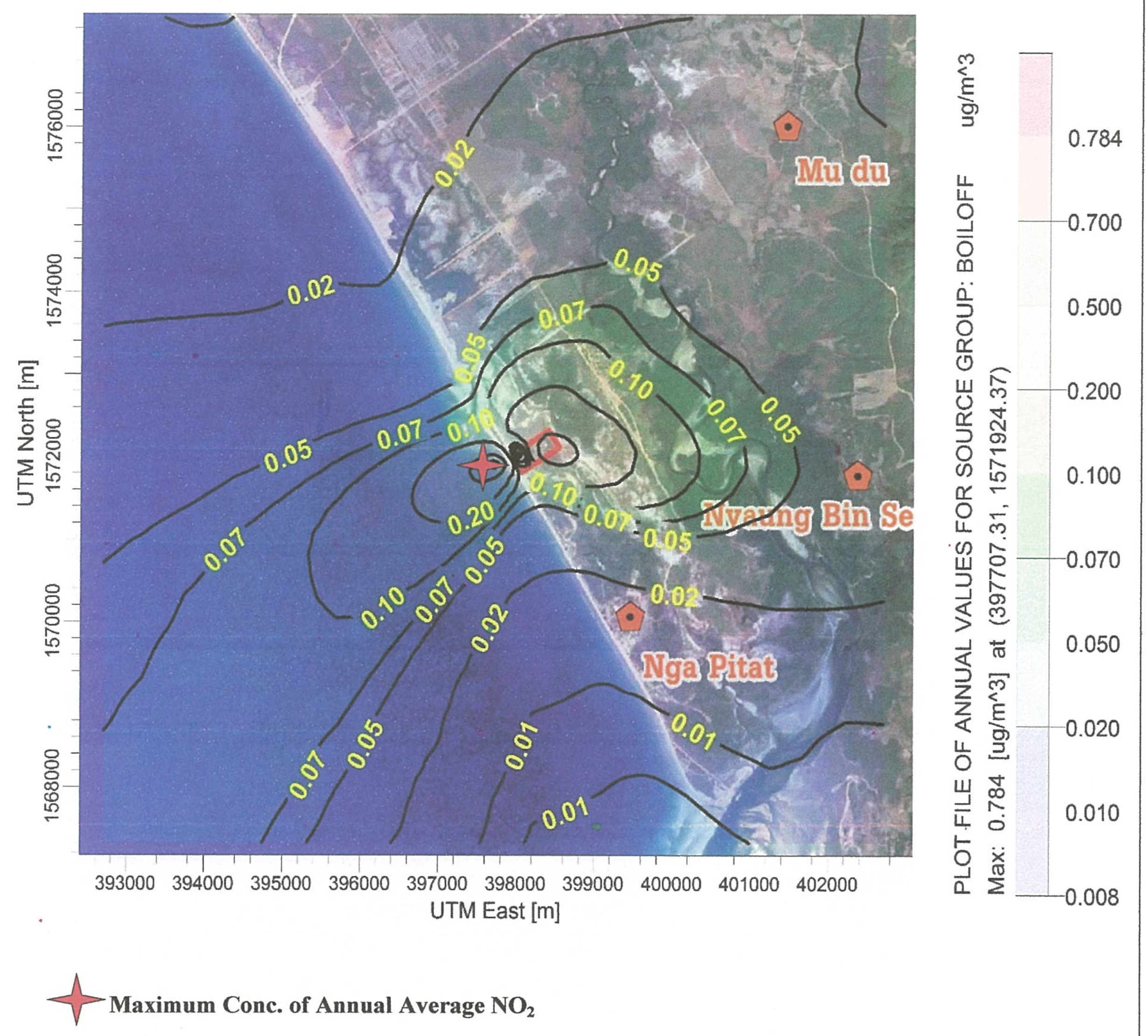

FIGURE 3: ISOPLETE OF ANNUAL AVERAGE CONCENTRATION OF NO_2 (BOIL-OFF)

2. NO_2– CUMULATIVE BETWEEN BOIL-OFF POWER PLANT AND INITIAL PHASE POWER PLANT

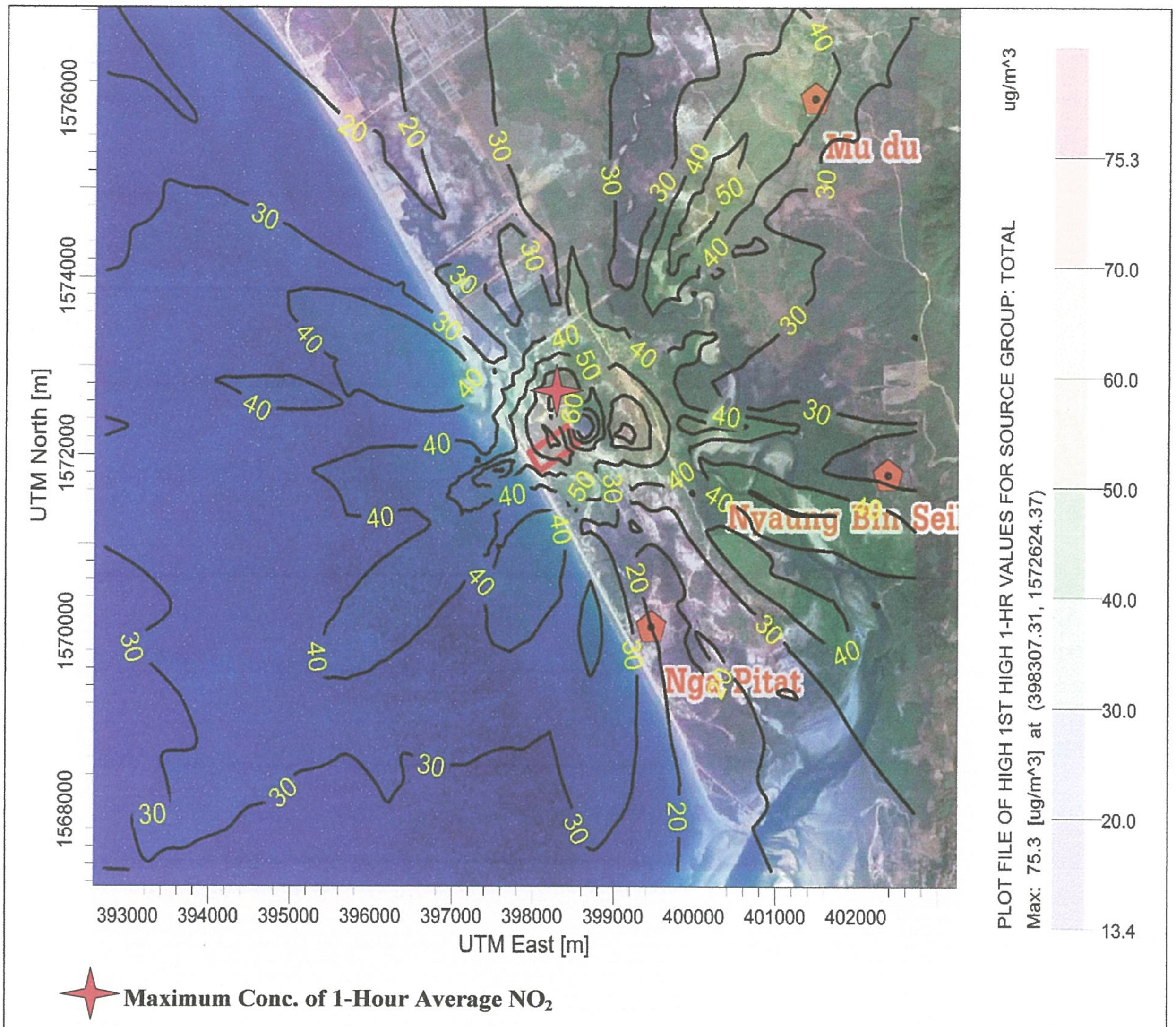

FIGURE 1: ISOPLETE OF 1-HOUR AVERAGE CONCENTRATION OF NO_2 (CUMULATIVE BETWEEN BOIL-OFF POWER PLANT AND INITIAL PHASE POWER PLANT)

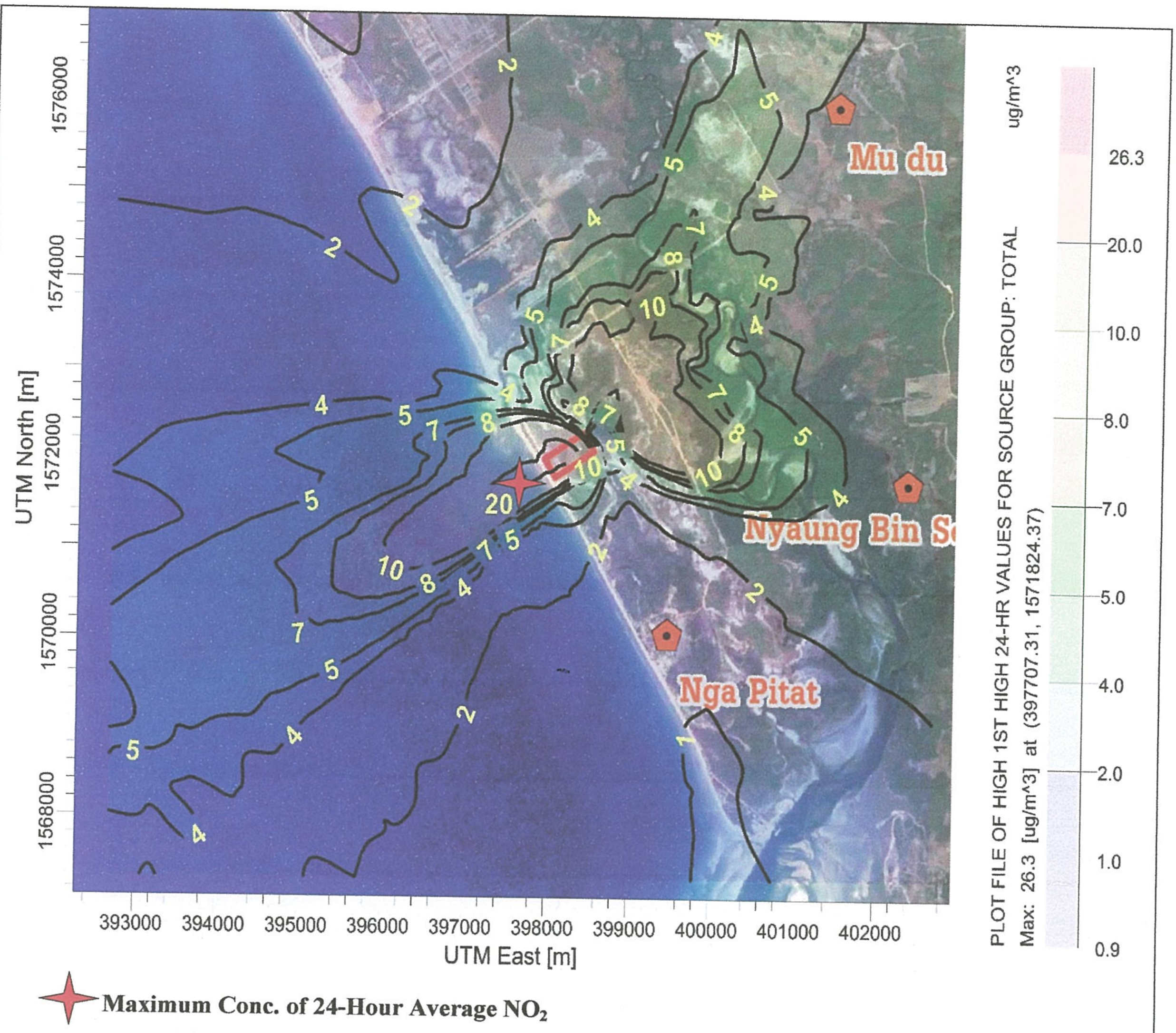

FIGURE 2: ISOPLETE OF 24-HOUR AVERAGE CONCENTRATION OF NO_2 (CUMULATIVE BETWEEN BOIL-OFF POWER PLANT AND INITIAL PHASE POWER PLANT)

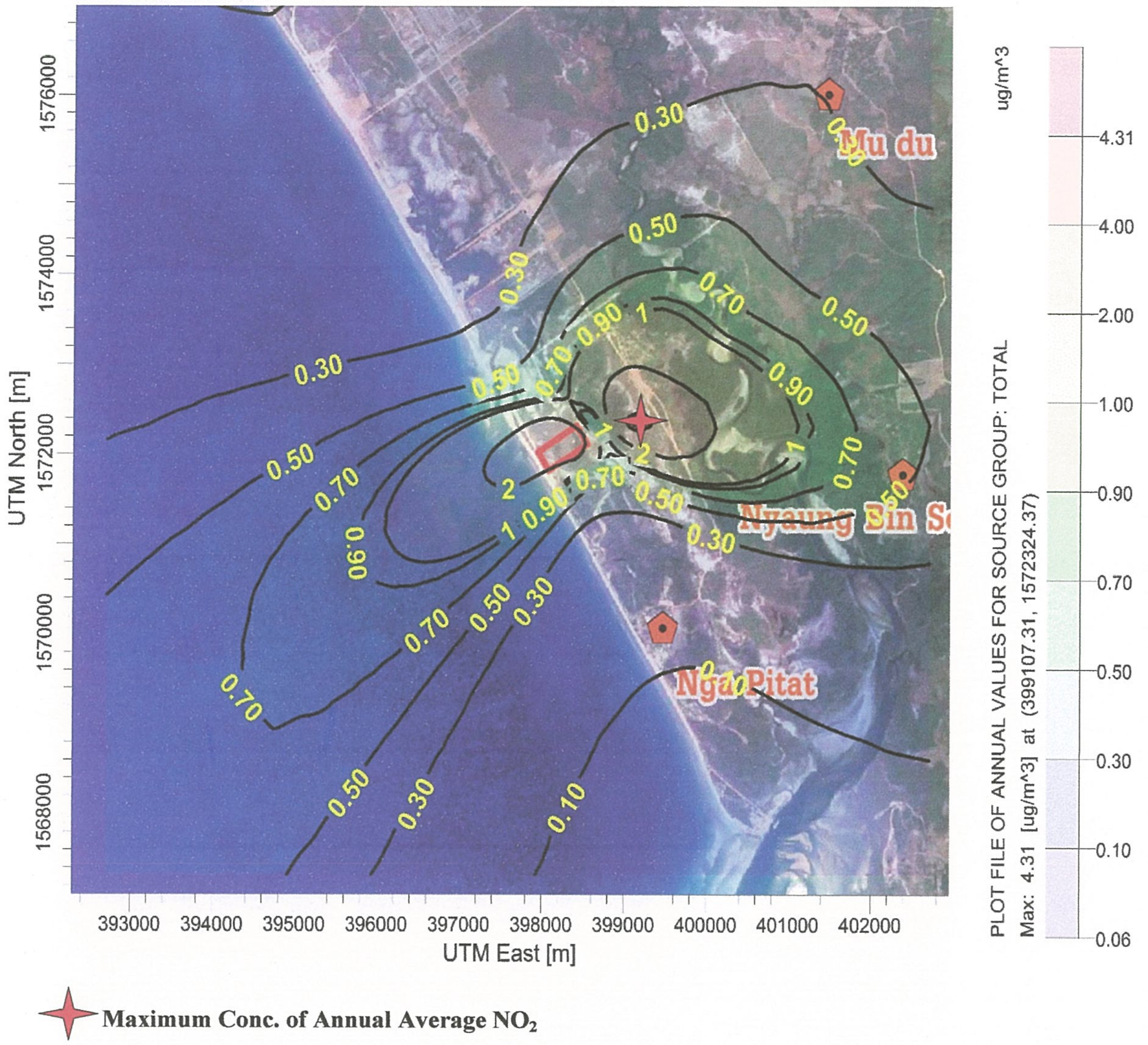

FIGURE 3: ISOPLETE OF ANNUAL AVERAGE CONCENTRATION OF NO_2 (CUMULATIVE BETWEEN BOIL-OFF POWER PLANT AND INITIAL PHASE POWER PLANT)

3. SO_2

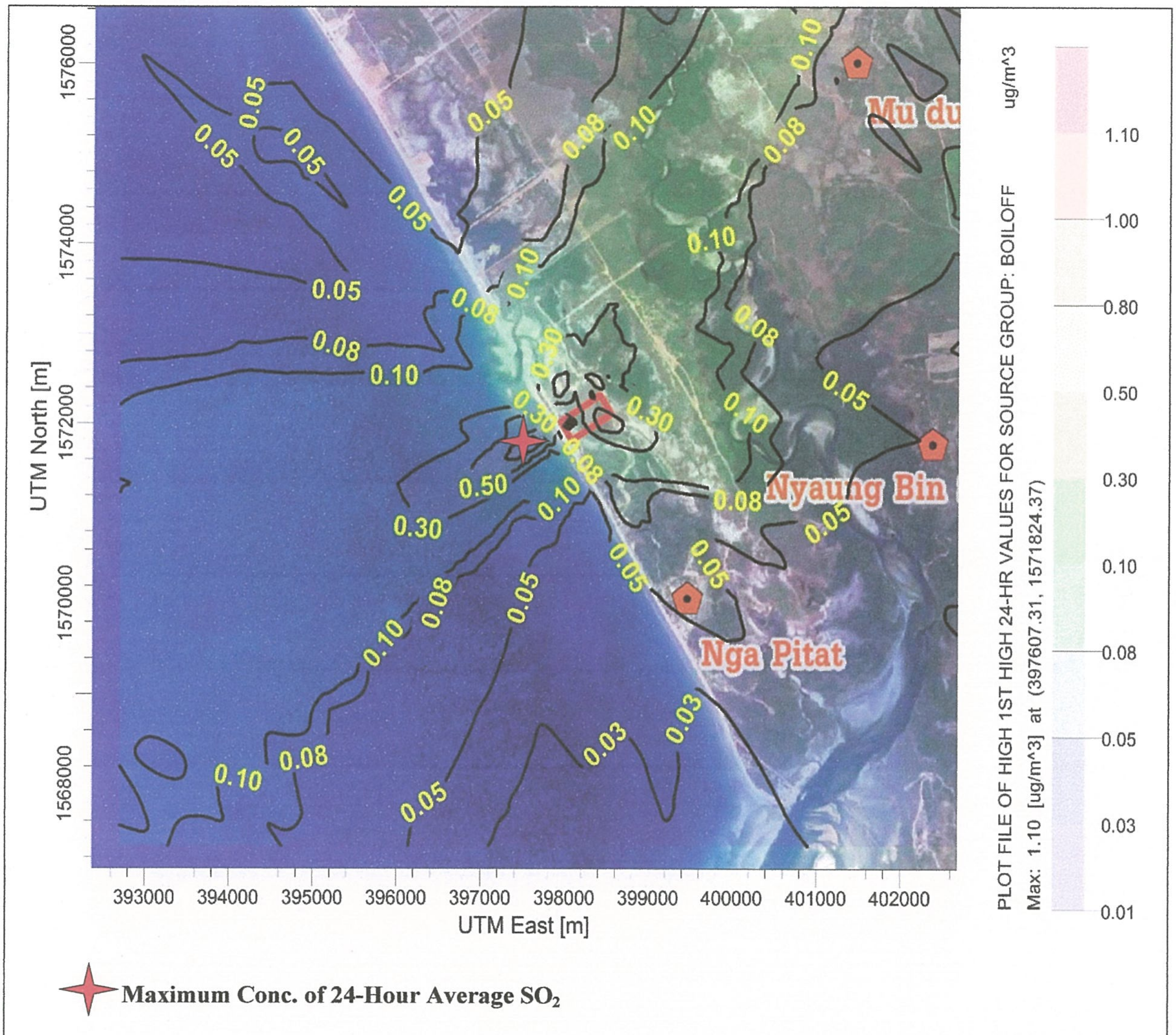

FIGURE 1: ISOPLETE OF 24-HOUR AVERAGE CONCENTRATION OF SO_2 (BOIL-OFF)

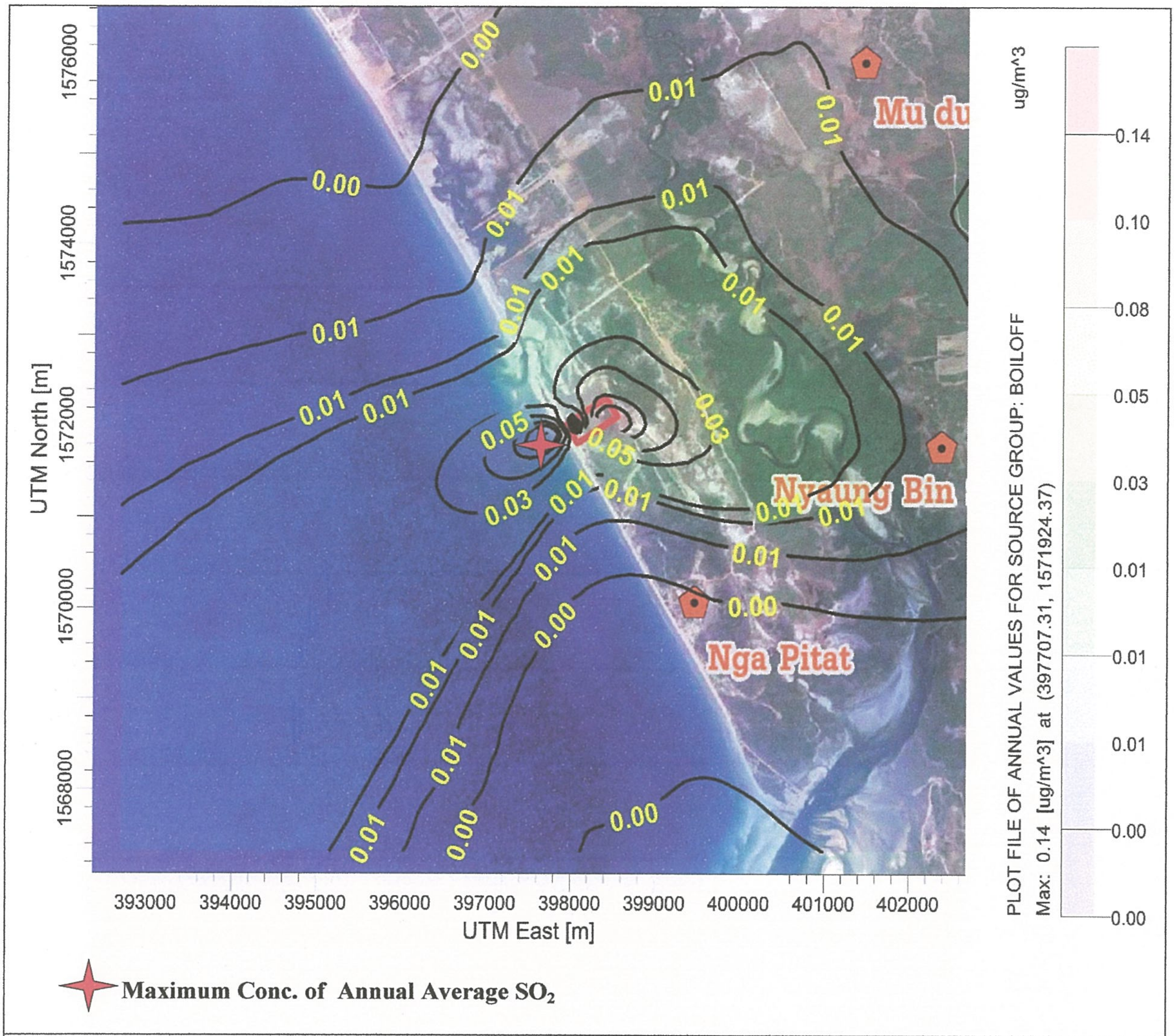

FIGURE 2: ISOPLETE OF ANNUAL AVERAGECONCENTRATION OF SO_2 (BOIL-OFF)

4. PM-10

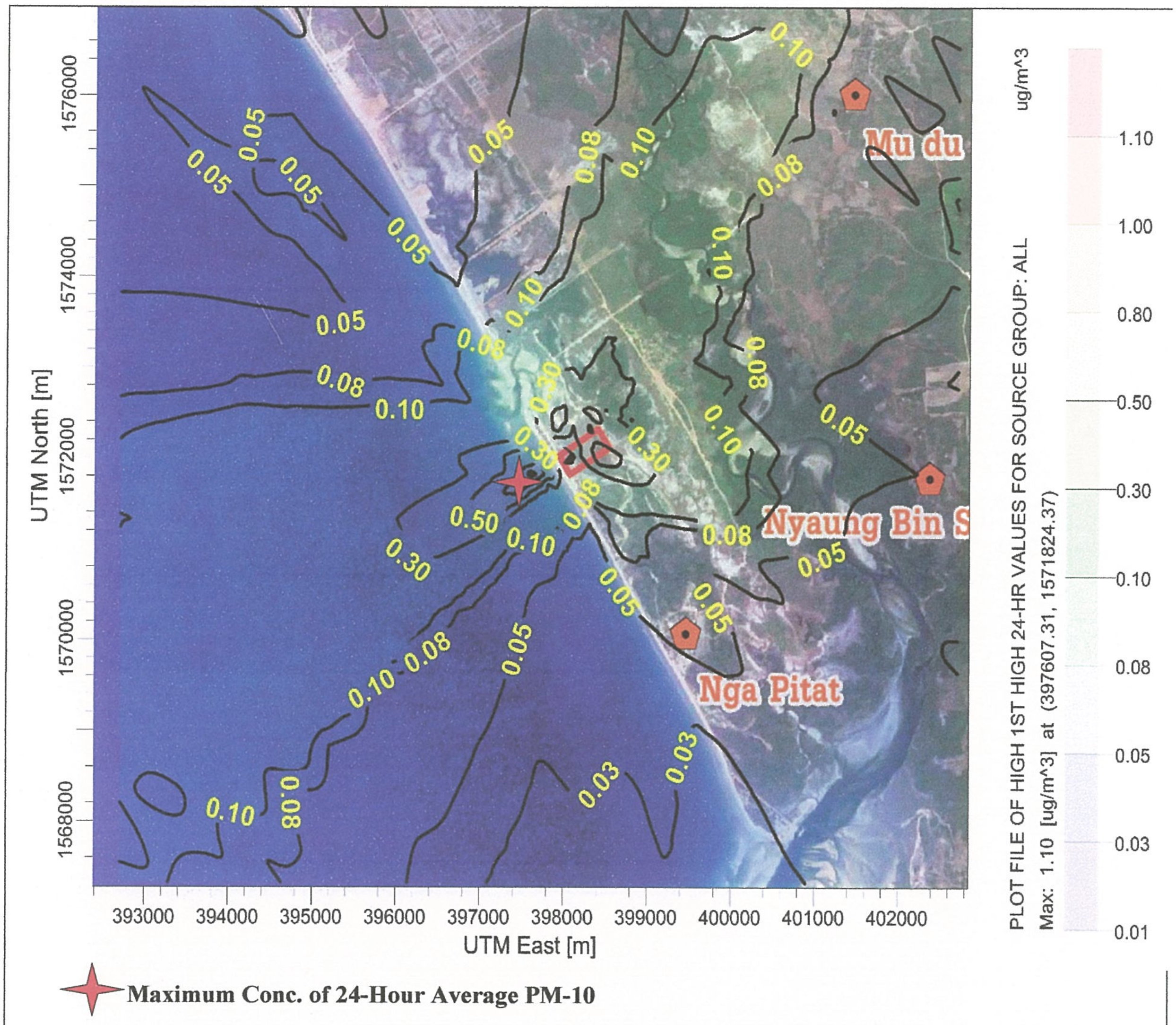

FIGURE 1: ISOPLETE OF 24-HOUR AVERAGE CONCENTRATION OF PM-10 (BOIL-OFF)

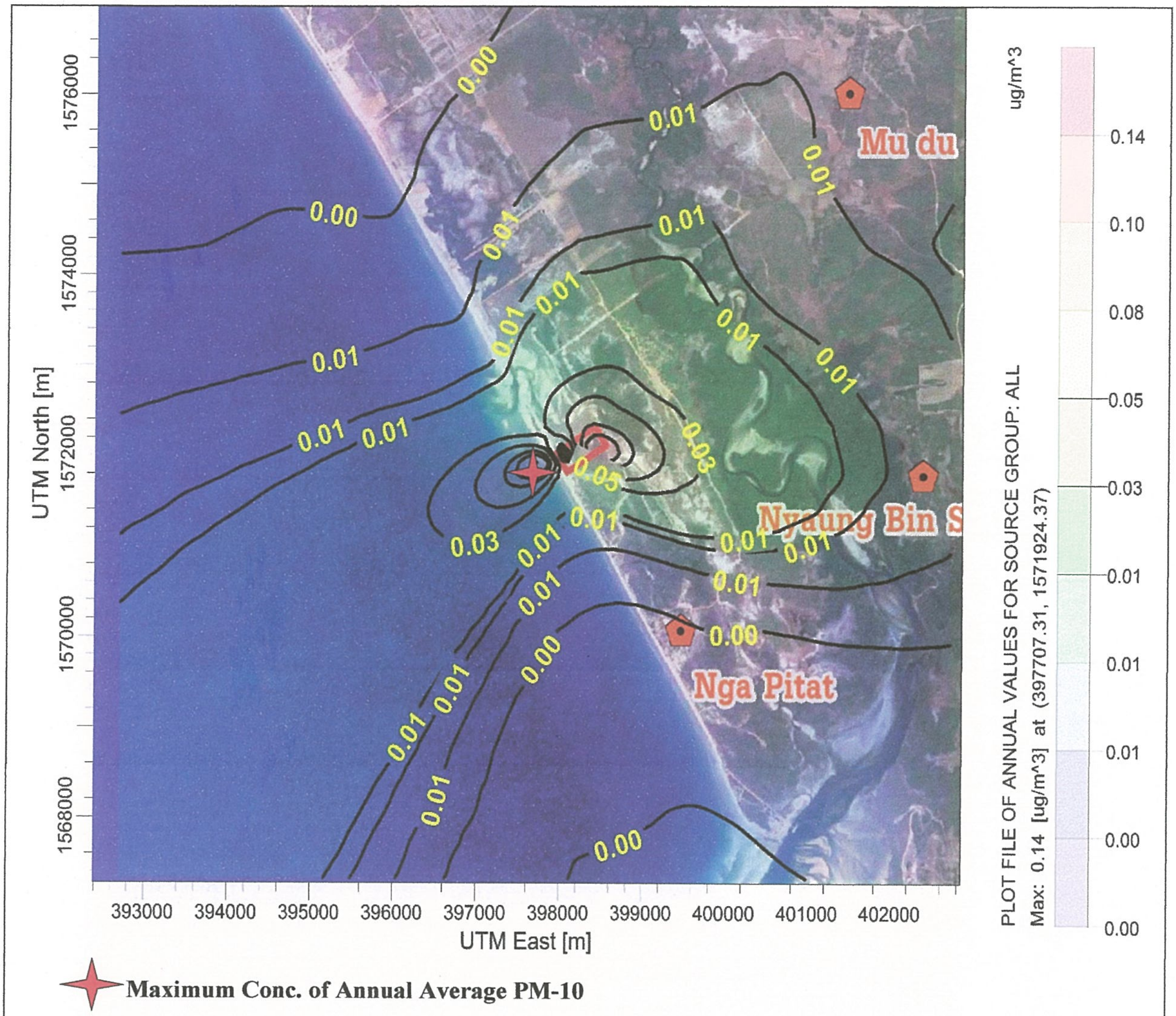

FIGURE 2: ISOPLETE OF ANNUAL AVERAGE CONCENTRATION OF PM-10 (BOIL-OFF)

APPENDIX 6E

TYPES OF NATURAL GAS EXPLOSION

APPENDIX 6E

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 6F

INFORMATION ON FIRE PROTECTION SYSTEM

Appendix6 F

Information on Fire Protection System

The plant fire protection system will be generally designed in accordance with NFPA 850 ("Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Converter Stations")

A fire detection system will be provided, including smoke detectors, remote manual pull stations and gas leak detection, with alarms fed to a main fire alarm panel in the central control room.

There will be a common tank for raw water and fire water.

1 x 100% electric motor-driven firewater pump shall be provided to cater for the hydrant and fixed fire protection systems (deluge systems, sprinkler systems).

1 x 100% diesel engine driven firewater pump shall be provided as a standby.

1 x 100%·electric motor-driven jockey pump shall be provided for main pressure maintenance of firewater ring.

Sprinkler systems shall be provided for diesel fire pump, steam turbine lube oil piping, maintenance shop and warehouse, admin building, control building, laboratory and the emergency shut down diesel generator.

Protection systems shall be provided for the GT lube oil cooler, GT lube oil reservoir, GT control oil unit, ST lube oil tank, ST oil cooler, ST oil purifier, ST generator seal oil unit and ST control oil unit, fuel oil unloading station and transfer pump area, GT fuel oil unit and all oil filled transformers (GT generator transformer, ST generator transformer, unit transformer). The type of protection is subject to detailed design as well as NFPA and local regulations.

A fire main with hydrants will be provided around the power plant buildings and site.

Foam/water indoor hose station will be provided in the turbine hall next to the lube oil tanks. This will comprise a hose cabinet equipped with AFFF foam canister for 5 minutes foam operation and proportioner.

The gas turbines will be protected by a CO_2 fire protection system.

APPENDIX 6G

CALCULATION OF DISPERSION OF FUGITIVE DUST DURING DECOMMISSION PHASE

APPENDIX 6G

CALCULATION OF DISPERSION OF FUGITIVE DUST DURING DECOMMISSION PHASE

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 decommission area perpendicular to wind direction (meteorological data period)

= 250 m. (for worst case)

w = average wind speed = 2.1 m/s.

m = average Daytime Mixing Height = 1,500 m

A = area of construction activities

= 34 acres

Q = the quantity of dust dispersion into ambient air = 47,222.22 milligrams per sec

C = (47,222.22)/ (250*2.1*1,500)

= 0.059965 mg/m^3

= 59.97 $\mu g/m^3$

The calculations were made in two cases-No Control Case and Control Case. The background ambient TSP of 110.81 $\mu g/m^3$ was used in the calculations. This background TSP was 24-hr average TSP measured at Nga Pitat Villages during the period from January 2015. The results of calculations are presented below:

Emission Rate, mg/s	TSP at Site, $\mu g/m^3$	Total TSP combined with NgaPitat Village, $\mu g/m^3$
No Control	59.97	170.78
Control 75% suppression	14.99	125.70

It can be seen that even without control the total ambient TSP level will be much lower than the control target of not exceeding 230 $\mu g/m^3$.

As the nearest receptors in Nga Pitat Village is about 2,220 m away to the South of the construction site, the impact of fugitive dust on the receptors will be smaller than the level at the perimeter of the decommission site.

APPENDIX 6H

PREDICTED NOISE LEVELS AT THE RECEPTORS DURING DECOMMISSION

APPENDIX 6H

PREDICTED NOISE LEVESL AT THE RECEPTORS DURING DECOMMISSION

The noise level at the receptors due to the noise source can be calculated using the following equation:

$Lp_2 = Lp_1 - 20 \log (r_2/r_1)$ ....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, 2,220 m (for Nga Pitat Village)

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:

$$\text{Total noise level} \quad Lp_{total} = 10 \log\left(\sum_{i=1}^{n} 10^{Lpi/10}\right) \quad ....2)$$

The ambient noise level at Nga Pitat Village measured during January 21-24 and October 7-10, 2015 was 54.5-60.7 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 47.6 to 72.7 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 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) and 88 (A). The 85 dB(A), are the noise levels of Bull Dozer.The 88 dB(A), are the noise levels of heavy machine and truck. 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 bull dozer will result in 89.77 dB(A) compared to 85 dB(A) for one machine.

The calculated ambient noise levels at the Nga Pitat village clearly indicate that without control, the noise control targets will met the standard in case noise level at 24 hr. (Leq 24 hr.) and high combine noise.However, in case low combine noise will be not met the standard. Therefore, the mitigation measure should be proposed to protect impact from noise level during site preparation.

G. Recommended Mitigation Measures

Physical Measures

(1) The noise reduction at the perimeter could be achieved using an temporary 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.

Control Case

1) Nga Pitat Village

Table 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). The EPC contractor will prepare a design of sound barrier using appropriate materials, and the sound barrier as part of the decommission contract.

TABLE 1

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR AT NGA PITAT VILLAGE

Nga Pitat village

Receptor, r2	2,220	m
Noise source,r1	15	m
Log (r2/r1)	2.17	
Noise level at r2, Lp1	Source-20x(Log(r2/r1)	
Ambient noise level,Lp2	60.7 dB(A) Leq-24 hr.	
-Low	47.6 dB(A) Leq-1 hr.	
-High	72.7 dB(A) Leq-1 hr.	
Net noise level	10xLog(10^(Lp2/10)+10^(LP1/10))	
Noise level of sources		

Assume 3 simultaneous operations

Bulldozer	85	89.77
heavy equipment	88	92.77
truck	88	92.77

Unit: dB(A)

PARTICULARS	NO CONTROL			CONTROL LEVEL					STANDARD
Impact-Leq-24 hr.									
LP0-ambient	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	
LP1-Source	92.8	92.8	89.8	70.0	75.0	80.0	85.0	90.0	
LP2-Effect of Source	49.4	49.4	46.4	26.6	31.6	36.6	41.6	46.6	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.7	1.7	1.4	1.5	1.6	1.6	1.7	
Combined Noise Level	61.0	61.0	60.9	60.7	60.7	60.7	60.8	60.9	70.0
Impact-Leq-1 hr									
High Combined Noise Level	72.7	72.7	72.7	72.7	72.7	72.7	72.7	72.7	
Increase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	51.6	51.6	50.0	47.6	47.7	47.9	48.6	50.1	
Increase	4.0	4.0	2.4	0.0	0.1	0.3	1.0	2.5	3.0

APPENDIX 8A

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATION

APPENDIX 8A

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATION

A. Annual Budget during 15 months of Pre-construction and Construction Phase

No.	COST ITEMS	Unit Cost US$	Unit Cost Units	Frequency	Sampling Station	Total Cost (US$)
1	Environmental monitoring during the pre- construciton/ construction period					
	air quality (2 stations)	800	Station	1 time/three months (5 time during pre-construction/construction Phase)	2 stations at project site and Nga Pitat Village	8,000
	noise measurement (2 stations)	700	Station	1 time/three months (5 time during pre-construction/construction Phase)	2 stations at project site and Nga Pitat Village	7,000
	wastewater measurement (1 station)	600	Station	1 time/ months (15 time during pre-construction/construction Phase)	1 stations at discharge point	9,000
	traffic flows measurement (1 stations)	500	Station	2 times per year during pre-construction/operation phase	1 station at Nga Pitat Village	1,000
	flora and fauna field survey	3,000	Lumpsum	1 time before site clearance	34 acre of proposed project site	3,000
2	OHS Management Plan	-	Include Construction Cost	Every day	Cosntruction Site and Surrounding Area	a
3	For natural resource used management, Village Forum, and support local villagers in rehabilitation activ	100,000	Lumpsum	Every day	At 3 affected villages	100,000
	TOTAL					128,000
	CONTINGENCY (APPROX. 10%)					19,500
	GRAND TOTAL					147,500

Remark : a = include on construction cost prepared by sub-contractor

APPENDIX 8A

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATION (CONT'D)

B. Annual Budget during Operation Phase (75 years, 50 years operation plus 25 years extensions)

No.	COST ITEMS	Unit Cost US$	Unit Cost Units	Frequency	Sampling Station	Annual Budget During Operation Phase (US$): From year 1 to year 5 of operaiton (total 5 years)	Annual Budget During Operation Phase (US$): From year 6 and throughout operation (total 70 years)
1	Environmental monitoring during the operation period						
	Stack Emission	-	Include Operation Cost	Everyday throughtout operation phase	Stack of Boil-off Power Plant	b	b
	ambient air quality (2 stations)	800	Station	twice a year during 1st-5th year of operation phase and 1 time per year throughtout operation phase	at Nga Pitat and Mudu Village	16,000	112,000
	wastewater measurement (1 stations)	600	Station	twice a year during 1st-5th year of operation phase and 1 time per year throughtout operation phase	1 stations at discharge point	6,000	42,000
	traffic measurement (2 stations)	500	Station	twice a year throughtout operation phase	2 station at project access road near Nga Pitat Village and Small Port	5,000	70,000
	Mangrove reforetation, rehabilitation, and maintenance (10 years)	95,000	Lumpsump	during 1st-10th year of operation phase	at reforestation area	47,500	47,500
	support local villagers in rehabilitation activities (10 years)	1,000	time	during 1st-10th year of operation phase	at reforestation area	5,000	5,000
2	OHS Management Plan	-	Include Operation Cost	Everyday	Project Site	b	b
3	Social development and livelihood support for PAPs						
3.1	Development Fund during 1st-5th year	1,500	time	During 1st-5th of opration phase	at three affected village	7,500	-
3.2	Development Fund during 6th to throughout opeartion phase	1,200	time	During 6th-throughout opration phase	at three affected village	-	84,000
3.3	Village forum	150,000	Lumpsum	2 times per year during 1st-5th of opration phase and once a year throughout operation	at three affected village	30,000	120,000
	TOTAL					117,000	480,500
	CONTINGENCY (APPROX. 10%)					11,700	48,050
	GRAND TOTAL					128,700	528,550
							657,250

Remark : b = include operation cost prepared by project proponent

APPENDIX 8B

SUB-PLANS FOR CEMP

APPENDIX 8B-1

GENERAL-CONSTRUCTION

Element	Content
Objective	• Manage construction in accordance with the Construction Environmental Management Plan (CEMP) and CEMP sub-plans to avoid or minimize adverse impacts on the environment and the community.
Performance Criteria	• Worksites prepared in accordance with designs providing for the management and mitigation of construction impacts. • Construction works (civil engineering and mechanical works) are managed to avoid, or mitigate and manage impacts on the amenity and environmental conditions prevailing in the vicinity of the worksites. • Non-compliance with guidelines and standards established in this CEMP are avoided or minimized. • Maintain safe and efficient access near worksites for emergency vehicles. • Take reasonable measures to minimize potential construction risks to construction workers, to the general public in adjacent areas and to the environment.
Mitigation Measures	**Hours of work:** • Works (civil engineering and mechanical works) which may generate excessive levels of noise, vibration, dust or traffic movements should only be undertaken between 6.30 am and 6.30 pm Monday to Saturday and at no time on Sundays or Public Holidays except for special circumstances where the works should be conducted outside these days and hours. • In case of urgent situation, exceeding the hours of work, information dissemination should be conducted prior to commence construction activities. • Special circumstances include works on transport of heavy and large process equipment to the construction sites, transport of materials for site filling, and transport of large construction equipment to the construction sites (on land and by shipment logistics). • Collection, loading and haulage of spoil from construction worksites by truck/ship would be undertaken between 6.30 am Mondays and 6.30 pm Saturdays. If this is taken place out of the hours of work and it is really or emergent to be done at that time, a request/information should be done prior to the action of collection, loading and haulage. • Notify local communities of duration and timing of works to be conducted outside of usual working hours.

Element	Content
	Construction worksites: • To be designed and constructed for the minimization, management and mitigation of construction impacts; • The main construction site will include foundation work, other infrastructures and routinely utilities/facilities. • Civil engineering and mechanical materials, for Boil-off, should be transported by shipment or lorry trucks appropriately in accordance with national regulations and acts. • To conduct spoil handling, storage and loading at all times within enclosures designed and constructed to achieve environmental objectives and performance criteria for noise and air quality as set out in the CEMP; • To have night lighting, including security lighting and avoid light spill onto adjoining premises, in excess of 8 lux measured at the common boundary; • To include fencing to worksite boundaries to ensure site security and public safety (onshore or offshore restricted area).
Monitoring	• Site inspections will be conducted as outlined in this CEMP.
Reporting	• Results of site inspections will be included in the environmental monitoring reports.
Area	• Within the project site.
Responsible Agency	• Project developer and construction contractor.
Estimate Cost	• Include on pre-construction and construction cost

APPENDIX 8B-2

MANGROVE REHABILITATION MANAGEMENT PLAN

Element	Content
Objectives	• To reduce impacts on loss mangrove forest area from the Project. • To rehabilitate mangrove forest resources
Performance Indicator	• Types and number of flora species in disturbed mangrove forest area that clearance for proposed project site • Types and number of flora species in reforestation area
Mitigation Measures	• Survey and record flora species in the proposed project site before construction (biological survey). • Select appropriate mangrove species for rehabilitation area. • Prepared and design mangrove rehabilitation program and monitoring with concerned authorities such as MONREC and Forest Department. • The mangrove rehabilitation program should also include mangrove reforestation to expand mangrove area which serves as natural sanctuaries for marine ecological resources. • Mangrove rehabilitation program should be involve local villagers participates in site selection. • Developer should be create a green buffer zone around the Project port boundaries. • In case of conservation plant species will be found, the plant will be transferred to growth in green buffer zone, mangrove reforestation or other areas. • Cutting and clearance must done only on specific area designated in the term of reference. • Prohibit workers to cut tree outside project boundary. Also, prohibit and control workers not to hunt wildlife in all area (restricted area). • Give a brief orientation for collectors/visitors (for educational and recreational purposes) about mangrove forest and other relevant topics for rehabilitation plan.
Monitoring	• Monitor flora and fauna species before project clearance - Frequency : 1 time before site clearance. • Monitor project site clearance to ensure that it is strictly carried out in accordance with proper equipment as specified in contract and ensure strictly conducted only within the project site - Frequency : 1 time/month during pre-construction/construction phase • Consider and monitor on mangrove rehabilitation area due to clearance activities for proposed project site - Frequency : 2 times/month during pre-construction/construction phase

Element	Content
Reporting	• Results of site inspections will be included in the environmental monitoring reports and submitted to MONREC and related Authorities Department.
Area	• Mangrove rehabilitation area (investigating for the appropriate area).
Responsible Agency	• Project developer
Estimate Cost	• 3,000 USD Lumpsump for Flora and Fauna species investigate before land clearance

APPENDIX 8B-3

AIR QUALITY MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objectives</td><td>

Ambient air quality in the construction sites and at the identified sensitive receptors meets the prescribed standards throughout the construction period.
Community concerns and complaints about air quality are addressed quickly and effectively.
</td></tr>
<tr><td>Performance Indicators</td><td>

Number of complaints filed through the complaint response channel.
Number of times that the local ambient air quality is below the prescribed standards related to dust and exhaust emissions.
</td></tr>
<tr><td>Sources</td><td>The construction could adversely affect local air quality in and near the construction sites. The issues will be:

Fugitive dust generated in soil compaction (site development work-removal of vegetation, top soil and engineered filling and compaction of raise the level of project area), and vehicle movements in the construction sites and along the transport routes;
Exhaust emissions from ships, trucks and heavy construction equipment and materials powered by diesel engines and other kinds of fuel.
</td></tr>
<tr><td>Applicable Standards</td><td>Applicable ambient air quality standards related to fugitive dust and exhaust emissions are as follows:
Table 1 – Construction Air Quality Goals
<table>
<tr><th>Pollutant</th><th>Not to be Exceeded</th></tr>
<tr><td>Particulate as PM_{10}</td><td>150 $\mu g/m^3$ (24 hr average)</td></tr>
<tr><td></td><td>50 $\mu g/m^3$ (annual average)</td></tr>
<tr><td>Total Solid Particulates (TSP)</td><td>230 $\mu g/m^3$ (24 hr average)</td></tr>
</table></td></tr>
<tr><td>Mitigation Measures</td><td>The Contractor will conduct air quality surveys at the construction sites (non-mobile pollutant source) and trucks (mobile pollutant source) to identify sensitive receptors and update the baseline data established in the Final ESIA Report.

Fugitive Dust Control

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
</td></tr>
</table>

Element	Content
	leaving the project site are following the measures prescribed to reduce dust emissions. **Gaseous Emissions** • 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 construction phase. • 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 (repowered engines, electric drive trains). 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.

Element	Content
Monitoring	**Ambient Air Quality** • Undertake local, 1 time per three months monitoring of ambient air quality in the vicinity of construction sites and Villages situated near the project site for the duration of construction works (Nga Pitat Village), and in response to complaints, based on the following parameters: - Total suspended particulates (TSP) - Particulates (PM 10) • Monitor and manage the incidence of dust deposition and manage construction vehicle emissions in relation to ambient air quality. **Dust** • Monitor 1 time per three months or more frequently if weather conditions required, construction sites, stockpiles, vehicles and roads leaving the construction sites for evidence of dust generation or loose, unstable material with potential for dust. • Monitor regularly (weekly minimum) by inspection or other effective sampling: • The performance of dust filtration systems on construction shed ventilation systems; • Spillage or deposition of loose material on roads leaving a construction site. • Monitor performance of mitigation measures in relation to the construction air quality goals in the above table.
Reporting	• Twice a year. If more than one complaint is received in the preceding more frequently. • Twice a year reports for submission to MONREC and related Authorities Department..
Area	• Project sites. • Closest villages (Nga Pitat Village).
Responsible Agency	• Project developer. • Air quality monitoring agency • Construction contractor.
Estimate Cost	• 800 USD/station/time

APPENDIX 8B-4

NOISE MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objectives</td><td>To minimize noise level of construction activities.
To ensure that the noise level at the identified sensitive receptors will not exceed the maximum limits prescribed by MONREC as a condition of the ECC and will be acceptable to the sensitive receptors.</td></tr>
<tr><td>Performance Indicators</td><td>The incremental increases in noise level during the construction works compared to the targets.
Net ambient noise level compared to the applicable ambient noise standards.</td></tr>
<tr><td>Sources</td><td>Noise (vehicles, trucks, cars, civil engineering and mechanical works and etc.) will be managed at the project site. The Boil-off Gas construction site will be where construction activities causing noise will be most intensive and concentrated.
Construction activities creating noise at the project site are shown in the table below:<table><tr><th>Construction Activities</th><th>Boil-off Gas</th></tr><tr><td>Site Development</td><td>Removal of vegetation, top soil, and foundation work.</td></tr><tr><td>Erection and installation of equipment (only noise) – civil and mechanical works</td><td>Materials and equipment and various kinds of vehicle will be generating disturbance noises in wide range within the project area (onshore or offshore activities)</td></tr></table></td></tr>
<tr><td>Applicable Standards</td><td>Noise performance will be evaluated against the following standards:
National Ambient Noise Level Standards:
- Ambient noise level standard, Myanmar National Environment Quality (Emission) Guidelines, Final Draft (December 2015).
Noise Standards: World Health Organization (WHO), 1999
- Guidelines for Community Noise, World Health Organization (WHO), 1999
Standard
Noise impacts should not exceed the levels presented in Table below, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.</td></tr>
</table>

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td></td><td>
<table>
<tr><th></th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr>
<tr><th>Receptor Daytime</th><th>Daytime
07:00 - 22:00</th><th>Nighttime
22:00 - 07:00</th></tr>
<tr><td>Residential; institutional; educational</td><td>55</td><td>45</td></tr>
<tr><td>Industrial; commercial</td><td>70</td><td>70</td></tr>
</table>

U.S. EPA Standard:
Noise level not higher than 70 dB(A) $L_{eq\text{-}24\ hour}$
</td></tr>
<tr><td>Mitigation Measures</td><td>
Design

The Contract will require the Contractor and his sub-contractors to use construction equipment that generate low levels of noise and vibrations. The Contractor will present alternative construction equipment to demonstrate that the selected equipment adopts best available technologies to minimize noise level.
Before commencing the construction, the Contractor will conduct a noise and vibration survey covering the identified sensitive receptors to update the existing baseline data in the Final EIA Report. The noise survey will be manually conducted using a sound level meter following Noise Standard stated on Environmental, Health, and Safety Guidelines : Noise Management (April 30, 2007).
Demonstrate through predictive modelling of the proposed construction techniques and monitoring ambient noise and vibration readings prior to construction to establish pre-disturbance levels, the likely levels of noise due to construction works throughout the construction phase.

Construction 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.
Speeds of vehicles in the construction site will not be more than 40 km/hr.
Noise performance requirements of construction equipment will need to be clearly stated in contract specifications.
Temporary sound barriers or shielding should be installed for non-mobile equipment.
The contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period.
The construction environmental management plan needs to include

</td></tr>
</table>

Element	Content
	an efficient complaints redress procedure and an efficient corrective action procedure to address the none compliance of noise performance.
Monitoring	• Undertake local, 1 time per three months monitoring of noise level in the vicinity of construction sites and Nga Pitat Villages for the duration of construction works, and in response to complaints, based on the following parameters: - L_{max}, - $L_{eq\ 1\ hr}$, - $L_{eq\ 24\ hr}$, - L_{dn} and, - L_{90} • Monitor and manage the incidence of noise level and manage construction vehicle noise level. • The Contractor is to implement measures to receive and respond to complaints about construction noise and vibration made at any time during the construction phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this CEMP. Key requirements for the system include: - On receipt of a complaint, implement a complaint response procedure for tracking and responding to the issue(s) and the complaint; - Identify the relevant construction activity at which the complaint is directed; - As soon as practicable, investigate and measure the level of noise from that activity; - Respond to the complainant as soon as practicable upon completion of the investigation and describe the corrective action taken; and - Report to the Proponent on the complaint, the activity, the corrective action and the response.
Reporting	• Twice a year reporting on noise performance and complaints. • Twice a year reports for submission to MONREC and related Authorities Department.
Area	• Project sites. • Closest villages (Nga Pitat Village).
Responsible Agency	• Project developer • Contractor • Sub-contractors
Estimate Cost	• 700 USD / station/time

APPENDIX 8B-5
WASTE MANAGEMENT PLAN

Element	Content
Objective	To minimize all types of wastes generated at the construction sites, particularly the construction site, that will have to be disposed. To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to waste disposal.
Sources	Wastes will be divided into three categories: • Construction, demolition, and land-clearing (CDL) waste: Includes all non-hazardous solid wastes resulting from site clearing, excavation, concrete works, steel works, piping 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, remnants of steel bars and beams, packaging materials, broken roofing materials and tiles, and remnants of pipes, glasses, and other inert building materials. • Non-construction waste: Includes wastes generated in worker camps, canteens and offices such as paper, food and beverage containers, food wastes, and other domestic items.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of wastes as prescribed by MONREC or enforced by the local government, whichever are more stringent.
Mitigation Measures	**Design and Planning before Commencing the Construction** • The Contractor will consult with 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 construction site, if possible. • The Contractor will ensure that the design and the proposed construction methods will generate the least amount of wastes. • Based on the construction plan, methods, and schedule, The Contractor will prepare estimates of the quantity of each waste category to be generated in each quarter of the construction period. The estimates will be monthly updated. • The 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.

Element	Content
	• The Contractor will propose methods of waste transport and disposal. • The Contractor will then prepare an action plan for waste management for the first quarter of the construction period 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 construction. • The subsequent quarterly 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 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 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.

Element	Content
	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; **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. • No burning of wastes will be allowed. • 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 power plant site in designated green areas. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. **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

Element	Content
	recycling service or landfill. • Accessibility to the EHS Manager of the Project developer 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	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. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer 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 developer 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.
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 a year reports for submission to MONREC and related Authorities Department.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management company)
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 8B-6

WASTEWATER MANAGEMENT PLAN

Element	Content
Objective	To ensure that all wastewaters generated during the construction will be adequately treated before discharging into the sea
Performance Indicators	Qualities of the treated effluent compared with the applicable effluent quality standards.
Sources	• Domestic wastewater generated by living activities of about 70 persons at peak of construction, estimated volume about 11 m^3/d. • Construction wastewater, estimated volume about 42 m^3/d. • Storm water with a return period of 5 years at boil-off power plant approx. 28,635 m^3.
Applicable Standards	**Effluent quality standards:** • General Guideline of Site Runoff and Wastewater Discharges (construction phase), National Environmental Quality (Emission) Guidelines (Final), 2015 • Environmental, Health, and Safety-General Guidelines Environmental Wastewater and Ambient Water Quality, April 30, 2007 (World Bank Group/IFC); Standard (both from Myanmar and World Bank Group/IFC Guidelines) - Oil and Grease = 10 mg/L - pH = 6-9 - Total Suspended Solid = 50 mg/L - BOD = 30 mg/L - Total Nitrogen = 10 mg/L
Mitigation Measures	**Design Concept** The Contractor will prepare detailed design of a wastewater management system for the Boil-off Gas 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: • **Domestic Wastewater** - Toilet wastes will be separated from grey water or salvage. - Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. - Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. - Grey water will be discharged into the retention pond.

Element	Content
	- The retention pond will be designed as an oxidation pond with a hydraulic retention time of about 7 days.
Monitoring	• Once a month collection of one water samples at Effluent from release point of temporary drainage system. The treatment performance of the drainage system will be assessed from the monitoring data.
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on wastewater performance, and submit to MONREC and related Authorities Department..
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (wastewater management company)
Estimate Cost	• 600 USD/station/time

APPENDIX 8B-7

HAZARDOUS WASTE MANAGEMENT PLAN

Element	Content
Objectives	• To minimize all types of hazardous wastes generated at the construction sites, particularly the Boil-off Gas construction site, that will have to be disposed. • To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to hazardous waste disposal.
Sources	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.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of hazardous wastes as prescribed by MONREC or enforced by the local government, whichever are more stringent.
Mitigation Measures	• 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.
Monitoring	Monitoring of the hazardous 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 hazardous waste materials in the construction sites and hazardous waste disposal areas, and reviewing the daily records. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer 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 developer 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.

Element	Content
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 a year reports for submission to MONREC
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Contractor/Sub-contractors (waste management company)
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 8B-8

TRAFFIC MANAGEMENT PLAN

Element	Content
Objective	• Manage construction traffic and transport issues to minimize potential impacts on the communities and the operation of the road network
Performance indicators	• Number of traffic accidents in the identified impact areas • Number of traffic on Road during the construction period.
Sources	• Traffic disturbances could be caused by haulage of spoil, fill materials, construction materials and plant equipment. • Potential impact areas: - Local roads
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential construction traffic impacts on communities near the worksites. • 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 and monastery, 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.
Mitigation Measures	**Truck routes and construction site access** • In consultation with the concerned authorities at the regional, and township levels, develop and implement a Construction Traffic Management Plan to address the following issues: - 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;

Element	Content
	- 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. • Measures to manage the operation of the construction truck fleet for incorporation into a Construction Vehicle management sub-plan to include: - Monitoring of truck position, speed, route and performance in relation of traffic conditions and schedule requirements; - 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 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 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; • Employ local people a Nga Pitat village to give a sign when local villagers walk across the road during construction **Traffic Management at the Intersection of Local Roads** • Provide a traffic police or relevant officers to control traffic at the intersection during the transport period.

Element	Content
	Pedestrians and Cyclists • Maintain safe pedestrian and cycle access near construction works (particularly for elderly and children), including to community facilities, such as schools, monastery, open space and particularly: • 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.
Monitoring	• Monitor number of vehicles two times per year at 2 sampling stations include 1) boil-off gas area and 2) at Village. • Monitor traffic accident situation related to the project every day at project access road.
Reporting	• Monthly report on local traffic conditions, including any accidents involving construction traffic. • Twice a year reporting on traffic performance, and submission to MONREC and related Authorities Department.
Area	• Local roads and Boil-off Gas Site.
Responsible Agency	• Project developer • Relevant authorities (police)
Estimate Cost	• 500 USD/station/time for monitoring number of vehicles throughout pre-construction and construction phase • Cost for monitoring vehicles accident situation related to the project include on cost for pre-construction and construction

APPENDIX 8B-9

OHS MANAGEMENT PLAN

Element	Content
Objective	To establish best practicable OHS conditions to ensure work related health and safety of construction personnel.
Performance Indicators	• Total Recordable Injury Frequency Rate (TRIFR) • Lost Time Injury Frequency Rate (LTIFR) • Medical Treatment Injury Frequency Rate (MTIFR) • Duration rate • Incident rate
Sources	Public safety related to construction traffic will be managed in the traffic management plan. The issues of concern in this OSH plan are worker safety in construction site.
Applicable Standards	OHS guidelines and standards enforced by the Ministry of Health and proposed for this Project as follows: "To safeguard public health and to take necessary measure and respect of environmental health"
Mitigation Measures	**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 OHS policy and procedures. The OHS 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 developer 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

Element	Content
	• 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. • The project proponent must be set buffer zone between gas engine of Boil-off power plant project and gas tank of LNG Terminal project (at least 1.5 km) to prevent hazard during gas leakage. If none of adequate distance, fire protection wall or plant perennial tree will recommended to set for protecting the impact during gas leakage situation. **During Construction** • The implementation of the OHS plan will be integrated with construction supervision. • The Contractor will implement the OHS 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 OHS performance.
Monitoring	• Monitoring of OHS 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 OHS 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 OHS inspection notes as part of the site inspection notes.

Element	Content
	• The weekly formal inspections will be carried out at weekly intervals and shall be documented using appropriate "Weekly OHS Inspection Checklists". The Contractor's Construction Manager, EHS Manager, and Site Engineers will carry out the weekly inspections. The Owner's EHS Manager will jointly undertake the weekly inspections. Subcontractors will also be required to participate in the weekly inspections. The weekly inspections will include plant, substances, equipment and temporary structures used by subcontractors. • Internal audits will be carried out annually or more frequent if the OHS performance is significantly below established targets. The internal auditor or team will be engaged by the Contractor with concurrence of the Project developer. • Monitoring results will be discussed in Project OHS monthly review meetings.
Reporting	• Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Twice a year reporting on OHS performance, and submission to MONREC and related Authorities.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 8B-10

NATURAL RESOURCE USED MONITORING PLAN

Element	Content
Objective	To ensure that Nga Pitat villagers can still utilize marine and coastal resources sufficient to their livelihoods.
Performance Indicators	Number of complaints related to resource management.
Sources	Loss of fishing ground and boatyard areas in Britney Creek cause of livelihood affect to Nga Pitat Villagers
Applicable Standards	All complaints about construction about 15 months period
Mitigation Measures	**Pre-Construction** • Alternative fishing ground and boatyard areas will need to be identified and discuss with local villagers and fishermen and concern authorities include MONREC, Fisheries Department at Taninthayi Region, and Concerned Authorities Department. If justified, supports will need to be provided to the affected local villagers and fishermen to enable them to adjust to the alternative fishing grounds and boatyard areas • 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: - Community forest and mangroves management - Coastal aquaculture within extensive system - Fish processing - Crop cultivation techniques - Product development and marketing - Food preparation and preservation **During Construction** • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village).

Element	Content
Monitoring	• Report community consultation's activities and on consultation. • Training and promotion household account record. • Consultation with Nga Pitat Village to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all household in Nga Pitat Village) at least 1 times per three month.
Reporting	• Results of the resource management will be included in the monthly monitoring reports and the twice a year reports for submission to MONREC and related Authorities. • Report immediately to the relevant authorities in case of complaint from villagers.
Area	• Project sites/fishing ground/villages/natural resources within the area nearby project site.
Responsible Agency	• Project developer
Estimate Cost	• 100,000 USD lump sump throughout pre-construction / construction phase

APPENDIX 8B-11

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN

Element	Content
Objective	To avoid or mitigate and manage construction impacts on the social environment. *Note: The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, livelihood and safety.*
Performance Indicators	• Number of grievances or complaints filed with the Project Management Office of the Project developer. • Number of complaints successfully responded.
Sources	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 (both land traffic and navigation), noise, coastal water, and workers' misconduct. The management of social environment will cover villages potentially to be affected by construction activities.
Applicable Standards	The target for the entire construction period of about 15 months in total for all phases is all complaints are responded by the EPC and filed with the Project Management Office.
Mitigation Measures	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans, such as air quality, noise, traffic, navigation and marine ecology. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the construction impacts on their daily living and properties. **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 it is 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 work sites to develop effective mitigation strategies and maintain regular communication with these facility managers.

Element	Content
	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. **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. • Ensure medical facilities, community centers, monastery and schools in the area have access to construction updates and community education during the construction. **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.

Element	Content
Monitoring	• Consultation with three village include Nga Pitat, Mudu, and Nya Binsiek to colloect information include local concerns, issues, and problems during pre-construction and construction phase at least 1 time per three months • 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 twice a year reports for submission to MONREC. • Report immediately in case of a safety incident or complaint from a neighbor.
Area	• Villages
Responsible Agency	• Project developer
Estimate Cost	• Cost include in the budget for Natural Resources Used Monitoring Plan

APPENDIX 8B-12

EMERGENCY MANAGEMENT PLAN (FLOOD, TSUNAMI AND CYCLONE)

Element	Content
Objectives	• To minimize impacts in case of emergency during construction phase. • To acknowledge and raise awareness of construction workers to evacuate, shelter or lockdown can save lives.
Performance Indicator	• Number of employees/workers/staff understand about emergent situation and know how to minimize/survive from the hostile situation (flood, tsunami and cyclone). • Conduct a test (pre-test and post-test) to evaluate their understanding.
Mitigation Measures	• Provide training program about emergency plan before commencing construction activities. • Construct buffer zone (for both off-shore and on-shore area) to minimize impacts.
Monitor	• Results of pre-test and post-test of construction workers.
Reporting	• Results of pre-test and post-test directly reporting to project developer.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers
Estimate Cost	• Include cost for pre-construction and construction.

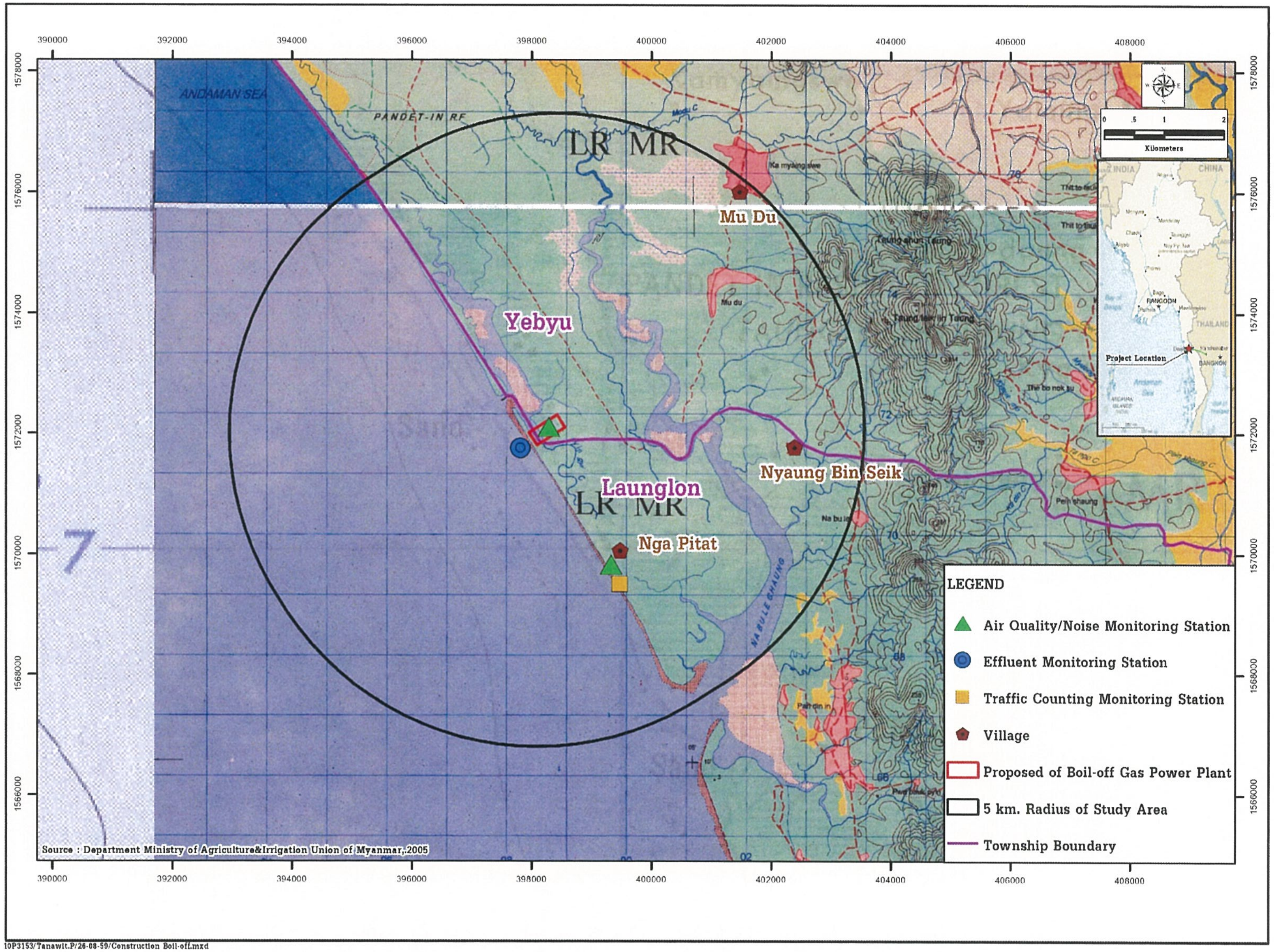

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FIGURE 1 : MONITORING STATION DURING PRE-CONSTRUCTION / CONSTRUCTION PHASE

APPENDIX 8C

SUB-PLANS FOR OEMP

APPENDIX 8C-1

MANGROVE REHABILITATION MANAGEMENT PLAN

Element	Content
Objective	• To monitor the activities of rehabilitate mangrove forest resources • To conserve in existing mangrove forest around project area.
Performance Indicator	• Types and number of flora species in mangrove rehabilitation area
Mitigation Measures	• Planting, checking and evaluating fertilities in mangrove rehabilitation area and around project site. • Plant additional mangroves. • Mangrove rehabilitation program should be involve local villagers participates in prepare seeding, and maintain the areas. Developer should provide appropriate budget for this activity. • Give a brief orientation for collectors/visitors (for educational and recreational purposes) about mangrove forest and other relevant topics for rehabilitation plan. • Maintenance program for the rehabilitation area.
Monitoring	• Monitor on mangrove rehabilitation area and forest area around project site. - Frequency : 2 times/year during 1st-10th years of operation phases
Reporting	• Results of site inspections will be included in the environmental monitoring reports and submitted to MONREC and Port Authorities Department.
Area	• Mangrove rehabilitation area (investigating for the appropriate area).
Responsible Agency	• Project developer (CSR Team)
Estimate Cost	• 95,000 USD lump sump for planting and maintenance in reforestation area during 1st-10th of operation phases. • 1,000 USD / year for support local villagers (from Nga Pitat and Nyua Binseik Villages) in rehabilitation activities (during 1st-10th years during operation phase, total cost 10,000 USD)

APPENDIX 8C-2

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objectives</td><td>

To minimize the emissions from the power plant, particularly NO_x.
To ensure the emissions are within the limits prescribed as a condition of the ECC prescribed by MONREC.

</td></tr>
<tr><td>Performance Indicators</td><td>

Concentrations of NO_x in the stack gas as percentage of the permissible maximum concentrations.
No complaint on ambient air quality in sensitive receptor areas.

</td></tr>
<tr><td>Sources</td><td>Stack gas</td></tr>
<tr><td>Applicable Standards</td><td>
1) Emission Standard for the project
Table 1 : Emission Standards for the Project
<table>
<tr><th>Parameter</th><th>Standard</th></tr>
<tr><td>Particulate matter, PM_{10}</td><td>60 mg/Nm^3</td></tr>
<tr><td>SO_2</td><td>20 ppm (20 mg/Nm^3)</td></tr>
<tr><td>NO_X</td><td>120 ppm (120 mg/Nm^3)</td></tr>
</table>
Sources: As specified by the draft concession agreement of the Project
2)Ambient Air Quality
Applicable ambient air quality standards related to exhaust emissions are as follows:
Table 2 –Air Quality Goals
<table>
<tr><th>Pollutant</th><th>Not to be Exceeded</th></tr>
<tr><td rowspan="2">PM-10</td><td>150 μg/m^3 (24 hr average)</td></tr>
<tr><td>50 μg/m^3 (annual average)</td></tr>
<tr><td>SO_2</td><td>125 μg/m^3 (24 hr average)</td></tr>
<tr><td>NO_2</td><td>150 μg/m^3 (24 hr average)</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>
Design and Commissioning

The gas turbine facility has been modelled and designed so as to ensure stack emissions will meet prescribed technical specifications;
Low NOx burners will be used to minimize thermal NOx emissions.
The Contractor and his supplier will complete the testing and tuning program on the turbines 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;

</td></tr>
</table>

Element	Content
	• 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 turbines using low NOx burners. 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.
Monitoring	**Stack Emission** • Each of the exhaust stacks will be fitted with in-stack monitoring equipment linked to the continuous emissions monitoring system (CEMS). This monitoring system will be designed to meet the regulatory requirements As specified by the draft concession agreement of the Project, in particular monitoring of NOx. **Ambient Air Quality** • Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Nga Pitat and Mudu) for the duration of 1st-5th year of operation works and 1 time per year throughout operation phase, and in response to complaints, based on the following parameters: - Particulates (PM 10) - Sulfur Dioxide (SO_2) - Nitrogen Dioxide (NO_2)
Reporting	• Twice a year reports for submission to MONREC and Concerned Authorities Department.
Area	• Stack • Closest sensitive receptors (Nga Pitat and Mudu).
Responsible Agency	• Project developer (Monitoring Team)
Estimate Cost	**Stack Emission** • Including in operation cost **Ambient Air Quality** • 800 USD/station/time

APPENDIX 8C-3

WASTE MANAGEMENT PLAN

Element	Content
Objective	To minimize all types of wastes generated at the operation sites, that will have to be disposed. To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to waste disposal/Environmental issue in relation to waste management.
Sources	• Operation waste: • Non-operation waste: Includes wastes generated in worker project site, canteens and offices such as paper, food and beverage containers, food wastes, and other domestic items.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of wastes as prescribed by MONREC or enforced by the local government, whichever are more stringent.
Mitigation Measures	**Design and Planning before Commencing the Operation** • The Contractor will consult with 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. • The Contractor will ensure that the design and the proposed operation methods will generate the least amount of wastes. • 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 first quarter of 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. • The subsequent quarterly 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

Element	Content
	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 **During Operation** **Waste Segregation** • The project developer/contractor will design and implement a waste segregation system and procedure and communicate it to all operation 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 operation 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 operation 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

Element	Content
	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). • Preferably, inert wastes such as broken tiles, bricks, plastics should be used for filling the site in areas planned to be vacant space. • No burning of wastes will be allowed. • Non-operation 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 power plant site in designated green areas. • Decomposable wastes such as food wastes and vegetation may be disposed of by composting. **On-site Record Keeping** The project developer/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. • Accessibility to the EHS Manager of the project developer for verification of operation 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	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 operation sites and waste disposal areas, and reviewing the daily records. The focus will be on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer 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 developer and the operation 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.

Element	Content
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 a year reports for submission to MONREC and related Authority Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management company)
Estimate Cost	• Include of operation cost.

APPENDIX 8C-4

WASTEWATER MANAGEMENT PLAN

Element	Content
Objective	To ensure that all wastewaters generated during the operation will be adequately treated before discharging into the sea
Performance Indicators	Qualities of the treated effluent compared with the applicable effluent quality standards.
Sources	• Domestic wastewater generated by living activities of about 20 persons at peak of operation, estimated volume about 0.96 m^3/d. • Storm water with a return period of 5 years at boil-off gas approx. 28,635 m^3.
Applicable Standards	**Effluent quality standards:** • General Guideline of Site Runoff and Wastewater Discharges (operation phase), National Environmental Quality (Emission) Guidelines (Final), 2015 • Environmental, Health, and Safety-General Guidelines Environmental Wastewater and Ambient Water Quality, April 30, 2007 (World Bank Group/IFC); Standard (both from Myanmar and World Bank Group/IFC Guidelines) - Oil and Grease = 10 mg/L - pH = 6-9 - Total Suspended Solid =50 mg/L - BOD_5 = 50 mg/L - Total coliform bacteria = 400 / 100 ml - Temperature increase = <3°C (100 m. from discharge point)
Mitigation Measures	**Design Concept** The Contractor will prepare detailed design of a wastewater management system for the Boil-off gas operation 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: • **Domestic Wastewater** - Toilet wastes will be separated from grey water or salvage. - Kitchen and canteen waste water will be discharged into oil and grease trap tank before draining into a retention pond. - Toilet wastes will be discharged into a septic tank (or more than one septic tank) with a hydraulic retention time of about 5 days. - Grey water will be discharged into the retention pond. - The retention pond will be designed as an oxidation pond with a hydraulic retention time of about 7 days.

Element	Content
	• **Operation Wastewater** - There is no wastewater discharged (closed system).
Monitoring	• twice a year collection (cover dry and wet seasons) of one water samples at Effluent from release point of temporary drainage system. The treatment performance of the drainage system will be assessed from the monitoring data.
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on wastewater performance, and submit to MONREC and related Authorities Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management company)
Estimate Cost	• 600 USD/station/time

APPENDIX 8C-5

HAZARDOUS WASTE MANAGEMENT PLAN

Element	Content
Objectives	• To minimize all types of hazardous wastes generated at the operation sites, particularly the boil-off gas operation site that will have to be disposed. • To minimize environmental impacts of waste disposal.
Performance Indicators	Number of complaints related to hazardous waste disposal.
Sources	Hazardous waste: Includes such wastes as spent lubricating oil, paints, and chemicals used in the operation. Most of the hazardous wastes are in liquid form.
Applicable Standards	Applicable guidelines and standards regarding the management and disposal of the three categories of hazardous wastes as prescribed by MONREC or enforced by the local government, whichever are more stringent.
Mitigation Measures	• 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.
Monitoring	Monitoring of the hazardous 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 hazardous waste materials in the operation sites and hazardous waste disposal areas, and reviewing the daily records. This will be focused on efficiency of the collection, storage, and disposal; and on the quality of the records. The EHS Managers of the Project developer 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 developer and the operation 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.

Element	Content
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 a year reports for submission to MONREC and related Authorities Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management company)
Estimate Cost	• include on operation cost

APPENDIX 8C-6

TRAFFIC MANAGEMENT PLAN

Element	Content
Objective	• Manage operation traffic and transport issues to minimize potential impacts on the communities and the operation of the road network and navigation/shipping
Performance indicators	• Number of traffic accidents in the identified impact areas • Number of traffic on local roads during the Operation phase.
Sources	• Traffic disturbances could be caused by haulage of spoil, fill materials, operation materials and plant equipment. • Potential impact areas: local roads
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential traffic impacts on communities near the worksites. • 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 boil-off gas sites. • Monitor traffic flows near project site and take corrective action in response to traffic impacts as a consequence of operation works.
Mitigation Measures	• Strictly enforce the traffic regulations (on drivers and pedestrians) to reduce road traffic accidents • Construction the bridge for local villagers and children walk across the project coastal road. • Prepare and implement an improvement program for improving safety of the local road network/navigation/shipping to cope with expected increase in traffic volume during operations.
Monitoring	• Monitor number of vehicles two times per year at 2 sampling stations include 1) project area and 2) at Village. • Monitor traffic accident situation related to the project every day at project access road/ or even navigation.
Reporting	• Monthly report on local traffic conditions, including any accidents involving operation traffic. • Twice a year reporting on traffic performance, and submission to MONREC and related Authorities Department.
Area	• Project site (Onshore) and Project Access Road (at Nga Pitat Village)
Responsible Agency	• Project developer
Estimate Cost	• 500 USD/station/time throughout operation phase • Cost for monitoring vehicle accident situation related to the project include on cost for operation.

APPENDIX 8C-7

OHS MANANGEMENT PALN

Element	Content
Objective	To establish best practicable OHS conditions to ensure work related health and safety of operational personnel.
Performance Indicators	• Total Recordable Injury Frequency Rate (TRIFR) • Lost Time Injury Frequency Rate (LTIFR) • Medical Treatment Injury Frequency Rate (MTIFR) • Duration rate • Incident rate
Sources	Issues of concern: excessive noise and temperature inside the power plant, fire and explosion risks.
Applicable Standards	OSH guidelines and standards enforced by the Ministry of Health and proposed for this Project as follows:
Mitigation Measures	**Design and Equipment Selection** (1) Incorporate in the EPC contract, all OHS requirements that the EPC contractor will in the design of the project and associated facilities, including equipment selection; give due consideration to, but not limited to, the following OHS requirements: (i) integrity of workplace structures; (ii) standard operating procedures for process shutdown, including emergency 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 developer an OHS management plan and implementation procedures specific to the power plant of this Project and in line with the Owner's OHS policy and procedures. The OHS management plan and implementation procedures will be submitted not later than one month before commissioning of Boil-off gas and associated facilities. (3) The OHS management plan and implementation procedures will cover but not limited to the following subjects: • Organization and responsibilities of OSH management • Training plan

Element	Content
	• Communication plan • Contractor responsibilities • Safety measures for the Boil-off gas's O&M, including-safety in project operations, fire, explosion, and chemical hazards. • Emergency response procedures. • Task-specific work requirements Compliance monitoring and evaluation plan • Audit plan • Reporting system • Documentation system **During Project Commissioning** During project commissioning, the EPC contractor will be required to conduct necessary orientation and training to the Owner's Boil-off gas operational team to ensure that the operational team clearly understands the OHS plan and implementation procedures. **During Operations** The Plant Manager will implement the OHS 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.
Monitoring	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. • Monthly formal inspections of the work place. • Audits • Corrective Action Reports The daily inspections will observe: (i) adherence of the operational personnel to the OHS 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.

Element	Content
	The daily inspections will be carried out by the EHS Manager, the Operational Manager, and relevant unit heads. The Manager will occasionally join the daily inspections. The EHS Manager will prepare daily OHS inspection notes as part of the site inspection notes. The weekly formal inspections will be carried out at weekly interval sand shall be documented using appropriate "Weekly OHS Inspection Checklists". The EHS Manager and the Operational 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. The monthly formal inspections will review the OHS 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 OHS 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 meetings on power plant performance.
Reporting	• Monthly as part of the monthly monitoring reports except in case of an incident when reporting should occur immediately on completion of any investigation required to resolve the incident. • Results of OHS monitoring will be reported: - Twice a year reports will be submitted to MONREC and Port Authorities in the first five year after commissioning. - Annually report will be submitted to MONREC and Port Authorities throughout the Project life.
Area	• Project site
Responsible Agency	• Project developer (OHS Team)
Estimate Cost	• include operation cost

APPENDIX 8C-8

SOCIAL ENVIRONMENTAL MANAGEMENT PLAN AND CSR PROGRAM

Element	Content
Objective	Avoid or mitigate and manage operation impacts on the social environment. *Note: The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, livelihood and safety.*
Performance Indicators	• Number of grievances or complaints filed with the Project Management Office of the Project developer. • Number of complaints successfully responded.
Sources	Daily living of people in the surrounding communities may be disturbed or inconvenienced by environmental disturbances caused by the operation such as air quality, traffic, and waste management not satisfaction with marine resources utilization. The management of social environment will cover villages (sensitive receptors).
Applicable Standards	The target for the entire operation period of about 50 years is all complaints are responded by the EPC and filed with the Project Management Office.
Mitigation Measures	Mitigation measures for minimizing physical impacts on the social environment are prescribed in relevant sub-plans, such as noise, air quality and wastewater management. Mitigation measures in this sub-plan are community measures designed to support the implementation of the physical measures. The basic requirement is that the communities have access to the communication and complaints process to address and respond to their complaints related to the construction impacts on their daily living and properties. Establish the CSR Program to implement and support public relations and mitigation measures. **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 it is practicable after the completion of construction, the Contractor shall reinstate community facilities affected by the works, if any.

Element	Content
	• Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during construction phase • Conduct attitude survey to collect information on local concerns, issues, and problems of the communities in the new alternative fishing ground and boatyard area (should be all households in Villages). **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. **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. • Ensure medical facilities, community centers, monastery and schools in the area have access to construction updates and community education during the construction. • Training and promotion household account record. • Support on development program such as electricity supply, improve on local road, and fishery program in new alternative fishing ground and boatyard area in CSR Program
Monitoring	• 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.

Element	Content
Reporting	• Report immediately in case of complaint from a neighbor. • CSR Program will be reported: - Twice a year reports will be submitted to MONREC and Concerned Authorities in the first five year after commissioning. - Annually report will be submitted to MONREC and Port Authorities throughout the Project life.
Area	• Villagers (PAPs)
Responsible Agency	• Project developer
Estimate Cost	• 150,000 USD lump sump for group interview or village forum at 3 affected villages throughout operation phase • 2,000 USD / year for development fund during 1st-5th years of operation phase • 1000 USD / year for development fund during 6th-throughout operation phase.

APPENDIX 8C-9

OPERATION STAFF MANAGEMENT PLAN

Element	Content
Objective	• To manage staff resources throughout the life of project. • To ensure that sufficient staff processing the correct skill sets and experience to ensure a successful project completion.
Performance Indicator	• Operation staff meet the target/goal of proposed plan (percentage). • Results/products meet the standard requirement used for the Boil-off gas Project.
Mitigation Measures	• Provide a training program for operational staff. • Incentive idea for achieving goals.
Monitoring	Set Key Performance Indicators (KPIs) for operation staff (individual staff or department).
Reporting	• Results will be included in the environmental monitoring reports and submitted to MONREC and related Authorities Department.
Area	• Project site/or outside.
Responsible Agency	• Project developer (HR Team)
Estimate Cost	• include on operation cost

APPENDIX 8C-10

EMERGENCY MANAGEMENT PLAN

(FLOOD, TSUNAMI AND CYCLONE)

Element	**Content**
Objectives	• To minimize impacts in case of emergency during operation phase. • To acknowledge and raise awareness of operation staff to evacuate, shelter or lockdown can save lives.
Performance Indicator	• Number of staff understand about emergent situation and know how to minimize/survive from the hostile situation (flood, tsunami and cyclone). • Conduct a test (pre-test and post-test) to evaluate their understanding.
Mitigation Measures	• Provide training program about emergency plan in orientation program. • Practice emergency plan every year taught by experts.
Monitor	• Results of pre-test and post-test of construction workers (understanding and application of knowledge).
Reporting	• Results of pre-test and post-test/yearly emergency practice, directly reporting to project developer.
Area	• Project sites (onshore and off shore).
Responsible Agency	• Project developer • Operation staff
Estimate Cost	• include on operation cost

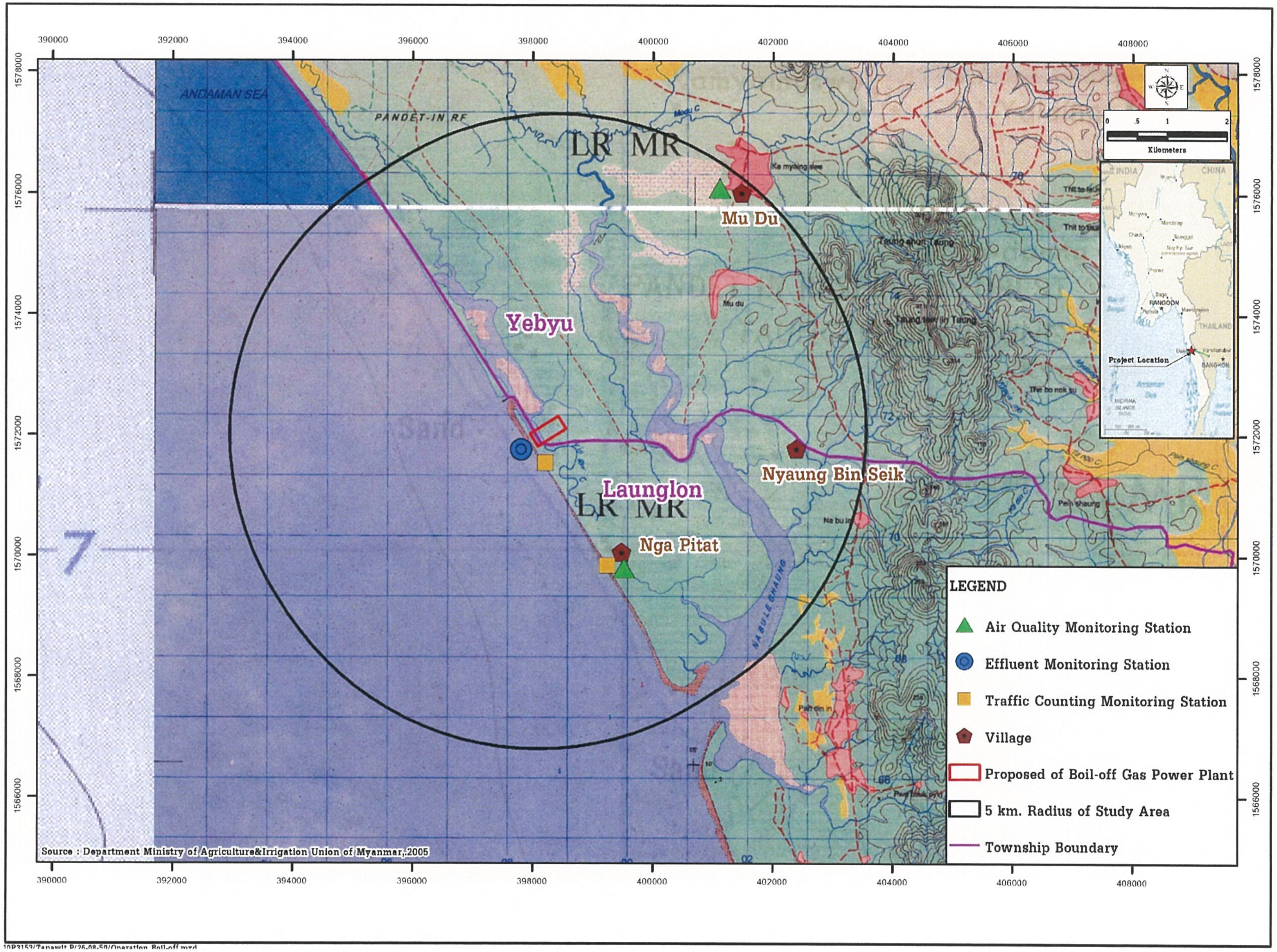

FIGURE 1 : MONITORING STATION DURING OPERATION PHASE

APPENDIX 9A

NAME LIST OF VILLAGERS WHO ATTENDED THE PUBLIC CONSULTATION MEETING

APPENDIX 9A-1

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN NGA PITAT OCTOBER 2015

ဒီတက်ကျေးရွာ EIA / SIA သုတေသီ [illegible] ဆွေးနွေးပွဲ

Public Consultation Attendance List

Date 8/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	ဦး [illegible]	ဒီတက်		[illegible]
2	ဦး [illegible]	〃		[illegible]
3	ဦး [illegible]	〃		[illegible]
4	ဒေါ် [illegible]	〃		[illegible]
5	ဒေါ် [illegible]	〃		[illegible]
6	ဒေါ် [illegible]	〃		[illegible]
7	ဒေါ် [illegible]	〃		[illegible]
8	ဒေါ် [illegible]	〃		[illegible]
9	ဒေါ် [illegible]	〃		[illegible]
10	ဒေါ် [illegible]	〃		[illegible]
11	ဒေါ် [illegible]	〃		[illegible]
12	ဒေါ် [illegible]	〃		[illegible]
13	ဒေါ် [illegible]	〃		[illegible]
14	ဒေါ် [illegible]	〃		[illegible]
15	ဒေါ် [illegible]	〃		[illegible]
16	ဦး [illegible]	〃		[illegible]
17	ဒေါ် [illegible]	〃		[illegible]
18	ဒေါ် [illegible]	〃		[illegible]
19	ဒေါ် [illegible]	〃		[illegible]
20	ဒေါ် [illegible]	〃		[illegible]
				[illegible]

Certificated by [illegible]

Position ရပ်ကျက်ရေးမှူး

ပေါတက်ကျေးရွာ EIA / SIA ဆွေးနွေးပွဲ [illegible]

Public Consultation Attendance List

Date 8 / 10 / 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ဌာန	လက်မှတ်
21	ဒေါ်ခင်ဝင်း	ပေါတက်		[signature]
22	ဒေါ်မွားကြည်	〃		[signature]
23	ဒေါ်ကြိုင်ညို	〃		[signature]
24	ဒေါ်ချိုချိုလှိုင်	〃		[signature]
25	ဒေါ်သခင်မို	〃		[signature]
26	ဒေါ်မြနွေ	〃		[signature]
27	ဦးလှနွေ	〃		[signature]
28	ဒေါ်နွေအောင်ထား	〃		[signature]
29	ဒေါ်ချိုနွေ	〃		[signature]
30	ဒေါ်မြစိုး	〃		[signature]
31	ဒေါ်ကျင်သန့်	〃		[signature]
32	ဒေါ်မိုလှ	〃		[signature]
33	ဒေါ်တင်တင်	〃		[signature]
34	ဒေါ်တင်တင်ချို	〃		[signature]
35	ဒေါ်နှင်းနှင်းယု	〃		[signature]
36	ဒေါ်စုကြည်	〃		[signature]
37	ဒေါ်စိုးမွှေး	〃		[signature]
38	ဒေါ်စန်းဝင်း	〃		[signature]
39	ဒေါ်မြို	〃		[signature]
40	ဒေါ်စု	〃		[signature]
41	ဒေါ်မိုးငယ်	〃		[signature]

Certificated by [signature]

Position ရပ်ကွက်ကျေးရွာ [illegible]

ပေါက်တော်ကျေးရွာတွင် EIA / SIA လူထုတွေ့ဆုံဆွေးနွေးပွဲ

Public Consultation Attendance List

Date 8 / 10 / 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
42	ဒေါ်မိုမို	ပေါက်တော်		[signature]
43	ဒေါ်ကြူကြူဘို	"		[signature]
44	ဒေါ်သီခဝေ	"		[signature]
45	ဦးဒွေကောင်းသိန်း	"		[signature]
46	ဦးကျော်ရွှေ	"		[signature]
47	ဦးတင်ရွှေ	"		TIN SHWE
48	ဦးမိုးသိန်း	"		[signature]
49	ဦးဂျူကြည်	"		[signature]
50	ဦးကျော်သိန်း	"		[signature]
51	ဦးသိန်းမေဖော်	"		[signature]
52	ဦးမောင်ကျော်	"		[signature]
53	ဒေါ်ဒွေ	"		[signature]
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55	ဦးထွန်းနိုင်	"		[signature]
56	ဦးကြီး	"		[signature]
57	ဦးသိန်းဖေ	"		[signature]
58	ဦးလှဝင်း	"		[signature]
59	ဦးတင်	"		[signature]
60	ဦးတင်မောင်	"		[signature]
61	ဦးဘညွန့်	"		[signature]
62	ဦးလှညွန့်	"		[signature]

Certificated by [signature]

Position [illegible]

ဗေဓာက်ကျေးရွာတွင် EIA / SIA ဆိုင်ရာ ညှိနှိုင်းဆွေးနွေးပွဲ

Public Consultation Attendance List

Date 8 / 10 / 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
63	ဦး[illegible]	ဗေဓာက်		[illegible]
64	ဦး[illegible]	"		[illegible]
65	[illegible]	"		[illegible]
66	[illegible]	"		[illegible]
67	[illegible]	"		[illegible]

Certificated by [signature]

Position ဒုတိယကျေးရွာ[illegible]

APPENDIX 9A-2

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN NYAUNG BIN SEIK OCTOBER 2015

ဒေါင်းပင်ဆိပ်ကျေးရွာဝင်း EIA / SIA လူထုတွေ့ဆုံ ဆွေးနွေးပွဲ

Public Consultation Attendance List

Date 7/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	ဦးခါ	ဒေါင်းပင်ဆိပ်		ဦးခါ
2	ဒေါ်ခင်မြို့	〃		x
3	မကြူ	〃		ကြူ
4	ဒေါ်တင်ရွှေ	〃		+
5	အောင်မြို	〃		အောင်မြို
6	ဒေါ်ကြင်ဘို	〃		x
7	ဝင်းမြို	〃		ဝင်းမြို
8	ဒေါ်ကြူ	〃		ဒေါ်ကြူ
9	ဒေါ်နွဲ့ကြင်	〃		ဝင်းကြ
10	ဒေါ်ဂေဇာဘ	〃		+
11	ဒေါ်လှဘိန်	〃		+
12	ဒေါ်သန်းအေး	〃		သန်းအေး
13	ဦးကြည်ရွှေ	〃		ဦးကြည်ရွှေ
14	ဒေါ်ဝေခင်	〃		ဝေခင်
15	ဦးတင်ဦး	〃		ဦးဂန်းစိုး
16	ဦးမင်းကြည်	〃		မင်းကြည်
17	ဒေါ်အေးသိန်း	〃		မအောင်သိန်း
18	ဦးညာဏ်ဘုန်း	〃		ဦးညာဏ်ဘုန်း
19	ဦးလေးဝင်း	〃		ဦးလေးဝင်း
20	ဦးတင်ရွှေ	〃		တင်ရွှေ
21	ဦးအောင်ကြိုင်	〃		ဦးအောင်ကြိုင်

Certificated by [illegible signature]

Position

[illegible] EIA / SIA [illegible]

Public Consultation Attendance List

Date 7/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
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38	[illegible]	[illegible]		[illegible]
39	[illegible]			[illegible]
40	[illegible]	[illegible]		[illegible]

Certificated by [illegible]

Position

APPENDIX 9A-3

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN MUDU OCTOBER 2015

[illegible] EIA / SIA [illegible]

Public Consultation Attendance List

Date 7/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]	—	[illegible]
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3	[illegible]	[illegible]		[illegible]
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12	[illegible]	[illegible]		[illegible]
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16	[illegible]	[illegible]	—	[illegible]
17	[illegible]	[illegible]		[illegible]
18	[illegible]	[illegible]		[illegible]

Certificated by [illegible]

Position [illegible]

Public Consultation Attendance List

Date: 7/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
19	[illegible]	[illegible]		[illegible]
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36	[illegible]	[illegible]		[illegible]
37	[illegible]	[illegible]		[illegible]
38	[illegible]	[illegible]		[illegible]

Certificated by: [signature]

Position: [illegible]

Public Consultation Attendance List

Date 7/10/2019

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
39	[illegible]	[illegible]		[illegible]
40	[illegible]	[illegible]		[illegible]
41	[illegible]	[illegible]		[illegible]
42	[illegible]	[illegible]		[illegible]
43	[illegible]	[illegible]		[illegible]
44	[illegible]	[illegible]		[illegible]
45	[illegible]	[illegible]		[illegible]
46	[illegible]	[illegible]		[illegible]
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48	[illegible]	[illegible]		[illegible]
49	[illegible]	[illegible]		[illegible]
50	[illegible]	[illegible]		[illegible]
51	[illegible]	[illegible]		[illegible]
52	[illegible]	[illegible]		[illegible]
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56	[illegible]	[illegible]		[illegible]
57	[illegible]	[illegible]		[illegible]
58	[illegible]	[illegible]		[illegible]
59	[illegible]	[illegible]		[illegible]

Certificated by [illegible]

Position [illegible]

[illegible] EIA/SIA [illegible]

Public Consultation Attendance List Date 7/10/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
60	[illegible]	[illegible]		[illegible]
61	[illegible]	[illegible]		[illegible]
62	[illegible]	[illegible]		[illegible]
63	[illegible]	[illegible]		[illegible]
64	[illegible]	[illegible]		[illegible]
65	[illegible]	[illegible]		+
66	[illegible]	[illegible]		+
67	[illegible]	[illegible]		[illegible]
68	[illegible]	[illegible]		[illegible]
69	[illegible]	[illegible]		[illegible]
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71	[illegible]	[illegible]		[illegible]
72	[illegible]	[illegible]		[illegible]
73	[illegible]	[illegible]		

Certificated by [signature]

Position [illegible]

APPENDIX 9A-4

NAME LIST OF SWB-SUPPORT WORKING AND CONCERN AUTHORITIES GROUP WHO ATTENDED THE PUBLIC CONSULTATION MEETING DECEMBER 2015

Public Consultation Attendance List

Date 2/12/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1.	U Kyaw Naing	Yaphyu	GAD	
2	U THAN HLA AUNG	IMMIGRATION	IMMIGRATION	
3	U Thet Oo	ITD, SWB	DOL	
4.	U Aung Htun Than	SWB	GAD	
5	U Ko Ko Naing.	SWB.	DOL	
6	U KYAW MAW HTUN	SW/R	IMMIGRATION	
7	U Khin Mg Win	SWB	Port (MPA)	
8	U Khin Mg Than	Dawei	D.D	
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 2/12/2015

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ဌာန	လက်မှတ်
21	Mr. Chinnavuth Liorungwong	SVP-BDD2 ~~EGCO~~	EGCO	
22	Ms. Siriluck Soontornruengyot	AVP-Environment	EGCO	Siriluk
23	Mr. Suphap Sathatham	PE	ITD	
24	Mr. Ruangrit Somnarai	PM	ITD	S.R.N
25	Mr. Kasin Aksorndech	ENGINEER	ITD	
26	MS. Supansa Kruajan.	Environmental Engineer	MZE	
27	Mrs. Parichat Makorncan	Deputy Envi Mgr.	MJE	
28	MISS YAOWAPA CHEWONG	Sociologist	TEAM	
29	Ms Chalida Neobulpa	Env. Scientist	TEAM	CHALIDA N.
30	Mr. Yongyut Khenchantet	Env. Scientist	TEAM	Yongyut
31	Mr. Nipat Sumhleab	Env. Scientist	TEAM	Nipat Sumhleab
32	Mr. Pliam Manuyc	ENV. Scientist	TEAM	
33	Mr. SUNGROCK KUNA	ENG.	ITD	
34	Ms. Supichaya Wongchinawit	TEAM-Env. Scientist	TEAM	Supichaya
35	Mr. Natt Dumkum	ENV. Scientist	TEAM	

Certificated by..

Position..

APPENDIX 9A-5

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN NGA PITAT DECEMBER 2015

Public Consultation Attendance List

Date ၂.၁၂.၁၅

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၁။	ဦးဖေအောင်	ပေါက်တော		[signature]
၂။	ဦးကံကြိုင်	〃		[signature]
၃။	ဒေါ်သန်းကြီ	〃		[signature]
၄။	ဒေါ်နွဲ့	〃		[signature]
၅။	မမာချို	〃		[signature]
၆။	မမော်ဇော်	〃		[signature]
၇။	မရှင်းရွှေ	〃		[signature]
၈။	ကိုမြကြည်	〃		[signature]
၉။	မချိုလေး	〃		[signature]
၁၀။	မနှင်းမူ	〃		[signature]
၁၁။	ဒေါ်သန်းကြီ	〃		[signature]
၁၂။	ဒေါ်မြသောင်း	〃		[signature]
၁၃။	ဒေါ်နှင်းငွေ	〃		[signature]
၁၄။	မရှင်းချို	〃		[signature]
၁၅။	မမြစိုး	〃		[signature]
၁၆။	မမာစိုး	〃		[signature]
၁၇။	ဒေါ်ကျင်သောင်း	〃		[signature]
၁၈။	ဒေါ်ထွေးကြူ	〃		[signature]
၁၉။	မအေးသီတာ	〃		[signature]
၂၀။	ဦးကျော်ငွေ	〃		[signature]
၂၁။	ဒေါ်ကြည်ငွေ	〃		[signature]

Certificated by.......[signature].......

Position.......................................

Public Consultation Attendance List

Date........၉.၁၂.၁၅..........

စဉ်	အမည်	နေရပ်	ဆက်သွယ်ရန်/ရာထူး	လက်မှတ်
၂၂။	ဦးကျော်ဝင်း	ပေါ်တက်		ကျော်ဝင်း
၂၃။	ဒေါ်ခင်အေး	"		+
၂၄။	မကိုကိုဆိုး	"		ကိုကိုဆိုး
၂၅။	ဒေါ်သန်းမြ	"		[illegible]
၂၆။	ဒေါ်လှကျင်	"		လှကျင်
၂၇။	မဟိ	"		မဟိ
၂၈။	ကိုသန်းမြင့်	"		ကိုသန်းမြင့်
၂၉။	ကိုဆန်းညွှန့်	"		[illegible]
၃၀။	ဒေါ်ညိုမြ	"		[illegible]
၃၁။	ကိုစိုးဟန်	"		+
၃၂။	မဆော်ဦး	"		မဆို
၃၃။	မမွှေးမို	"		မမွှေးမို
၃၄။	မမာမာဝေ	"		သောကြာဝေး
၃၅။	ဒေါ်ညိုအေး	"		+
၃၆။	ယသန်းအေး	"		မသန့်အေး
၃၇။	ဒေါ်ကြည်ဝင်း	"		ကြည်ဝင်း
၃၈။	ဒေါ်တေးသိန်း	"		[illegible]
၃၉။	မစန်းရွှေ	"		မစန်းရွှေ
၄၀။	မောင်ကို	"		ဥဒ်ဦး
၄၁။	မမိုးမိုး	"		+
၄၂။	ဒေါ်စိန်သာ	"		စိန်သာ

Certificated by.............................

Position.............................

[illegible]

Public Consultation Attendance List

Date [illegible]

စဉ်	အမည်	နေရပ်	ဆက်သွယ်ရန်ဖုန်း/လိပ်စာ	လက်မှတ်
၄၃.	ဒေါ်သာနုသိန်း	ဓေဘာတက်		[illegible]
၄၄.	ဒေါ်မိုးသိန်း	״		မိုးသိန်း
၄၅.	ဒေါ်ဝါဥ	״		ဝါဥ
၄၆.	မစိုး	״		ခစိုး
၄၇.	ဒေါ်ငွေသိန်း	״		ငွေသိန်း
၄၈.	မကြူဝင်း	״		မကြူဝင်း
၄၉.	မလှကြိုင်	״		[illegible]
၅၀.	ဒေါ်ခင်ကြူ	״		ခင်ကြူ
၅၁.	ဒေါ်မြင့်မြင့်စိုး	״		မြင့်မြင့်စိုး
၅၂.	ဒေါ်ထွန်းသိန်း	״		ထွန်းသိန်း
၅၃.	မစင်စင်ရီ	״		စင်စင်ရီ
၅၄.	ဒေါ်ဝိုကြူ	״		[illegible]
၅၅.	ကိုစိုးသိန်း	״		စိုးသိန်း
၅၆.	မမြင့်ဝင်း	״		မမြင့်ဝင်း
၅၇.	မခင်သိန်း	״		ခင်သိန်း
၅၈.	ဗသာဟာရဝင်း	״		[illegible]
၅၉.	မသိန်းစေ	״		သိန်းစေ
၆၀.	ဒေါ်ခင်ရယ်	״		ရယ်
၆၁.	ဒေါ်ခင်သိန်း	״		သိန်း
၆၂.	မညိုအေး	״		မညိုအေး
၆၃.	မနီတာဦး	״		[illegible]

Certificated by [illegible]

Position

Public Consultation Attendance List

Date ၃၀.၁၂.၂၀၁၅

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ဌာန	လက်မှတ်
၆၄။	ဒေါ်လှဦး	ပေါက်တော		[illegible]
၆၅။	မစန်း	〃		[illegible]
၆၆။	မမေမာ	〃		[illegible]
၆၇။	ဒေါ်သိန်းဝင်း	〃		သိန်းဝင်း
၆၈။	မခင်ညို	〃		မခင်ညို
၆၉။	ဦးတင်ဆန်း	〃		တင်ဆန်း
၇၀။	မစိုးစိုးသန်း	〃		စိုးစိုးသန်း
၇၁။	မမိုး	〃		မိုး
၇၂။	ဦးအောင်သိန်း	〃		[illegible]
၇၃။	ဦးသန်းလေး	〃		[illegible]
၇၄။	ဦးဆောင်ကျော်	〃		[illegible]
၇၅။	[illegible]	〃		[illegible]
၇၆။	မအေးအေး	〃		အေးအေး
၇၇။	မခင်နု	〃		ခင်နု
၇၈။	မစန်းလှ	〃		စန်းလှ
၇၉။	မမိုးလာဝင်း	〃		မိုးလာဝင်း
၈၀။	မစန္ဒာ	〃		စန္ဒာ
၈၁။	မနန်းမွေး	〃		နန်းမွေး
၈၂။	မညွန့်ခိုင်	〃		ညွန့်ခိုင်

Certificated by [signature]

Position

APPENDIX 9A-6

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN NYAUNG BIN SEIK DECEMBER 2015

Public Consultation Attendance List

Date 3.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၁.	ဦးကျော်မင်းထွန်း	လောကနန္ဒာ	ဒေသခံ	[signature]
၂.	ဦးဝင်းမောင်	ပန်းတနော်မြို့နယ်... [illegible]		[signature]
၃.	ဦး [illegible]			[signature]
၄.	ဒေါ်မြမြဦး	[illegible]		[signature]
၅.	ဒေါ်လှမြင့်	ကျောင်းထိပ်		+
၆.	ဒေါ်ကြူ	〃		[signature]
၇.	ဒေါ်သင်းမြ	〃		[signature]
၈.	ဒေါ်ခင်သိန်း	〃		[signature]
၉.	ဒေါ်သန်းမြ	〃		+
၁၀.	ဒေါ်ချိုဝင်း	〃		+
၁၁.	ဒေါ်မိခူကြီး	〃		[signature]
၁၂.	ဒေါ်ငွေဟန်	〃		[signature]
၁၃.	ဒေါ်ခင်ရွှေ	〃		[signature]
၁၄.	မမိုးသူ	〃		[signature]
၁၅.	မမိုးယဉ်	〃		[signature]
၁၆.	မိုးဝင်း	〃		[signature]
၁၇.	မသက်မွန်ဦး	〃		[signature]
၁၈.	[illegible]	〃		[signature]
၁၉.	ဒေါ်တင်ကြည်	〃		[signature]
၂၀.	ဒေါ်ခင်ကြည်	〃		[signature]
၂၁.	ဒေါ်မာဆို	〃		[signature]

Certificated by [signature]

Position

Public Consultation Attendance List

Date 7.12.15.

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၂။	မမာလာရွှေ	ရွာတင်ပင်သင်		ဒေါ်လာရွှေ
၂၃။	မစန်းဖွား	"		[illegible]
၂၄။	မခြီးခါ	"		မခြီးခါ
၂၅။	မဇော်ဝေး	"		မဇော်ဝေး
၂၆။	မဥမ္မာရွှေ	"		မဥမ္မာရွှေ
၂၇။	ဒေါ်အေးရင်	"		[illegible]
၂၈။	ဒေါ်ဝေးရှင်	"		[illegible]
၂၉။	ဒေါ်ချော်ကြေ	"		[illegible]
၃၀။	ဒေါ်မေသာ	"		[illegible]
၃၁။	မဒေွရွှေမိ	"		[illegible]
၃၂။	မသာစေမိုညိဖွား	"		ဖွား
၃၃။	ဒေါ်ခေါ်းမိ	"		[illegible]
၃၄။	ဒေါ်မြသိ	"		[illegible]
၃၅။	ဒေါ်ရွှေဝင်း	"		[illegible]
၃၆။	ဒေါ်ဘီသွန်း	"		[illegible]
၃၇။	ဦးစိုးလွင်	"		[illegible]
၃၈။	ဦးလင်းဆွေ	"		[illegible]
၃၉။	ဒေါ်ရွေးမိ	"		[illegible]
၄၀။	ဝေရွှေးမြို	"		ဝေရွှေးမြို
၄၁။	မရိုးဂါ	"		မရိုးဂါ
၄၂။	ဒေါ်ဆင်ရှု	"		[illegible]

Certificated by [signature]

Position

Public Consultation Attendance List

Date 7.12.15.

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၄၃။	[illegible]	[illegible]		[illegible]
၄၄။	[illegible]	"		[illegible]
၄၅။	[illegible]	"		[illegible]
၄၆။	[illegible]	"		[illegible]
၄၇။	[illegible]	"		[illegible]
၄၈။	ဦးကျော်မြ	"		[illegible]
၄၉။	ဒေါ်မစော	"		[illegible]
၅၀။	မစိုးငယ်	"		မိုးငယ်
၅၁။	ခင်ညို	"		ခင်ညို
၅၂။	မတင်ရွှေ	"		တင်ရွှေ
၅၃။	မခင်ဆန့်ကြီ	"		ခင်ဆန့်ကြီ
၅၄။	မသာဝင်း	"		[illegible]
၅၅။	ဦးဖိုးလင်း	"		ဖိုးလင်း
၅၆။	ဦးကျော်သိန်း	"		ကျော်သိန်း
၅၇။	[illegible]	"		[illegible]
၅၈။	မလှသိန်း	"		မလှသိန်း
၅၉။	[illegible]	"		[illegible]
၆၀။	[illegible]	"		[illegible]
၆၁။	[illegible]	"		[illegible]
၆၂။	မသီတာ	"		သီတာ
၆၃။	[illegible]	"		[illegible]

Certificated by [illegible]

Position

Public Consultation Attendance List

Date 3 . 12 . 15

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
၆၄.	[illegible]	[illegible]		[illegible]
၆၅.	[illegible]	"		[illegible]
၆၆.	[illegible]	"		[illegible]

Certificated by..............................

Position..............................

APPENDIX 9A-7

NAME LIST OF VILLAGERS WHO ATTENDED THE CONSULTATION MEETING IN MUDU DECEMBER 2015

Public Consultation Attendance List

Date 3.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1.	ဦး ကျော်ဆန်း	[illegible]		
2.	ဦးအောင်ကို	״		
3.	ဦး [illegible]	״		
4.	ဦး [illegible]			
5.	[illegible]			
6.	ဒေါ်[illegible]	״		
7.	ဒေါ်[illegible]	״		
8.	[illegible]	״		
9.	[illegible]	״		
10.	[illegible]	״		
11.	[illegible]	״		
12.	[illegible]	״		
13.	[illegible]	״		
14.	[illegible]	״		
15.	[illegible]	״		
16.	[illegible]	״		
17.	[illegible]	״		
18.	[illegible]	״		
19.	[illegible]	״		
20.	[illegible]	״		
21.	[illegible]	״		

Certificated by.............................

Position.............................

Public Consultation Attendance List

Date 3. 12. 15

စဉ်	အမည်	နေရပ်	ဆက်သွယ်ရမည့်ဖုန်း/လိပ်စာ	လက်မှတ်
22.	[illegible]	မူးဒုံ		[signature]
23.	[illegible]	〃		[signature]
24.	[illegible]	〃		[signature]
25.	[illegible]	〃		[signature]
26.	[illegible]	〃		[signature]
27.	ခင်မောင်ကျော်	〃		ကျော်
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]

Certificated by........ [signature]

Position..........

Public Consultation Attendance List

Date 3.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
43	[illegible]	[illegible]		[illegible]
44.	[illegible]	[illegible]		[illegible]
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]
58.	[illegible]	〃		[illegible]
59.	[illegible]	〃		[illegible]
60.	[illegible]	〃		[illegible]
61.	[illegible]	〃		[illegible]
62.	[illegible]	〃		[illegible]

Certificated by [illegible]

Position

Public Consultation Attendance List

Date 9.12.15

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
		မုဒုံ		
63.	ဦးသိန်းမြင့်	"		သိန်းမြင့်
64.	ကိုအောင်မင်း	"		အောင်မင်း
65.	ဦးသိုက်ဖိုး	"		သိုက်ဖိုး
66.	ဒေါ်ခင်ညို	"		ဒေါ်ခင်ညို
67.	[illegible]	"		[illegible]
68.	ဦးကျော်အောင်	"		ကျော်အောင်
69.	ဦးချစ်ဝင်း	"		ချစ်ဝင်း
70.	ဦးမြအေး	"		မြအေး
71.	မညွန့်ရွှေ	"		ညွန့်ရွှေ
72.	မသင်နု	"		သင်နု
73.	မခင်	"		ခင်
74.	ဦးအုန်းဝင်း	"		[illegible]
75.	မြဦး	"		[illegible]
76.	တင်ဦး	ကမ်မိုးဇော်		တင်ဦး
77.	မကလေးလှ	"		မကလေးလှ
78.	မစိန်ဖော	"		မစိန်ဖော
79	ကြည်	"		ကြည်
80.	ဂျိုး	"		ဂျိုး
81.	သန်းမြင့်	"		သန်းမြင့်
82.	ဝင်း	"		ဝင်း

Certificated by..........

Position..........

Public Consultation Attendance List

Date..

စဉ်	အမည်	နေရပ်	ဆက်သွယ်ရန်ဖုန်း/လိပ်စာ	လက်မှတ်
83	[illegible]	[illegible]		[illegible]
84	[illegible]	〃		[illegible]
85	[illegible]	〃		[illegible]
86	[illegible]	〃		[illegible]
87	[illegible]	〃		[illegible]
88	[illegible]	〃		[illegible]
89	မမြင့်ဝင်း	〃		[illegible]

Certificated by.......[signature].......

Position..

APPENDIX 9A-8

NAME LIST OF AUTHORIZED PERSONS AND VILLAGERS WHO ATTENDED THE THIRD CONSULTATION MEETING 29 MARCH 2018

အစည်းအဝေးတက်ရောက်သူစာရင်းချုပ်

Summary of Attendant

March 29 , 2018;

စဉ် No.	အစည်းအဝေးတက်ရောက်သူ Attendants	ဦးရေ Number	မှတ်ချက် Remark
1	အစိုးရအဖွဲ့ Government / မီဒီယာများ Local Media	26	
2	ဒေသခံများ Villagers	76	
3	NGO	-	

Government Sector / Local Media

အစိုးရကဏ္ဍ/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (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	ဦး [illegible]	၅၅		[illegible]	[illegible]	[illegible]
၂	[illegible]	၆၀	KNU	[illegible]	0976656511	[illegible]
၃	[illegible]	၄၁	[illegible]	[illegible]	09.254700755	[illegible]
၄	[illegible]	၄၁	[illegible]		09.260465514	[illegible]

Government Sector / Local Media

အစိုးရကဏ္ဍ/ဒေသခံမီဒီယာ

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
1	ဦးကျော်ဆန်း	၄၆		[illegible]	09250466474	[signature]
2	[illegible]	၄၈		[illegible]	0925046678	[signature]
3	[illegible]	၃၃	[illegible]	[illegible]	09/400-409921	[signature]
4	[illegible]	၅၉	[illegible]	[illegible]	09.422208702	[signature]
5	[illegible]	၄၈	[illegible]	[illegible]	09250759713	[signature]
6	ဦးဝေလင်းကျော်	၃၇	[illegible]	[illegible]	09254694952	[signature]
7	[illegible]	၃၈	"	"	09422190544	[signature]
8	[illegible]	၃၉	"	[illegible]	094220 9281	[signature]
9	[illegible]	၃၉	"	[illegible]	09-[illegible]	[signature]
10	[illegible]	၆၈	[illegible]	[illegible]	[illegible]	[signature]
11	[illegible]	40	ECD	AD	09-428123845	[signature]

Government Sector / Local Media

အစိုးရကဏ္ဍ/ဒေသခံမီဒီယာ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအစမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (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	ဦး[illegible]	၂၈	ECD	[illegible]	09-457736585	[signature]
၂	ဦး[illegible]	၃၃	[illegible]	[illegible]	09-259035202	[signature]
၃	ဦး[illegible]	၃၅	ECD	[illegible]	09-444032390	[signature]
၄	ဦး[illegible]	၄၃		[illegible]	09-788730698	[signature]
၅	ဦး[illegible]	၅၃		"	09 776833858	[signature]
၆	ဦး[illegible]	၆၀	[illegible]	[illegible]	095011945	[signature]
၇	ဦး[illegible]	၅၅	[illegible]	[illegible]	09-2647734[illegible]	[signature]
၈	[illegible]	၃၉	[illegible]		09, 250334263	[signature]
၉	[illegible]		[illegible]		09 788174860	[signature]
၁၀	ဦး[illegible]		[illegible]		09 4589240[illegible]	[signature]
၁၁	ဦး[illegible]	၃၂	[illegible]		09444965967	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁၂	ဦး[illegible]	၅၄	[illegible]	[illegible]	[signature]
၁၃	ဦး[illegible]	51	[illegible]	၀၉.၇၈၈၀၄၆၀၄၅	[signature]
၁၄	ဦး[illegible]	၆၄	[illegible]	[illegible]	[signature]
၁၅	ဦး[illegible]	38	[illegible]	[illegible]	[signature]
၁၆	ဦး[illegible]	၅၀	[illegible]	[illegible]	[signature]
၁၇	ဦး[illegible]	48	[illegible]	[illegible]	[signature]
၁၈	ဦး[illegible]	38	[illegible]	0925 4700368	[signature]
၁၉	ဦး[illegible]	56	[illegible]	—	[signature]
၂၀	ဦး[illegible]	45	[illegible]	0977406112	[signature]
၂၁	ဦး[illegible]	35	[illegible]	09793466808[illegible]	[signature]
၂၂	ဦး[illegible]	45	[illegible]	09786611424	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁	ဦး [illegible]	36	[illegible]	09444495399.	
၂	ဦး [illegible]	41	[illegible]	09250998283.	
၃	ဦး [illegible]	37	"	—	
၄	ဦး [illegible]	51	[illegible]	09422248699.	
၅	ဦး [illegible]	51	"	09260164226	
၆	ဦး [illegible]	48	[illegible]	09250885538	
၇	ဦး [illegible]	61	"	09250771462	
၈	ဦး [illegible]	38	[illegible]	0978005456l	
၉	ဦး [illegible]	35	"	09253790676.	
၁၀	ဦး [illegible]	50	[illegible]	09786495071.	
၁၁	ဦး [illegible]	42	[illegible]	09260128141.	

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၂၃	ဦးစိုးမြင့်	၄၉	ကျွန်းသာယာအောင်:	09899731418	စိုးမြင့်
၂၄	ဦးကျော်မြင့်ဦး	45	ပုဂံကျွန်း	09422500&871	[illegible]
၂၅	ဦးကံဝင်း	63	မယင်းကြီး	09253884574	[illegible]
၂၆	ဦးအွန်းဇော်ဦး	50	လဲကျောင်း	၀၉ —	[illegible]
၂၇	ဦးဦးကြည်	565	ဗန်ဒော	၀၉ —	[illegible]
၂၈	ဦးကျော်ဝင်း	40	ပုဂံကျွန်း	09402448518	ဦးကျော်ဝင်း
၂၉	ဦးချိုဝင်း	30	မြစ်ဆိပ်		ချိုဝင်း
၃၀	ဦးတင်း	41.	လဲကျောင်း	094218 71218	ဝရုံးဖေဒါး
၃၁	ဦးမြင့်	53	ကလိ		[illegible]
၃၂	ဦးဖေမျိုးအောင်	37		09.444706922	[illegible]
၃၃	ဦး ~~မိုး~~ ကျော်မိုးခိုင်	၄0	ပဲ့၊ ၀၇၉ ၁၀၉၊	၀၉[illegible]၇၃၄၄၃၃	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦး[illegible]	56	[illegible]	09-788717209	[signature]
	ဦး[illegible]	49	[illegible]	—	[signature]
	ဦး[illegible]	76	[illegible]	—	[signature]
	ကို[illegible]	23	[illegible]	—	[signature]
	ဦး[illegible]	49	[illegible]	09-260280663	[signature]
	ဦး[illegible]	63	[illegible]	09-768167105	[signature]
	ဦး[illegible]	51	[illegible]	09-250771474	[signature]
	ဦး[illegible]	41	"	09-480456737	[signature]
	ဦး[illegible]	49	"	09-253811296	[signature]
	ကို[illegible]	30	"	09-773842088	[signature]
	[illegible]	30	"	09781484884	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးပေါ်သိန်း	61	ပဂုဒတ်	09-250471524	ပေါ်သိန်း
	ကိုလှိုင်ဖြင့်	29	ပဂုဒတ်	09-400012863	[signature]
	ကိုဇော်မင်းလတ်	36	״	09-260191906	[signature]
	ဦးအေးမင်း	42	ဘစ်ဘိုတောင်	09-422361006	[signature]
	ဦးတင်အောင်ရှိန်	59	״	-	[signature]
	ကိုကျော်ဝင်း	32	ပဂုဒတ်	-	ကျော်ဝင်း

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးဝေခင်မွှေ	၆၅	တမိုးဘော		
	ဦးဖောင်ညို	42	ကမ်းနားဘော	၀၉ 250128141	

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးသောင်းရွှေ	၆၀	ခတောင်ဝချောင်း	09974910145	(signature)
	ဦးအောင်မြင့်	၄၅	״	094530032856	(signature)
	ဦးအောင်ဟိန်း	၃၈	״	09962646221	(signature)
	ဦးအုန်းသိန်း	၅၃	״	09251142586	(signature)
	ဦးဝင်းနိုင်	၅၀	ကမ္ဘာ	09459252772	(signature)
	ဦးကျော်စိုး	၄၀	ပုဂံ3ပ်	09426009657	(signature)
	ဦးတင်ထွန်း	၄၂	ကျုံရှယ်ခင်း ကျုံသာယာအင်း	09400601296	(signature)
	ဦးထွန်းနိုင်	၄၀	ပုဂံကြွင်	09793323553	(signature)
	ဦးမျိုး	၄၆	သစ်ကိုးတောင်		(signature)

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
၁.	ဦးအောင်ကြည်	၅၄	ယဲ့ချောင်	09-771129108	[signature]
၂.	ဦးခင်ပေါ်	၃၇	ပေါ်ကတော်	09260920493	[signature]
၃.	ဦးထွန်းဝင်း	၆၈	ဘိုးနှုံး		[signature]
၄.	ဦးလှကြည်	၄၂	ပေါ်ကတော်	09251144627	[signature]
၅.	ဦးမိုးလှိုင်	၅၄	ခေတ်ဘင်ပင်ဆိပ်		[signature]
၆	ဦးသိန်းလွင်	၄၄	"		[signature]
၇	ဦးအောင်လွင်	၄၅	တလိုင်းသာ	.	[signature]
၈	ဦးထွန်းလွင်	၅၂	ပုတော်ရွာ		[signature]
၉	ဦးကျော်အေး	၅၉	"		[signature]
၁၀	ဦးမောင်ခြင်	၅၉	ညလိုင်		[signature]
	ဦးရဲသိန်း		ဝိန်ကြီး	0949865533	[signature]

APPENDIX 9B

MINUTES OF THE MEETING WITH PARTICIPANTS FROM THE AUTHORITIES AND THREE VILLAGES

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	Taninthayi Regional	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	

3. MIE officer

Mr. Sawan Phoothiwut	Environmental Engineer
Ms. Supansa Kruajan	Environmental Officer
Mrs. Parichat Makakhan	Environmental Officer

4. LNG Plus

Ms. Kulravee Soentiluck	Supervisor Project Coordinator

5. EGCO Staffs

Mr. Chinnavuth Liurungwang	SVP-BDD2
Ms. Siriluck Soonbrnruengyot	AVP Environment

6. TBS Staffs

Ms. Thet Htar Myint	Socio-Economic / Public Consultation Specialist
Mr Shwe Thein	Assistant

7. TEAM Consulting Engineering and Management Co, Ltd.

Mr. Plian Maneeya	Human Use Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist
Dr. Sirilluck Sirisup	Socio-Economic / Public Consultation Specialist
Dr. Suphichaya Wogchiwanit	Environmental Scientist
Mr. Yongyut Khonjunthet	Environmental Scientist
Ms. Yaowapa Chuwong	Socio-Economic / Public Consultation Specialist
Mrs. Chalida Nyiewbubpha	Marine Expect

Minutes:

The consultant disclosed information about:

- Objectives of EIA study for the Initial Phase Power Plant Project
- Project location and layout
- Project Information
- 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
Asking about impact on sea water quality and marine ecology	All will be control with in standards
Asking about the plan to provide electricity to nearby village.	• In the initial phase, electricity will serve to Initial Industrial Estate. • For the community, CSR program will be implemented by project developer in other activities.

Recommendations by the Myanmar officials:

➢ Suggested the Project to provide electricity to nearby community at the lower rate than actual official rate.

The consultation meeting was closed around 11.00 hrs.

Minutes of the Meeting at Nga Pi Tat Village

Date: 2nd December, 2015

Time: 13:00-15:00 hrs.

Venue: Nga Pi Tat Community Hall

Subject: Information disclosure about the Initial Phase Power Plant Project

Participants:

1. Villagers from Nga Pi Tat Village 82 prs (namelist attached)
2. ITD officers

Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kasin Aksorndech	Engineer
Mr. Kyaw Kyaw	

2. MIE officer

Mr. Sawan Phoothiwut	Environmental Engineer
Ms. Supansa Kruajan	Environmental Officer
Mrs. Parichat Makakhan	Environmental Officer

3. LNG Plus

Ms. Kulravee Soentiluck	Supervisor Project Coordinator

4. EGCO Staffs

Mr. Chinnavuth Liurungwang	SVP-BDD2
Ms. Siriluck Soonbrnruengyot	AVP Environment

5. TBS Staffs

Ms. Thet Htar Myint	Socio-Economic / Public Consultation Specialist
Mr Shwe Thein	Assistant

6. TEAM Consulting Engineering and Management Co, Ltd.

Mr. Plian Maneeya	Human Use Specialist
Mr. Natt Dumkum	Environmental Scientist
Mr. Nipat Somkleeb	Environmental Scientist
Dr. Sirilluck Sirisup	Socio-Economic / Public Consultation Specialist
Dr. Suphichaya Wogchiwanit	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:
- 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 villagers and answers/qualifications by the consultant are summarized as follows:

Questions	Answers
Concerning on limitation of fishing ground due to the project.	Demarcation zone for the power plant will be limited only in project area, fishermen can use the area out site the project for fishing.
• Asking about duration of construction period. • Concerning on decline of in-come in relation to long construction period.	• Construction period will be around 15 months. • Information about environmental existing situation and monitoring after the project implementation will be disclosed to villagers.
• Asking about the age limitation in relation to the project employment. • Concerning on unskilled labour of villagers which will not be employed by the Project.	Consideration will be based on qualifications and positions
Requesting to provide electricity into their village.	Electricity will serve consumers in Initial Industrial Estate, under the commitment of Concession Agreement. However the MIE will discuss with Myanmar authorities about this request.

The consultation meeting was closed around 15.00 hrs.

Minutes of the Meeting at Mudu Village

Date: 3rd December, 2015

Time: 09:00-11:00 hrs.

Venue: Mudu Village Community Ground

Subject: Information disclosure about the Initial Phase Power Plant Project

Participants:

1. Villagers of Mudu village — 89 prs, namelist attached (including Ka maing Swe community)
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw — Assistant
8. MIE officer
   - Mr. Sawan Phoothiwut — Environmental Engineer
9. LNG Plus
   - Ms. Kulravee Soentiluck — Supervisor Project Coordinator
10. EGCO Staffs
    - Mr. Chinnavuth Liurungwang — SVP-BDD2
    - Ms. Siriluck Soonbrnruengyot — AVP Environment
11. TBS Staffs
    - Ms. Thet Htar Myint — Socio-Economic / Public Consultation Specialist
    - Mr Shwe Thein — Assistant
12. TEAM Consulting Engineering and Management Co, Ltd.
    - Mr. Plian Maneeya — Human Use Specialist
    - Mr. Natt Dumkum — Environmental Scientist
    - Mr. Nipat Somkleeb — Environmental Scientist
    - Dr. Sirilluck Sirisup — Socio-Economic / Public Consultation Specialist
    - Dr. Suphichaya Wogchiwanit — 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:
- 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 villagers and answers/qualifications by the consultant are summarized as follows:

Questions	Answers
Asking about the monitoring system of the project, regarding the project impact.	Ministry of Forestry and Environmental Conservation will involve in organizing the third party to monitor the project implementation.
• Asking about the study procedure.	• After data collection, Consultants have carried out impact assessment during construction and operation phases and used as base information to formulate the proposed mitigation measures in order to minimize the project impacts.
Suggest monitoring short and long term impact of the project implementation.	• Will do.

The consultation meeting was closed around 11.00 hrs.

Minutes of the Meeting at Nyaung Bin Seik Village

Date: 3rd December, 2015

Time: 13:00-15:00 hrs.

Venue: Nyaung Bin Seik Monastery

Subject: Information disclosure about the Initial Phase Power Plant Project

Participants:

1. Villagers of Nyaung Bin Seik — 66 prs, namelist attached
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw — Assistant
2. MIE officer
   - Mr. Sawan Phoothiwut — Environmental Engineer
3. LNG Plus
   - Ms. Kulravee Soentiluck — Supervisor Project Coordinator
4. EGCO Staffs
   - Mr. Chinnavuth Liurungwang — SVP-BDD2
   - Ms. Siriluck Soonbrnruengyot — AVP Environment
5. TBS Staffs
   - Ms. Thet Htar Myint — Socio-Economic / Public Consultation Specialist
   - Mr Shwe Thein — Assistant
6. TEAM Consulting Engineering and Management Co, Ltd.
   - Mr. Plian Maneeya — Human Use Specialist
   - Mr. Natt Dumkum — Environmental Scientist
   - Mr. Nipat Somkleeb — Environmental Scientist
   - Dr. Sirilluck Sirisup — Socio-Economic / Public Consultation Specialist
   - Dr. Suphichaya Wogchiwanit — 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:
- 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 villagers and answers/qualifications by the consultant are summarized as follows:

Questions	Answers
Concerning on the project impacts to the community during construction and operation phase.	• No negative impact as this village is far from the power plant. • The village is not within a direction of emissions.
Villagers have understanding about the project, and agreeable in case it is benefit to villagers.	• Cited. • Villagers will have benefits in terms of generating local employment.

The consultation meeting was closed around 15.00 hrs.

Minutes of the Meeting with Tavoyan Women's Union

Date: 4th December, 2015

Time: 13:00-15:00 hrs.

Venue: 702, Shwe Taung Sar Road, North Village, Dawei

Subject: Information disclosure about the Initial Phase Power Plant Project

Participants:

1. Ms. Ma Marlar — Head of Tavoyan Women's Union (total of 9 persons)
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw — Assistant
3. TBS Staffs
   - Ms. Thet Htar Myint — Socio-Economic / Public Consultation Specialist
4. TEAM Consulting Engineering and Management Co, Ltd.
   - Mr. Plian Maneeya — Human Use Specialist
   - Dr. Sirilluck Sirisup — Socio-Economic / Public Consultation Specialist
   - Dr. Suphichaya Wogchiwanit — Environmental Scientist

Minutes:

The consultant informed the Tavoyan Women's Union about the second public consultation activities during 2-3 December 2015, and provided them a set of information presented in the village meeting.

Members of the Tavoyan Women's Union proposed to participate the public consultation meeting at the village level in the future. This was agreeable in both parties and hope for mutual understanding.

TEAM GROUP

MINUTES OF MEETING	
Project ESIA for Boil-off Power Plant Project	**Project No** P03153

Venue	Dawei Special Economic Zone, Meeting Hall	**Date**	29th March, 2018
Subject	Public Consultation Meeting III	**Time**	Morning section (2)

Participants: (Appendix 9A-8)

1. Dr.Myint San — Vice Chairman-2 of DSEZ Committee
2. Environmental Conservation Department (Naypyitaw and Dawei)
3. Dawei Special Economic Zone Management Committees
4. Myandawei Industrial Estate Company Limited
5. Representatives from project affected villages
6. Related government departments
7. TEAM Consulting, Engineering and Management Co., Ltd.
8. Total Business Solution Co., Ltd.

Minutes: Minutes:

The consultant disclosed information (**Appendix 9C-3**) 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:

TEAM GROUP

No.	Question	Response
1.	**Mr.Kyaw San (Villager of Mu Du)** - Need power plant provide electricity to villagers.	**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 in DSEZ area. - Villages outside of DSEZ, regional government will responsible to get electricity for these villages.
2.	**Mr. Soe Naing (Villager of Ya Laing)** - Warning Sign (traffic sign) need to be installed in every village roads to reduce accident.	**TEAM replied,** - Project developer will install prior to start construction the project starts.
3.	**Mr.Su Nge (Villager of Htain Gyi)** - Na Bu Lal village do not get electricity until now while other villages as Pandainn, Nyaung Pin Sake, and Yayphyu already got electricity. - Recently, there is a lot of dust fugitive from road traffic with high speed. - Accidents are also took place along the road due to the fugitive dust reduce eye visibility. - The structure of bridges are not proper so there are motor-cycle accident at the bridge.	**TEAM replied,** - When the projects start, dust control measures will employ for example speed to car will control (not more than 40km/hr). - All of the road and bridge will be maintained when the project starts.
4.	**Mr.Soe Thein (Villager of Htain Gyi)** - Villagers want to learn new skills. - Villagers want to work as not only temporary staffs but also permanent staffs. - They want to become skillful workers.	**TEAM replied,** - Training and development process will propose for employees.
5.	**Mr. Tun Naing (Villager of Pagaw Zon)** - Villagers want job opportunities in not only construction phase but also operation phase. - Project developer should keep in touch with all villages to know about their difficulties. - When do the compensation will be paid?	**Mr.Thanarat replied** about resettlement and compensation steps including Compensation and Resettlement Committee.

Recorded by: Ms. THIRI TIN HTUT

Date 29th 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

(See ***Photo 9.3-3*** in Chapter 9 of ESIA: photos of Public Consultation Meeting III for ESIA for Boil-Off Power Plant Project.)

MINUTE OF MEETING DURING THE THIRD PUBLIC CONSULTATION MEETING (OVERALL)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

စာအမှတ်၊ ထ၀-၁/DSEZ-D/၂၀၁၈ (၀၄၁)

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
- လက်ခံ/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)	ဦးစောလုကာ	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	မြန်မာဆိပ်ကမ်းအာဏာပိုင်အဖွဲ့
(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	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီရုံးအဖွဲ့
(ဒ)	ဦးထင်အောင်ကျော်	လ/ထညွှန်ကြားရေးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(ဓ)	ဒေါ်ဝေစိုးဇင်	ဦးစီးအရာရှိ	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(န)	ဦးစောမောင်သိမ်း	ဒု-ဦးစီးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

(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

(သ) 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
(-)	ကိုဇော်	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 စီမံ/ဘဏ္ဍာဝန်ကြီး 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 စီမံကိန်းလုပ်ငန်းများ ဆောင်ရွက်ရာတွင် 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 Thanarat၊ Italian-Thai Development Public Co.,ltd., မှ ယနေ့သည့် 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 အတူတကွ ပူးပေါင်းဆောင်ရွက်သွားရန် 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၊ ကျန်းမာရေးစောက်ရှောက်မှုမြင့်တင်ခြင်းများ ဖြစ်ပါကြောင်း၊ လူထုစိုးရိမ်ပူပန်မှုများအား လျော့ပါးသက်သာစေရေးအတွက် တာဝန်ယူမှု/တာဝန်ခံမှုများဖြင့်

ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်းနှင့် စီမံကိန်းဆောင်ရွက်ခြင်းဖြင့် ရရှိနိုင်မည့်အကျိုး ကျေးဇူးများအားဆွေးနွေးခဲ့ပါသည်။

၆။ ဦးစောဘီးလယ်၊ KNU အဖွဲ့မှ စက်မှုဇုန်အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ (၁၃) ရွာ ထိခိုက်မှုရှိသည်ဟု သိရှိရပါကြောင်း၊ ကျေးရွာများအထိသွားရောက်၍ အနီးကပ်မေးမြန်းသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၇။ ထို့နောက် UAE အဖွဲ့မှ စက်မှုဇုန်စီမံကိန်းနှင့် 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 ဒေါ်ဖြူဖြူရှိန်တို့အဖွဲ့တွေကိုပါ ဖိတ်ကြားပါကြောင်း၊ EIA အစီရင်ခံစာ အကောင်အထည် ဖော်မှု စောင့်ကြည့်ရမည့်အပိုင်းနှင့်ပတ်သက်၍ စောင့်ကြည့်စစ်ဆေးနေပါကြောင်း၊ (၆) လလျှင် တစ်ကြိမ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနသို့ Monitoring Report တင်ရမည်ဖြစ်ကြောင်း၊ နောက်ဆက်တွဲ လေ့လာစောင့်ကြည့်မှုများ ပြုလုပ်သွားရမည်ဖြစ်ပါကြောင်း၊ EIA, SIA အစီရင်ခံစာပါ လမ်းညွှန်အကြံ ပြုချက်များအား လိုက်နာမှုမရှိပါက အရေးယူ၍ရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၁။ ဦးအောင်ဖြိုးဝင်း၊ ထားဝယ်ဖွံ့ဖြိုးရေးအဖွဲ့က EIA Process အား ဆောင်ရွက်ရာတွင် ကျေးရွာ (၁၃) ရွာအား မတ်လ (၁၇) ရက်မှ (၂၂) ရက်နေ့ထိ (၆) ရက်တည်းဖြင့် မည်သို့မည်ပုံ ကွင်းဆင်းသွား သည်ကို သိလိုကြောင်း၊ ကျေးရွာကွင်းဆင်းမှုမှာ တစ်ရက်လျှင် နှစ်ရွာနှင့်အထက်ဖြစ်နေပါကြောင်း၊ တစ်ရွာလျှင် ရွာသားဦးရေမည်မျှ မေးမြန်းရှင်းပြခဲ့သည်ကို သိလိုပါကြောင်း၊ အချင်းဝက် (၅) ကီလိုမီတာ နယ်မြေဆိုသည်မှာ မည်သည့်နေရာများ ပါဝင်သည်ကိုသိလိုကြောင်း၊ ယခုတင်ပြချက်များတွင် ကွင်းဆင်း စစ်ဆေးချိန်တွင် 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၊ မည်သည့်စီမံကိန်းမျှမစရသေးဘဲ မီဒီယာများအနေဖြင့် အစိုးရတာဝန်ရှိသူ များအား စီမံကိန်းအကောင်အထည်ဖော်မှုနှင့်ပတ်သက်၍ ကန့်ကွက်မှုများ သိပ်ပြီးမပြုလုပ်ရန် ပြောလိုပါ ကြောင်း၊ ဒေသခံပြည်သူများအား သနားငဲ့ညှာသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၃။ UAE အဖွဲ့မှ မိမိတို့အဖွဲ့ ကွင်းဆင်းမည့်ရက်အား ကျေးရွာသို့ ကြိုတင်အကြောင်းကြားပါကြောင်း၊ တစ်ရက်တည်းဖြင့် နှစ်ရွာခန့် ကွင်းဆင်းပြီးသည်များလည်း ရှိပါကြောင်း၊ အချို့ရွာများတွင် လူဦးရေနည်း ပါးခြင်းနှင့် 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။ ပုဂေါ်ခွန်း ဒေသခံတစ်ဦးမှ အထူးစီးပွားရေးဇုန်နှင့်ပတ်သက်ပြီး လူထုတွေ့ဆုံပွဲများသာ မကြာခဏပြုလုပ်နေကြောင်း၊ ယခုထိ စီမံကိန်းလုပ်ငန်းများ စတင်သည်ကိုမတွေ့ရသေးကြောင်း၊ ကျေးရွာ (၁၃) ရွာလုံးမှ စီမံကိန်းအား မျှော်လင့်နေပါကြောင်း၊ မဖြစ်နိုင်တာတွေ ကန့်ကွက်နေသရွေ့ စီမံကိန်းအကောင်အထည်ဖော်ဖို့ ခက်ခဲနေမည်ဖြစ်ပါကြောင်း၊ ဒေသခံပြည်သူများအနေဖြင့် လုပ်ငန်းများ လုပ်ဖြစ်မည်/မလုပ်ဖြစ်မည်၊ ဘယ်အချိန် စတင်နိုင်မည်ကို ရှင်းရှင်းလင်းလင်းသိလိုပါကြောင်း၊ အမှန်တကယ်စီမံကိန်းအကောင်အထည်ဖော်ပါက 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 အပန်းဖြေဧရိယာများပါဝင်ပါကြောင်း၊ 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 အကြိမ်ကြိမ်အခါါအခါ တက်ရောက်ခဲ့ပါကြောင်း၊ ဒေသခံများအနေဖြင့် မြေယာလျော်ကြေးများ မှန်မှန်ကန်ကန် ရရှိရေး၊ အလုပ်အကိုင်ရရှိရေးကိစ္စများအတွက် စိုးရိမ်ပူပန်မှုများ ဖြစ်နေပါကြောင်း၊ ကျေးရွာတိုင်းတွင် လိုအပ်ချက်များအားလုံး ချက်ချင်းရရန်မဖြစ်နိုင်သည်ကိုတော့ နားလည်ပါကြောင်း၊ နိုင်ငံတော်စီမံကိန်းဖြစ်သည့်အတွက် အချို့ကိစ္စများတွင် ချက်ချင်းမရနိုင်သည်များကို နားလည်ပါကြောင်း၊ ကုမ္ပဏီမှ ဒေသအတွက် မှန်မှန်ကန်ကန်လုပ်ဆောင်ပေးပါက အထူးပြောစရာမလိုပါကြောင်း၊ ယခုအချိန်တွင် ဒေသခံများက တင်ပြသည်ထက် 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။ ဦးရီစွမ်း၊ ပုဂေါ့ဖွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ အထူးစီးပွားရေးဇုန် အကောင်အထည်ဖော်မည့်ကုမ္ပဏီအနေဖြင့် တာဝန်ယူမှု၊ တာဝန်ခံမှုရှိရန် လိုအပ်ပါကြောင်း၊ မြေယာကိစ္စနှင့်ပတ်သက်၍ ယခင်ကဲ့သို့ ကြိုက်ရောင်းကြိုက်ဝယ်ပုံစံဖြင့် 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၊ မိမိတို့အနေဖြင့် ဘဝါကျောက်မိုင်းကြောင့် ဒေသခံများနစ်နာမှုများအတွက် လျော်ကြေးငွေ သိန်းတစ်ထောင်ကျော်ရရှိအောင် ဆောင်ရွက်ပေးခဲ့ပါကြောင်း၊ တနင်္သာရီတိုင်းအနေဖြင့် National Grid လျှပ်စစ်မီးမရရှိသေးပါကြောင်း၊ ကန်ပေါက်ဒေသတွင် ၁၃၀၀ မီဂါဝပ် လျှပ်စစ်ဓာတ်အားရရှိနိုင်မည့် တာဘိုင်တည်ဆောက်နေပါကြောင်း၊ တနင်္သာရီကမ်းမြောင်ဒေသ Master Plan နှင့် SEZ Master Plan တို့အား ရေးဆွဲနေပါကြောင်း၊ ယခင်က စီမံကိန်းဇရိယာအတွင်း အစိုးရအနေဖြင့် ဖွံ့ဖြိုးရေးလုပ်ငန်းများ မလုပ်ဆောင်ခဲ့ကြောင်း၊ တိုင်းဒေသကြီးဘဏ္ဍာငွေဖြင့် သိန်း (၃၀၀၀) ကျော် အကုန်အကျခံကာ မောင်းမကန်ကျေးရွာမှ မူးဒူးရွာသို့ လမ်းပြုပြင်ပေးထားပါကြောင်း၊ အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီဥက္ကဋ္ဌ၊ လျှပ်စစ်နှင့်စွမ်းအင်ဝန်ကြီးဌာန၊ ဒုတိယဝန်ကြီးအနေဖြင့် ပညာရှင်တစ်ဦးဖြစ်ပါကြောင်း၊ ဒေါက်တာမြင့်ဆန်းနှင့် ဒေါက်တာတင်ထူးနိုင်တို့သည်လည်း နိုင်ငံခြားသို့ သွားရောက်ပညာသင်ထားသည့် စီးပွားရေးပညာရှင်များဖြစ်ကြောင်း၊ ကနဦးစီမံကိန်းများအား ဦးစွာအကောင်အထည်ဖော်သွားမည်ဖြစ်ကြောင်း၊ (၂) လမ်းသွား စီမံကိန်းအား ထိုင်းနိုင်ငံ၊ NEDA အဖွဲ့မှ ချေးငွေ ဘတ် ၄.၅ ဘီလီယံဖြင့် လမ်းဖောက်လုပ်သွားမည်ဖြစ်ကြောင်း၊ နှစ်လမ်းသွားစီမံကိန်းအောင်မြင်သွားပါက ကျွဲကူးရေပါဆိုသလို ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်းလည်း မအောင်မြင်နိုင်စရာမရှိပါကြောင်း၊ ကျွန်တော်တို့အနေဖြင့် လုပ်ငန်းဆောင်ရွက်ရာတွင် အမှားတွေ့ရှိပါက ထောက်ပြနိုင်ကြောင်း၊ စီမံကိန်းလုပ်ငန်းများနှင့်ပတ်သက်၍ သိရှိလိုသည်များအား

ပွင့်ပွင့်လင်းလင်းမေးမြန်းနိုင်ပါကြောင်း၊ မိမိတို့လူမျိုးများအနေဖြင့် နဂိုဇီဇမည့်ပါကြောင်း၊ အနှစ် (၂၀) အတွင်း စက်ဘုပူကိုကျော်နိုင်အောင် ကြိုးစားကြမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၁။ ဦးကျော်ဆန်း၊ မူးဒူးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ မိမိအနေဖြင့် ဒေသခံစစ်စစ်ဖြစ်ပါကြောင်း၊ မိမိတို့ မူးဒူးကျေးရွာ ပြောင်းရွှေ့ရမည့် ကျေးရွာစာရင်းထဲပါဝင်သည်ဟု သိရပါကြောင်း၊ ယခင်ကကောက်ယူထားသည့် အိမ်ခြေစာရင်းထက် ယခုအခါ အိမ်ခြေပိုမိုများပြားလာပီဖြစ်ကြောင်း၊ ကျေးရွာအတွင်း လူဦးရေတိုးတက်လာသဖြင့် အိမ်ခြေပိုမိုများပြားခြင်းဖြစ်ကြောင်း၊ ထပ်မံတိုးတက်လာသည့် အိမ်ခြေများအတွက် မည်သို့ပြုလုပ်ပေးမည်ကို သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၂။ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းမှ နာဂစ်ကြောင့် ဧရာဝတီမှလူများ ရန်ကုန်၊ လှိုင်သာယာတွင် လာရောက်ကျူးကျော်သကဲ့သို့ ယခု ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်း ပြင်ပမှ လာရောက်ကျူးကျော်သူများ မရှိဟု ယုံကြည်ကြောင်း၊ နဂိုဒေသခံမိသားစုမှ တိုးပွားလာသော မိသားစုများ၏ နေအိမ်များသာ ထပ်မံတိုးပွားလာသည်ဟု ယုံကြည်ကြောင်း၊ ဒါတွေဟာ ဖြစ်ရိုးဖြစ်စဉ်များဖြစ်၍ နောက်ဆုံးအခြေအနေအား အကောင်းဆုံးဖြေရှင်းသွားမည်ဖြစ်ကြောင်း ဒေသခံများ နစ်နာအောင်ဆောင်ရွက်မည်မဟုတ်ကြောင်း ပြန်လည်ရှင်းလင်းပြောကြားခဲ့ပါသည်။

၂၃။ ဒေါက်တာမြင့်ဆန်း၊ ဒုဥက္ကဋ္ဌ-၂၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီမှ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းဦးဆောင်သော မြေယာစီမံခန့်ခွဲမှုကော်မတီကို ဖွဲ့စည်းထားပါကြောင်း၊ နိုင်ငံခြားမှ ERM အဖွဲ့ကိုငှားရမ်း၍ မြေယာသိမ်းဆည်းရေး၊ မြေယာလျော်ကြေးပေးချေရေးကိစ္စများအတွက် ရွာသားများအား 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 တင်သွင်းဖတ်ကြားခဲ့ရာ ESIA အတွက် ပထမအကြိမ်အစည်းအဝေးကို ၂၀၁၆ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၂၇) ရက်နေ့တွင် ကျင်းပခဲ့ပါကြောင်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာကို ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလ (၃၀) ရက်နေ့တွင် အတည်ပြုချက်ရရှိခဲ့ပါကြောင်း၊ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ESIA အစီရင်ခံစာအတည်ပြု

ချက်ကို ၂၀၁၇ ခုနှစ်၊ အောက်တိုဘာလ (၂၅) ရက်နေ့တွင် ရရှိခဲ့ပါကြောင်း၊ ယခုစီမံကိန်းသည် (၁၅) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံစီမံကိန်းသာဖြစ်သော်လည်း ပတ်ဝန်းကျင်ထိခိုက်ဆန်းစစ်ခြင်းနှင့် သက်ဆိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်း (EIA) ကိုလုပ်ဆောင်ထားပါကြောင်း၊ ယာယီဓါတ်အားပေးစက်ရုံသည် ထားဝယ်အထူးစီးပွားရေးဇုန်၏ တည်ဆောက်ရေးလုပ်ငန်းများအား ထောက်ပံ့ပေးရန်နှင့် ဒီဇိုင်းသက်တမ်းမှာ (၂) နှစ် ကြာမြင့်မည်ဖြစ်ကာ အပူစွမ်းအင်သုံး လျှပ်စစ်ဓါတ်အားပေးစက်ရုံ စတင်လည်ပတ်ပါက ဖယ်ရှားမည်ဖြစ်ပါကြောင်း၊ အဓိကလောင်စာအဖြစ် Liquefied Natural Gas (LNG) ကိုအသုံးပြုပြီး ၎င်းသည် 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၍ ပုဂေါ်ခွန်း၊ 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၊ ဇကနီရွာအနောက်ဘက် ရေသိုလှောင်ကန်၊ ဒွဲတောရေလှောင်တမံ၊ အိုင်းရှည်ရေလှောင်တမံနှင့် ကလုံးထာရေလှောင်တမံနှင့် ရေကာတာများဖြစ်ပြီး ပယင်းဖြူရေလှောင်တမံကို ရွေးချယ်ထားပါကြောင်း၊ သက်ရောက်မှုရှိနိုင်သည့်အချက်များမှာ ပယင်းဖြူရေလှောင်ကန်နှင့် တမံတည်ဆောက်မည့်နေရာတွင် မြေယာသိမ်းယူခံရခြင်းကြောင့် သက်ရောက်နိုင်ခြင်း၊ ချောင်း

အနီးအနားတွင်နေထိုင်သူများ ချောင်းမှဆင်းလာသောရေအား အသုံးပြုနိုင်မှုအား သက်ရောက်နိုင်ခြင်း၊ ထားဝယ်မြစ်နှင့် ပယင်းဖြူချောင်းအကြားရှိ ရွှေ့ပြောင်းနေထိုင်တတ်သော 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။ ဦးရီစွမ်း၊ ပုဂေါခွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ 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 ပိုများလာရန်မရှိပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၉။ နှစ်လမ်းသွားစီမံကိန်းအတွက် ပတ်ဝန်းကျင်နှင့်လူမှုဘဝအပေါ် သက်ရောက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာအား 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 ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ကီလိုမီတာ (၅၀) အထက်ရှည်လျားသောလမ်းဟောင်းကို 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 တိုင်းဒေသကြီး အဆင့်အာဏာပိုင်များနှင့် တွေ့ဆုံခြင်း၊ ကျေးရွာများတွင် လူထုတွေ့ဆုံပွဲပြုလုပ်ခြင်းများ ဆောင်ရွက်ခဲ့ပါကြောင်း၊ ကျေးရွာ (၁၅) ရွာကို ဖြတ်သန်းရမည်ဖြစ်ကြောင်း၊ မြေယာပေးလျော်ခြင်းအစီအစဉ်ကို အပြည်ပြည်ဆိုင်ရာစံနှုန်းများနှင့်အညီ ထားဝယ်အထူးစီးပွားရေးဇုန်ကော်မတီနှင့် အခြားသောအစိုးရဌာနများနှင့် ဒေသခံများပါဝင်ကာ ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ WWF ၏ လမ်းဖောက်လုပ်ခြင်းဒီဇိုင်း လက်စွဲစာစောင်အကြံပြုချက်များအတိုင်း တောရိုင်းတိရစ္ဆာန်များ ဖြတ်သန်းသွားလာရန်နှင့် ဇီဝမျိုးကွဲများအတွက် စီစဉ်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံကိန်းအကောင်အထည်ဖော်စဉ် လိုက်နာရမည့် ကတိကဝတ်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု (EMP) အစီအစဉ်များအား လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပြီး ခြောက်လတစ်ကြိမ် အစီရင်ခံစာအား ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာန ECD သို့ တင်ပြသွားမည်ဖြစ်ကြောင်း ရှင်းလင်းတင်ပြခဲ့ပါသည်။

၃၀။ ဦးစောဘီးလယ်၊ KNU အဖွဲ့မှ ယခင်ကမိမိအနေဖြင့် ပြည်ထောင်စုအဆင့်သို့ တင်ပြခဲ့သည်များရှိပါကြောင်း၊ (၂) လမ်းသွားကားလမ်းဖောက်လုပ်မည့်အစီအစဉ်မှာ ကြာမြင့်နေပြီဖြစ်ကြောင်း၊ ကားလမ်းကြောင်းတစ်လျှောက် ကျေးရွာများတွင် အိမ်ခြေများ တိုးပွားလာမှုရှိနေကြောင်း၊ မေတ္တာမြို့နှင့် ထီးခီးဒေသမှ ဒေသခံများကိုလည်း သွားရောက်ရှင်းပြစေလိုကြောင်း၊ ယခင်က ITD မှ မစ္စတာအာနမ်နှင့် ကွင်းဆင်းခဲ့ဖူးပါကြောင်း၊ 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 စီမံကိန်းနှင့် ပတ်သက်၍ ညှိနှိုင်းပူးပေါင်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ တနင်္သာရီတိုင်းအနေဖြင့် သဘာဝပတ်ဝန်းကျင်ကို ထိန်းသိမ်းနိုင်သောတိုင်းဖြစ်စေလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါ သည်။

၃၀။ 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၊ အလုပ်အကိုင်နှင့် သက်မွေးဝမ်းကျောင်းနိုင်ရေးအစီအစဉ်များ 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 ပြည်သူတို့အဓိကထိခိုက်နေသည့် အရာများအတွက် သီးခြားသတ်မှတ်ချက်များရှိကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စတင်မည့်အချိန်မှာ မသေချာသေးသည့်အချိန်ဖြစ်နေပြီး မည်သူကပိုင်ရှင်ဆိုသည်ကိုလည်း 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၊ ဝက်ချောင်းကျေးရွာ၏ အရှေ့မြောက်ဘက် (၁.၈) ကီလိုမီတာနှင့် ခမောင်းချောင်းကျေးရွာ၏အရှေ့ဘက် (၃.၅) ကီလိုမီတာတွင် စီမံကိန်းနေရာတည်ရှိပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အစီအစဉ်များ၊ လူထုကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးအစီအစဉ်များ ချမှတ်အကောင်အထည် ဖော်ဆောင်ရွက်မည့် အစီအစဉ်များအား ဆွေးနွေးခဲ့ပါသည်။

၃၇။ တနင်္သာရီတိုင်းဒေသကြီးလွှတ်တော် ဒုဥက္ကဋ္ဌ ဦးကြည်စိုးမှ တက်ရောက်လာသော ဒေသခံပြည်သူများ၊ KNU အဖွဲ့အစည်းမှ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ ထားဝယ်အထူးစီးပွားရေးဇုန် ဖြစ်မြောက်ရေးအတွက် ဆောင်ရွက်ပေးသည့်ဝန်ထမ်းများအား ကျေးဇူးတင်ကြောင်း၊ ရှင်းလင်းပြောကြားပေးသောအဖွဲ့များကို လည်း အထူးကျေးဇူးတင်ပါကြောင်း၊ ဒေသခံများအနေဖြင့် စီမံကိန်းအောင်မြင်ရန်အတွက် ပံ့ပိုးကူညီပေးရန်လိုအပ်ပါကြောင်း၊ လျော်ကြေးရယူထားပြီးဖြစ်သော်လည်း ၎င်းမြေများအား လုပ်ငန်းများမစတင်မီ အချိန်တွင် အလကားမထားပဲ အရင်းအမြစ်ပြုလုပ်၍ စိုက်ပျိုးအသုံးချနိုင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပြီး အစည်းအဝေးအား ညနေ (၁၅၀၀) နာရီတွင် ခေတ္တရပ်နားခဲ့ပါသည်။

၃၈။ အစည်းအဝေးဒုတိယနေ့အား (၂၉-၃-၂၀၁၈) ရက်နေ့ နံနက် (၀၈၀၀) နာရီတွင် ပြန်လည်စတင်ခဲ့ပါသည်။

၃၉။ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ ဒုတိယဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ အဖွင့်အမှာစကားပြောကြားရာတွင် ယခုအစည်းအဝေးသည် ပြည်သူ့ကြားနာပွဲ၊ ဒေသခံပြည်သူများနှင့်တွေ့ဆုံပွဲဖြစ်ပြီး 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 အသစ်တာဝန်ထမ်းဆောင်ပြီးနောက်ပိုင်း ITD နှင့် ချုပ်ဆိုထားသော စာချုပ်များကို ပြန်လည်သုံးသပ်ခဲ့ပါကြောင်း၊ စီမံကိန်း (၃) ခုကို ရွေးချယ်ပြီး ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ ၎င်းတို့မှာ (၁) နှစ်လမ်းသွားကားလမ်းစီမံကိန်း၊ (၂) လျှပ်စစ်မီးရရှိရေးစီမံကိန်းနှင့် (၃) ဆိပ်ကမ်းစီမံကိန်းတို့ ဖြစ်ပါကြောင်း၊ နှစ်လမ်းသွားကားလမ်း 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 ဇုန်စီမံကိန်းများ ဖြစ်ပေါ်စေရန် မျှော်လင့်နေရသည်မှာ မောနေပြီဖြစ်ကြောင်း၊ ဒေသခံများ၏ စိုးရိမ်စိတ်များအား နားလည်ပါကြောင်း၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် ထိခိုက်မှုများသက်သာရန် ITD မှ Third Party ငှားရမ်း၍ ပညာရှင်များဖြင့် EIA, SIA များ ဆောင်ရွက်ပြီး မြန်မာနိုင်ငံဘက် ECD မှ ပညာရှင်များက အစီရင်ခံစာများကို စီစစ်ရကြောင်း၊ သဘာဝပတ်ဝန်းကျင်ဥပဒေများ ၂၀၁၂ နှင့် ၂၀၁၄ တွင်မှ ထွက်ပေါ်ခဲ့၍ ဇုန်၏ 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 တင်သွင်းဖတ်ကြားခဲ့ရာ 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 (၁.၄) ကီလိုမီတာ ရှိသောလှိုင်းကာတစ်ခု၊ အရှည် (၃) ကီလိုမီတာ၊ အကျယ် (၁၅၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသော ချဉ်းကပ်တူးမြောင်းတစ်ခုနှင့် အချင်း (၃၆၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသောTurning Circle တစ်ခုပါဝင်ကြောင်း၊ ကုန်တွင်းအဆောက်အဦးများအတွက် Stockyard (၂) ခု (စုစုပေါင်း ဧက ၂၀) နှင့် နောက်တိုးအဆောက်အဦးများအတွက် ဧက (၈၀) ဖြစ်ပါကြောင်း၊ အဓိကလုပ်ဆောင်မှုများမှာ သောင်တူးခြင်း၊ သောင်တူး၍ရရှိသော သောင်များကို စွန့်ပစ်ခြင်း၊ လှိုင်းကာတည်ဆောက်ခြင်း၊ 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 သောင်တူးဖော်ခြင်းလုပ်ငန်းဧရိယာတို့၏ 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 (၆) လ တစ်ကြိမ် တင်ပြရမည်ဖြစ်ပါကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၄၁။ ဦးတင်ရွှေ၊ ကျန်းမာရေးမှူး၊ ငပိတက်ငယ်ရွာမှ ဇုစ်နီချောင်းရှိ တံငါလှေများနှင့်ပတ်သက်၍ မည်သို့ဆောင်ရွက်ပေးမည်ကို သိလိုပါကြောင်း၊ EIA စစ်တမ်းကောက်ယူမှုနှင့် ရွာသို့လာရောက်ရှင်းပြခြင်းမရှိသေးပါကြောင်း၊ ယခင်က အိမ်ခြေ (၁၂) လုံးသာရှိခဲ့သော်လည်း ယခုအိမ်ခြေများ ပိုမိုများပြားလာကြောင်း၊ အရှည် (၁) မိုင်ခွဲ၊ အမြင့် (၁၂) ပေရှိ အသံကာတံတိုင်း တည်ဆောက်မည်ဟု သိရှိရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၂။ နောက်လတွင် အဆိုပါဇုစ်နီချောင်းတံတားအား ဖျက်သိမ်းပေးမည်ဖြစ်ကြောင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းများမစတင်ခင် လူထုတွေ့ဆုံပွဲ လုပ်သွားမည်ဖြစ်ကြောင်း Team အဖွဲ့မှ ပြန်လည်ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၃။ ဦးစိုးနိုင်၊ ထိန်ကြီးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ထိန်ကြီးကျေးရွာအုပ်စု၊ ဇုစ်နီရွာတွင် အိမ်ခြေ (၅၀) ရှိပြီး လူဦးရေ (၂၀၀) ခန့်ရှိပါကြောင်း၊ ဘာသာရေးအဆောက်အဦး၊ ယာယီစာသင်ကျောင်းနှင့် ဘုန်းကြီးကျောင်းအတွက် မြေနေရာများ စီစဉ်ပေးပါရန် ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၄။ အဆိုပါတင်ပြချက်အား ထားဝယ်အထူးစီးပွားရေးဇုန်ထဲတွင်ပါဝင်ပါက စီမံခန့်ခွဲမှုကော်မတီမှ ဆောင်ရွက်ပေးသွားမည်ဖြစ်ပြီး ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပဖြစ်ပါက တနင်္သာရီတိုင်းအစိုးရအဖွဲ့မှ ဆောင်ရွက်ပေးနိုင်ရန် တင်ပြပေးမည်ဖြစ်ကြောင်း ဒုတိယဥက္ကဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၅။ သဘာဝဓာတ်ငွေ့အရည် (LNG) သိုလှောင်ဖြန့်ဖြူးခြင်းလုပ်ငန်း၏ 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၊ လိုင်းကာဆောက်လုပ်ခြင်းလုပ်ငန်းများ၊ ချဉ်းကပ်တူးမြောင်းများ၊ 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 မည်သူက တာဝန်ယူဖြေရှင်းပေးမည်ကို သိလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၇။ အဆိုပါတင်ပြချက်အား ဒု-ဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ ပင်လယ်ကူးသင်္ဘောများ အဝင်/အထွက်ရှိ၍ 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 သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ရရှိခဲ့ပါကြောင်း၊ စီမံကိန်းအချက်အလက် LNG Tank ၏ ပတ်ဝန်းကျင်အပူကြောင့် ထွက်ရှိလာသော ဓါတ်ငွေ့ကို အပူစွမ်းအင်အဖြစ်အသုံးပြု၍ လျှပ်စစ်ဓါတ်အား ထုတ်လုပ်မည်ဖြစ်ပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ လူမှုရေးဆိုင်ရာ ထိခိုက်မှုစီမံခန့်ခွဲခြင်းနှင့် သက်ဆိုင်သောဥပဒေနှင့် စည်းမျဉ်များအတိုင်း လိုက်နာဆောင်ရွက်သွားရမည်ဖြစ်ပြီး တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ဖုန်မှုန့်၊ ဆူညံ

သံ၊ စွန့်ပြစ် ရေဆိုး/ကမ်းရိုးတန်းရေ/အဏ္ဏဝါ ဂေဟဗေဒ၊ လူမှု-စီးပွားတို့တွင် သက်ရောက်မှုများကို လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် စောင့်ကြည့်လေ့လာခြင်းများပြုလုပ်မည့် အစီအစဉ်များကိုလည်းကောင်း၊ လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) လေထုအရည်အသွေး၊ စွန့်ပြစ်ရေဆိုး/ကမ်းရိုးတန်းရေ/အဏ္ဏဝါဂေဟဗေဒ၊ လူမှု-စီးပွားကဏ္ဍတို့တွင် ထိခိုက်နိုင်မှုများကို လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် စောင့်ကြည့်လေ့လာခြင်းများပြုလုပ်မည့် အစီအစဉ်များကိုလည်းကောင်း၊ စီမံကိန်း အကောင်အထည်ဖော်မှုကာလတွင် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအား တင်ပြပါ Slides များမှ ဖော်ပြချက်များအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၄၉။ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် တည်ဆောက်မည့် ကနဦးကာလ ဓါတ်အားပေးစက်ရုံ စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ်သက်ရောက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM အဖွဲ့မှ တင်သွင်းဖတ်ကြားရာတွင် 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 ရွှံ့နွံဒေသ ဧရိယာတွင် တည်ရှိကြောင်း၊ တည်ဆောက်ရေးကာလသည် (၆) နှစ် ကြာမြင့်ပြီး အများဆုံး အလုပ်သမား အရေအတွက် (၆၀၀) ယောက် ရှိနိုင်ပါကြောင်း၊ အနီးဆုံး လူမှုအသိုင်းအဝိုင်းသည် ငပိတက်ရွာဖြစ်ပြီး စီမံကိန်းနေရာမှ ပျမ်းမျှ (၂.၂၃) ကီလိုမီတာ ကွာဝေးပါကြောင်း၊ LNG Terminal မှ သဘာဝဓါတ်ငွေ့ကိုအသုံးပြုကာ (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၊ အကြိုတည်ဆောက်ရေးလုပ်ငန်းဆောင်ရွက်ခြင်းကာလနှင့် တည်ဆောက်ဆဲကာလများတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင်ဆောင်ရွက်ရမည့် CEMP၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလတွင် စီမံကိန်းပိုင်ရှင်မှ ပြီးမြောက်အောင်ဆောင်ရွက်ရမည့် OEMP၊ လုပ်ငန်းရပ်စဲခြင်းကာလတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင်ဆောင်ရွက်ရမည့် 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၊ မူးဒူးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ဒေသခံအလုပ်အကိုင်ရရှိရေး စဉ်းစားပေးသည့်အတွက် ကျေးဇူးတင်ကြောင်း၊ ဒေသတွင်းကျေးရွာများ မီးလင်းရေးအတွက် စဉ်းစားပေးစေလိုကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၁။ ထားဝယ်အထူးစီးပွားရေးဇုန်းအတွက် 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 ယခုတင်သွင်းသောစာတမ်းများအတိုင်း လိုက်နာဆောင်ရွက်မှုရှိ/မရှိ တိုက်ဆိုင်စစ်ဆေးရန် အထောက်အထားများဖြစ်ကြောင်း၊ ဒေသခံရွာများမှ ဇုန်အတွင်းပါဝင်သည့်အတွက် မြစိမ်းရောင်ချေးငွေ၊ 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၊ လဲရှောင်ကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ဒေသတွင်းအလုပ်အကိုင်အခွင့်အလမ်းရရှိရေးကို ဦးတည်စဉ်းစားပေးစေလိုကြောင်းနှင့် အသက်မွေးဝမ်းကြောင်း သင်တန်းများ၊ ကျွမ်းကျင်လုပ်သားသင်တန်းများ ဖွင့်လှစ်ပေးစေလိုကြောင်း၊ မြေယာလျော်ကြေးငွေများ ယခင်ကကွက်တိကွက်ကျား ပေးလျော်ခဲ့ပါကြောင်း၊ ဒေသခံများမှ စီမံကိန်းအတွက် အကောင်းမြင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၅။ ဦးထွန်းလွင်၊ ပုဂေါ်ဇွန်းရွာမှ ယခုစီမံကိန်းသည် ဦးတည်ချက်နှင့် ရည်မှန်းချက်ကောင်းပါကြောင်း၊ (၅) ထပ်တိုက်ဘေးတွင် 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၊ စိုက်ပျိုးရေးဧရိယာများကို 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

သာ သက်ဆိုင်ပြီး အခြားမြေယာကိစ္စများသည် နောင်လာမည့် Developer နှင့်သာ သက်ဆိုင်ပါကြောင်း၊ ဒေသခံများ နစ်နာမှုမရှိအောင် ဆောင်ရွက်ပေးမည်ဖြစ်ပါကြောင်း၊ EIA, SIA အစီရင်ခံစာပါ အချက်များအား အကောင်အထည်ဖော်မှုနှင့်ပတ်သက်၍ ကျေးရွာသားဒေသခံများမှ စောင့်ကြည့်သွားရမည်ဖြစ်ပြီး နစ်နာမှုများအား စီမံခန့်ခွဲမှုကော်မတီသို့ တင်ပြသွားစေလိုကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန် ပြင်ပ ကျေးရွာများ မီးလင်းရေးမှာ တိုင်းအစိုးရအဖွဲ့နှင့်သာ သက်ဆိုင်ပါကြောင်း၊ ယခုစီမံကိန်းသည် ဒေသခံများ လူနေမှုမြင့်မားရေးနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်ရေးအတွက်ဖြစ်ပါကြောင်း၊ လမ်းဖောက်လုပ်ရေးအတွက် တင်ဒါခေါ်ယူဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ ဒေသခံများအနေဖြင့် ကာယလုပ်သား၊ ဉာဏလုပ်သားများအဖြစ် ပါဝင်ခွင့်ရှိကြောင်း၊ လမ်းတံတားများ ပျက်စီးနေခြင်းအား ပြုပြင်ပေးရန် တောင်းဆိုသွားမည်ဖြစ်ကြောင်း၊ ကနဦးစီမံကိန်းကို ITD မှ ဆောင်ရွက်မည်ဖြစ်ပြီး ပင်မစီမံကိန်းအား မေလခန့်တွင် စတင်နိုင်မည်ဖြစ်ကြောင်း၊ စီမံကိန်းနှင့်ပတ်သက်၍ (၃/၄) လတစ်ကြိမ် ရှင်းပြရန် တာဝန်ရှိပါကြောင်း နိဂုံးချုပ်ပြောကြားခဲ့ပါသည်။

(signature)

မှတ်တမ်းတင်သူ

(ရဲဝင်းကျော်၊ ဌာနခွဲမှူး)

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

စာအမှတ်၊ ထဝ - ၁ / DSEZ – D / ၂၀၁၈

ရက်စွဲ ၊ ၂၀၁၈ ခုနှစ်၊ ဧပြီလ ၆ ရက်

ဖြန့်ဝေခြင်း -

အစည်းအဝေးတက်ရောက်သူများအားလုံး

မိတ္တူကို

- မျှောစာတွဲ / လက်ခံစာတွဲ

APPENDIX 9C

PRESENTATION FOR MEETING

APPENDIX 9C-1

PRESENTATION FOR THE FIRST PUBLIC CONSULTATION MEETING

ထားဝယ်အထူးစီးပွားရေးဇုံ ကနဦး သဘာဝဓာတ်ငွေ့ရည် ဂိတ် နှင့် အငွေ့ပျံ ဓာတ်အားပေးစက်ရုံတည်ဆောက်ခြင်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အကျိုးသက်ရောက်ခြင်း အကဲဖြတ်လေ့လာမှုများ

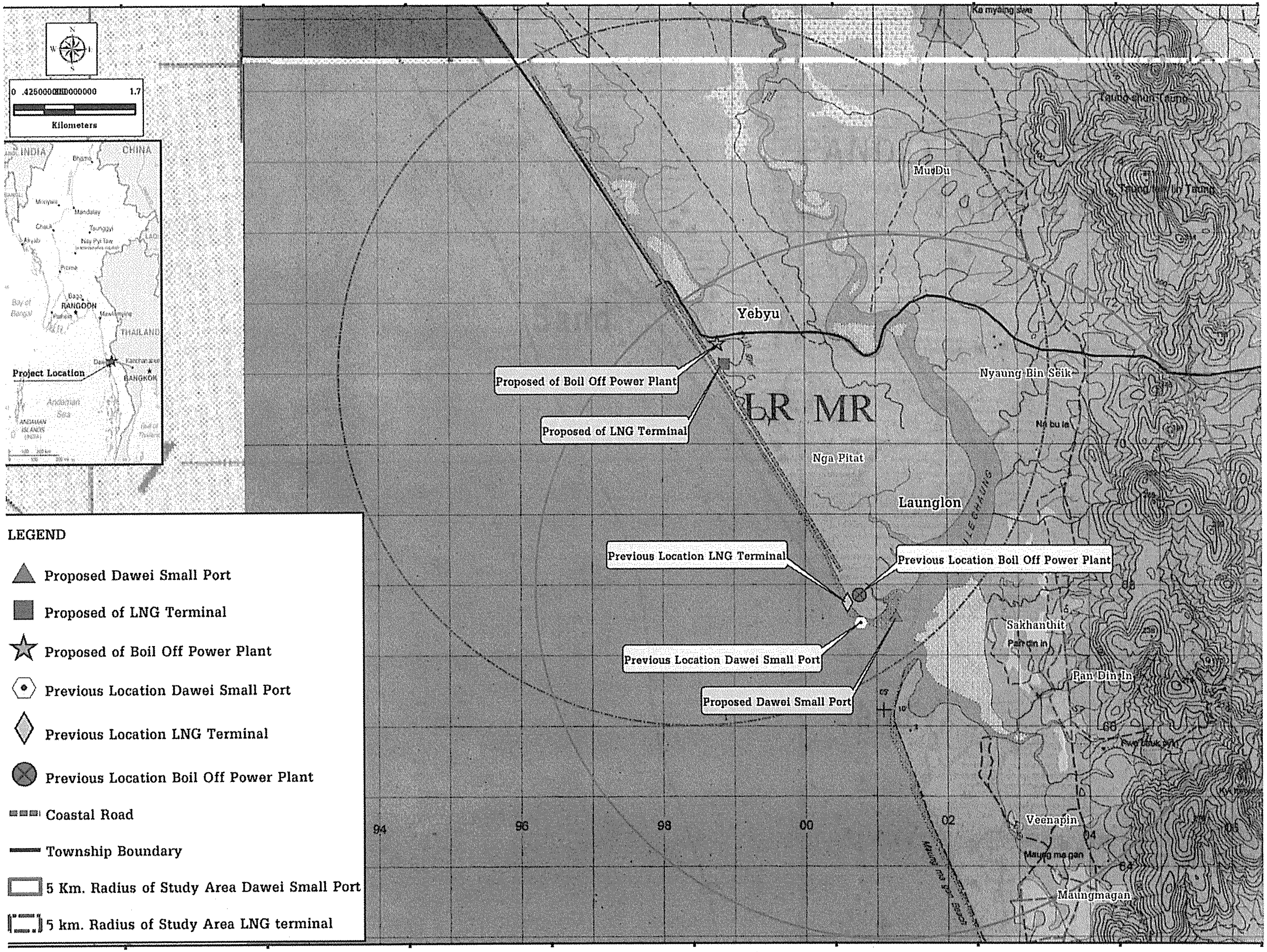
(၂၀၁၂)ခုနှစ်မြန်မာနိုင်ငံပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ခြင်းနှင့် အကျိုးသက်ရောက်မှုများပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ရေး ဝန်ကြီးဌာန၏ (၂၀၁၄)ခုနှစ်ပတ်ဝန်းကျင်ရေးရာအကျိုးသက်ရောက်မှုလုပ်ငန်းစဉ်များအရသဘာဝဓာတ်ငွေ့ရည် ဓာတ်အားပေး စီမံကိန်း ၏ ပတ်ဝန်းကျင်ရေးရာ အကျိုးသက်ရောက်မှုအကဲဖြတ်လေ့လာဆန်းစစ်ခြင်းကို စီမံကိန်း မစတင်မီတွင် အတည် ပြုချက် ရယူနိုင်ရန် ပြင်ဆင်ရန် လိုအပ်ပါသည်။

သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အကျိုးသက်ရောက်မှုများလေ့လာဆန်းစစ်ခြင်းရည်ရွယ်ချက်

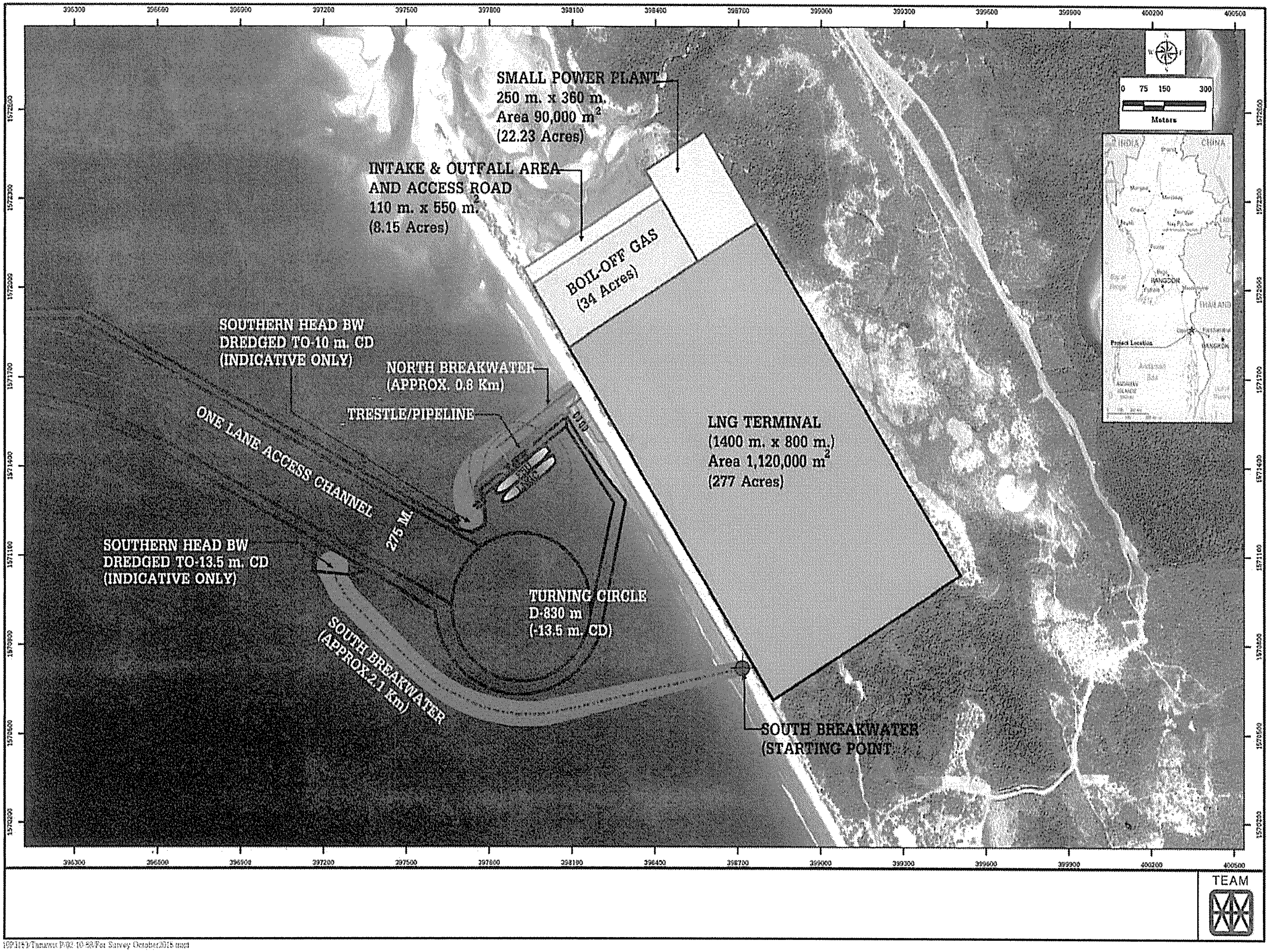
- အသစ်တည်ဆောက်မည့် သဘာဝဓာတ်ငွေ့ရည် ဓါတ်အားပေးစက်ရုံ နှင့် အငွေ့ပျံ စက်ရုံ တည်နေရာ ၏ လက်ရှိ သဘာဝပတ်ဝန်းကျင် အခြေအနေလေ့လာမှုများ ပြုလုပ်ခြင်း
- အသစ်တည်ဆောက်မည့် သဘာဝဓာတ်ငွေ့ရည်ဂိတ် နှင့် အငွေ့ပျံ စက်ရုံ၏ သဘောလက္ခဏာများ အားပြန်လည် သုံးသပ်ခြင်း
- အသစ်တည်ဆောက်မည့် သဘာဝဓာတ်ငွေ့ ရည်ဂိတ် နှင့် အငွေ့ပျံ စက်ရုံ တည်နေရာ အနေအထား လေ့လာမှုများ အား ယခင်ကပြုလုပ်ခဲ့ သော ရလာဒ်များနှင့် ပေါင်းစပ်ခြင်း
- စီမံကိန်းမှ ဖြစ်နိုင်ခြေရှိသော ကောင်းကျိုးနှင့် ဆိုးကျိုး သက်ရောက်မှုများ၏ ပမာဏကိုဖော်ထုတ်ခြင်း(ရုပ်ဝတ္ထုပတ်ဝန်းကျင်ဆိုင်ရာများ၊သက်ရှိတို့၏ဂေဟစနစ် လူသားတို့၏ အသုံးချမှု၊ ဝလေ့စရိုက် အရည်အသွေးများနှင့် ကျန်းမာရေးစံနှုန်းများ)
- အဆိုပြုကာကွယ်ခြင်းများဆိုးကျိုးသက်ရောက်မှုလျှော့ချခြင်းနှင့် စောင့်ကြည့်ကြီးကြပ်ခြင်းများ

စီမံကိန်း တည်နေရာ

စဉ်	စီမံကိန်း အစိတ်အပိုင်း	မှတ်ချက်
၁။	သဘာဝဓာတ်ငွေ့ရည် ဂိတ်	- ၎င်းနေရာသည် ပန်းတင်အင်း မြစ်ဝ၏ အနောက်မြောက်ဘက် ၄.၅ ကီလိုမီတာ အကွာတွင် တည်ရှိပါသည်။
၂။	အငွေ့ပျံစက်ရုံ	- ၎င်းနေရာသည် ပန်းတင်အင်း မြစ်ဝ၏ အနောက်မြောက်ဖက် ၄.၅ ကီလိုမီတာ နှင့် သဘာဝဓာတ်ငွေ့ ဓါတ်အားပေးစက်ရုံ ၏ အရှေ့မြောက်ဖက် ၄.၆ ကီလိုမီတာ အကွာတွင် တည်ရှိပါသည်။



0 .4250000000000000 1.7
Kilometers
INDIA
CHINA
RANGOON
THAILAND
BANGKOK
Project Location
Andaman Sea
Yebyu
MuDu
Nyaung Bin Seik
LR MR
Nga Pitat
Launglon
Sakhanthit
Pan Din In
Veenapin
Maungmagan
Proposed of Boil Off Power Plant
Proposed of LNG Terminal
Previous Location LNG Terminal
Previous Location Boil Off Power Plant
Previous Location Dawei Small Port
Proposed Dawei Small Port
94
96
98
00
02
04
LEGEND
Proposed Dawei Small Port
Proposed of LNG Terminal
Proposed of Boil Off Power Plant
Previous Location Dawei Small Port
Previous Location LNG Terminal
Previous Location Boil Off Power Plant
Coastal Road
Township Boundary
5 Km. Radius of Study Area Dawei Small Port
5 km. Radius of Study Area LNG terminal


SMALL POWER PLANT
250 m. x 360 m.
Area 90,000 m²
(22.23 Acres)
INTAKE & OUTFALL AREA
AND ACCESS ROAD
110 m. x 550 m²
(8.15 Acres)
BOIL-OFF GAS
(34 Acres)
LNG TERMINAL
(1400 m. x 800 m.)
Area 1,120,000 m²
(277 Acres)
SOUTHERN HEAD BW
DREDGED TO-10 m. CD
(INDICATIVE ONLY)
NORTH BREAKWATER
(APPROX. 0.8 Km)
TRESTLE/PIPELINE
ONE LANE ACCESS CHANNEL
275 M.
SOUTHERN HEAD BW
DREDGED TO-13.5 m. CD
(INDICATIVE ONLY)
TURNING CIRCLE
D-830 m
(-13.5 m. CD)
SOUTH BREAKWATER
(APPROX.2.1 Km)
SOUTH BREAKWATER
(STARTING POINT)
0 75 150 300
Meters
Project Location
TEAM

စီမံကိန်း အချက်အလက်များ

- သဘာဝဓာတ်ငွေ့ရည် ဂိတ်

ပင်လယ်ကမ်းစပ်

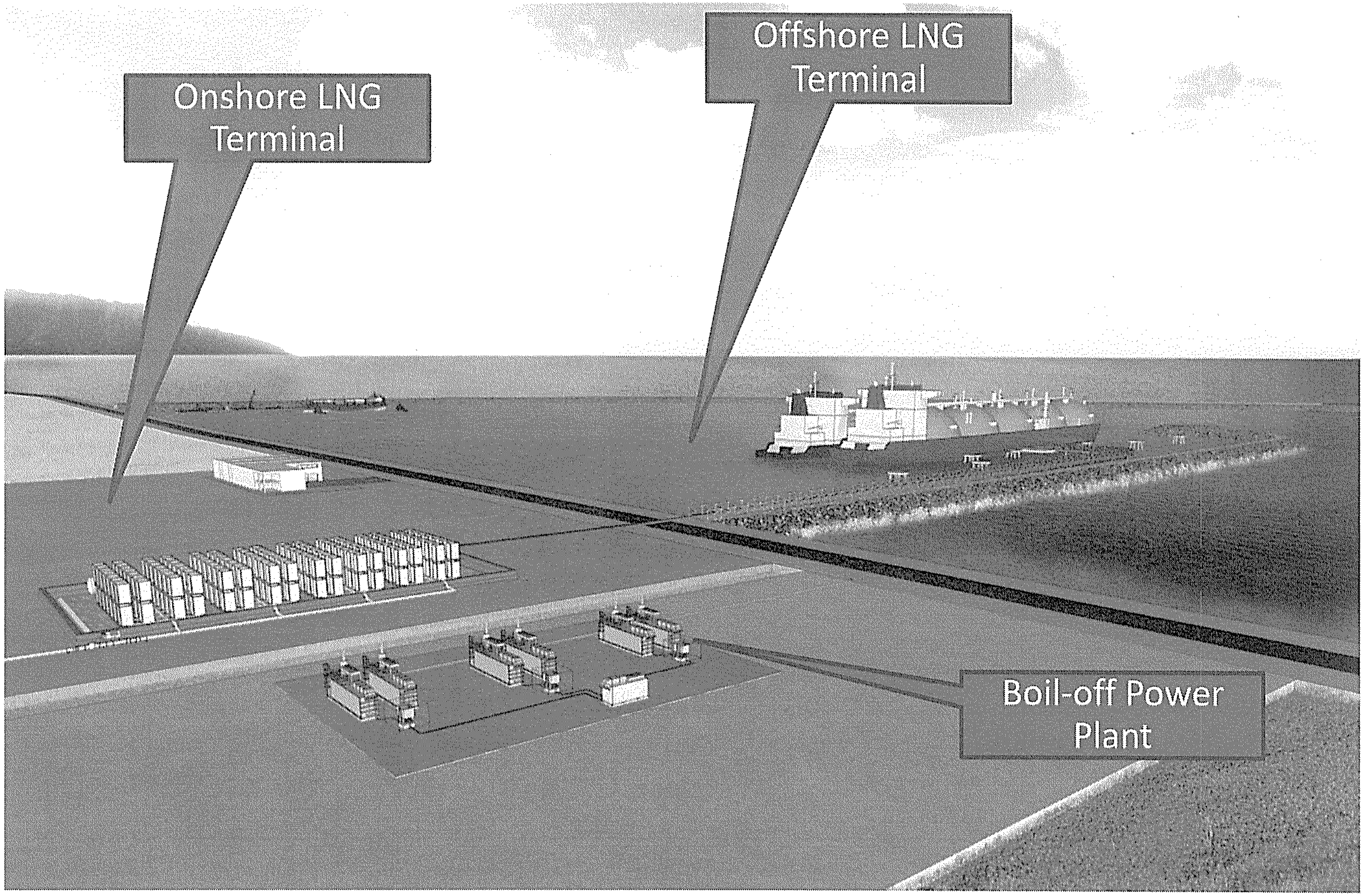
- စုစုပေါင်း ပင်လယ်ကမ်းစပ် ဧရိယာ = ၂၂၇ ဧက
- ပံ့ပိုး အင်္ဂါများ အဖြစ် သဘာဝဓာတ်ငွေ့ရည် ပိုက်လိုင်း၊ လေငွေ့ပျံ ကရိယာ၊ အပူကူးကန် နှင့် အဓိက ထိန်းချုပ်ခန်း တို့ ပါဝင်သည်။

ပင်လယ်ကမ်းနီး

- ရေထိန်းကိရိယာ ၂ခု (မြောက်ဘက်=၀.၈ ကီလိုမီတာ နှင့် တောင်ဘက် ၂.၀ ကီလိုမီတာ)
- ရေပေါ်ရေစုကန် ၂ ကန် နှင့် သဘာဝဓာတ်ငွေ့ရည် သွယ်ယူ ကိရိယာ
- ၆.၀၇ ကီလိုမီတာအရှည်၊ ၂၇၅ မီတာ အကျယ် နှင့် အနက် ၁၄.၇၅ မီတာ မြေကြီး အောက် ရှိ ချဉ်းကပ်လမ်း

စီမံကိန်း အချက်အလက်များ

- အငွေ့ပျံ စက်ရုံ
  - ၃၄ ကော
  - ဓာတ်ငွေ့လည်ပတ် ကိရိယာ ၂ စုံ = ၁၅.၄၈၈ မဂ္ဂါဝပ်
  - အရှည် = ၂၇.၅ မီတာ
  - လွှတ်ထုတ် ခြင်း နှင့် လုံခြုံမှု ထိန်းချုပ်ကိရိယာ


Onshore LNG Terminal
Offshore LNG Terminal
Boil-off Power Plant

ပတ်ဝန်းကျင်ရေးရာနှင့် လူမှုရေးရာ အခြေအနေ များ ကွင်းဆင်းဆောင်ရွက်ခြင်း ရည်ရွယ်ချက်

ရည်ရွယ်ချက်

- အသစ်တည် ဆောက်မည့် သဘာဝဓာတ်ငွေ့ရည် ဂိတ် နှင့် အငွေ့ပျံစက်ရုံ တို့နှင့် ပတ်သက်သော အခြေခံ အချက် အလက် များ ခိုင်မာစေရန်
- ၄င်းအချက်အလက်များ ကို အသုံးပြုခြင်းအားဖြင့် ဆိုးကျိုးသက်ရောက်မှုများလျှော့ချလျှော့နှာ်းစေရန်၊ သဘာဝပတ်ဝန်းကျင် နှင့် လူမှုရေး အခြေအနေ များ ယခင် အခြေအနေ များထက် ဆုတ်ယုတ် မှု မဖြစ်စေအောင် ထိန်းသိမ်းထားနိုင်စေရန်

ပတ်ဝန်းကျင်ရေးရာတိုင်းတာသတ်မှတ်ချက်မှုဘောင်များ

၄င်းတို့မှာ

၁။ လေထုဝန်းကျင်နှင့် အသံအမျိုးအစားများ

၂။ ပင်လယ်ရေ၏ အရည်အသွေး

၃။ ပင်လယ်တွင်းသက်ရှိဝန်းကျင်

၄။ ငါးဖမ်းလုပ်ငန်းများ

၅။ မြေအောက်ရေအခြေအနေ

၆။ အနည်ကျမှုအဆင့်အတန်း

၇။ ကုန်းတွင်းအရင်းအမြစ်များ

၈။ တောရိုင်းတိရစ္ဆာန်အရင်းအမြစ်များ

၉။ မြေယာခွဲဝေသုံးစွဲမှုပုံစံ

လူမှုစီးပွားစစ်တမ်း အတွက် ဒေသခံပြည်သူများနှင့် ဆွေးနွေးခြင်း

လူမှုရေးရှုထောင့်	ကွင်းဆင်းလေ့လာဆောင်ရွက်ချက် အကျဉ်းချုပ်
၁။ဒေသခံပြည်သူ များနှင့် ဆွေးနွေးခြင်း	▪ စီမံကိန်းနှင့် ပတ်သက်သည့်သတင်းအချက်အလက်များကို ဒေသခံပြည်သူများအား အသိပေးတင်ပြရန် ▪ ဒေသခံပြည်သူများ၏ ထင်မြင်ချက်များ၊ ဆွေးနွေးချက်များသိနိုင်စေရန် ▪ စီမံကိန်းနှင့် သက်ဆိုင်သော မူဒူးရွာ၊ ညောင်ပင်ဆိပ်ရွာ၊ ငပိတက်ကျေးရွာများရှိ ဒေသခံ ပြည်သူများနှင့် ဆွေးနွေးခြင်း
၂။လူမှုစီးပွားစစ်တမ်း	▪ စီမံကိန်းတည်ဆောက်ရမည့်ရွာ ရွာသုံးရွာအတွင်းရှိ အိမ်ထောင်စုများ၏လူမှုစီးပွားစစ်တမ်း ကောက်ယူခြင်း၊ ▪ ဒေသခံပြည်သူများ၏ လူမှုစီးပွားရေးအခြေအနေ၊ ထင်မြင်ယူဆချက်များ ဆွေးနွေးမှုများကို လေ့လာဆန်းစစ်ခြင်း၊

စီမံကိန်း ဆောင်ရွက်မှု လျာထားအချိန် ဇယား

Activity	2015																2016			
	September				october				November				December				January			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Additional Field Survey																				
Data Analysis and Evaluation	---	---																		
Initial Environmental and Social Impact Assessment			---	---	---	---	---	---												
Public Consultation										---	---									
Impact Assessment/ Cumulative Impacts/ Mitigation and Monitoring Programs									---	---	---	---	---	---	---	---				
Report Submission																				
Final Scoping Report to Client (October 15, 2015)						▼														
Final Scoping Report to the Republic of the Union of Myanmar (October 30, 2015)								▼												
Final ESIA Report to Client (December 15, 2015)														▼						
Final ESIA Report to the Republic of the Union of Myanmar (December 30, 2015)																▼				

စီမံကိန်း ဆောင်ရွက်မှု လျာထားအချိန် ဇယား

Activity	2015																2016			
	September				october				November				December				January			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Additional Field Survey				–																
Data Analysis and Evaluation					–	–	–													
Initial Environmental and Social Impact Assessment										–	–	–	–	–						
Public Consultation				–																
Impact Assessment/ Cumulative Impacts/ Mitigation and Monitoring Programs															–	–	–	–	–	–
Report Submission																				
Final Scoping Report to Client (October 30, 2015)								▼												
Final Scoping Report to the Republic of the Union of Myanmar (November 15, 2015)										▼										
Final ESIA Report to Client (January 15, 2016)																		▼		
Final ESIA Report to the Republic of the Union of Myanmar (January 30, 2016)																				▼

ဆက်သွယ်ရန်

၁။ မစ္စတာ ကာရစ် ငုရမ် ရောင်းကိုရက် နှင့် မစ္စတာ စုမွတ်အုန်ဂွမ်သွန်
အယ်လအန်ဂျီ ပလတ် အင်တာနေရှင်နယ် ကုမ္ပဏီ
၂၀၃၄/ ၁၆၁၊ အီတယ်- ထိုင်းအဆောက်အဦး (၄၃)ထပ်
နယူးဖက်ဘူရီလမ်း၊ ဟွေ့ခွမ်၊ ဘန်ကောက် ၁၀၃၁၀၊ ထိုင်းနိုင်ငံ။

၂။ မစ္စတာ ပလိန်မနီယာ၊ စီမံကိန်းမန်နေဂျာ
TEAM အင်ဂျင်နီယာ နှင့် စီမံအုပ်ချုပ်ရေး ကုမ္ပဏီ
TEAM အဆောက်အဦး၊ (၁၅၅) နူဝင်ကျန်လမ်း၊ ဘန်ရူ၊ ဘန်ကောက်
၁၀၂၃၀။ ထိုင်းနိုင်ငံ
နှင့်
တိုတယ်ဘစ်နက်ရုံး၊ အမှတ် ၅၄ အခန်း ၇၀၄၊ ဝေဇယန္တာတာဝါ၊
ဝေဇယန္တာလမ်း၊ သင်္ဃန်းကျွန်းမြို့နယ်၊ ရန်ကုန်မြို့၊ မြန်မာ။

ကျေးဇူးတင်ပါတယ်

APPENDIX 9C-2

PRESENTATION FOR THE SECOND PUBLIC CONSULTATION MEETING

ထားဝယ်အထူးစီးပွားရေးဇုံအတွက်ကနဦးအဆင့်ဖွံ့ဖြိုးရေး၊ BOIL-OFF လျှပ်စစ်ဓါတ်အားပေးစက်ရုံအတွက် ပတ်ဝန်းကျင်နှင့်လူမှုစီးပွားအခြေအနေလေ့လာဆန်းစစ်မှု (ESIA)

၂၀၁၂ ခုနှစ်တွင် ပြဌာန်းခဲ့သော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ နှင့် ၂၀၁၄ ခုနှစ် ၏နည်းဥပဒေအရ (၅၀)မီဂါဝပ်နှင့်အထက်ရှိသော သဘာဝဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံသည်ပတ်ဝန်းကျင်ထိခိုက်မှုရှိ/မရှိလေ့လာဆန်းစစ်ပြီးဆောက်လုပ်ခွင့်ပြုချက်ကြိုတင်ယူရမည်ဖြစ်သည်။

ဤဓါတ်ငွေ့သုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံသည် (၁၅)မီဂါဝပ်သာရှိသော်လည်းပတ်ဝန်းကျင်အခြေအနေကိုအလေးထားသောအားဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုရှိ/မရှိလေ့လာဆန်းစစ်ခြင်း ESIA ပြုလုပ်သွားမည်ဖြစ်သည်။

ESIA လေ့လာမှု၏ရည်ရွယ်ချက်

- လျှပ်စစ်စက်ရုံစီမံကိန်း၏ ပတ်ဝန်းကျင်(ရုပ်ဝတ္တုဆိုင်ရာ၊ ဂေဟစံနစ်ဆိုင်ရာ၊လူအသုံးချမှုများ၊လူ့ဘဝအရည်အသွေးနှင့်ကျန်းမာရေးတန်ဖိုးများ)အပေါ်သက်ရောက်မည့်ကောင်းကျိုးဆိုးကျိုးတို့၏အရည်အသွေးနှင့်အရေအတွက်တို့အားဖေါ်ထုတ်သတ်မှတ်ရန်
- ဆိုးကျိုးသက်ရောက်မှုအားကာကွယ်ရန်၊လျော့ချရန်နှင့် စောင့်ကြည့်ရန်နည်းလမ်းများကိုတင်ပြပေးရန်

TEAM GROUP

ပတ်ဝန်းကျင်နှင့်လူမှုစီးပွားထိခိုက်မှုအခြေအနေအား လေ့လာဆန်းစစ်ခြင်း (ESIA)

1) လျှပ်စစ်စက်ရုံ၏ (၅)ကီလိုမီတာ ပတ်လည်အတွင်းလေ့လာခြင်း
2) ပတ်ဝန်းကျင်နှင့်ဆိုင်သောမူဝါဒ၊လမ်းညွှန်ချက်များနှင့် ဥပဒေရေးရာတို့အားလေ့လာခြင်း
3) စီမံကိန်းဖော်ပြချက်တို့အားစုဆောင်းခြင်း
4) အချက်အလက်ရှာဖွေစုဆောင်းခြင်းနှင့်ကွင်းဆင်းကောက်ခံခြင်း
5) ပတ်ဝန်းကျင်နှင့်ဆိုင်သောစီမံခန့်ခွဲမှု အစီအမံ (EMP)အားတင်ပြခြင်း
6) အများပြည်သူလူထုအားတွေ့ဆုံတိုင်ပင်ခြင်း

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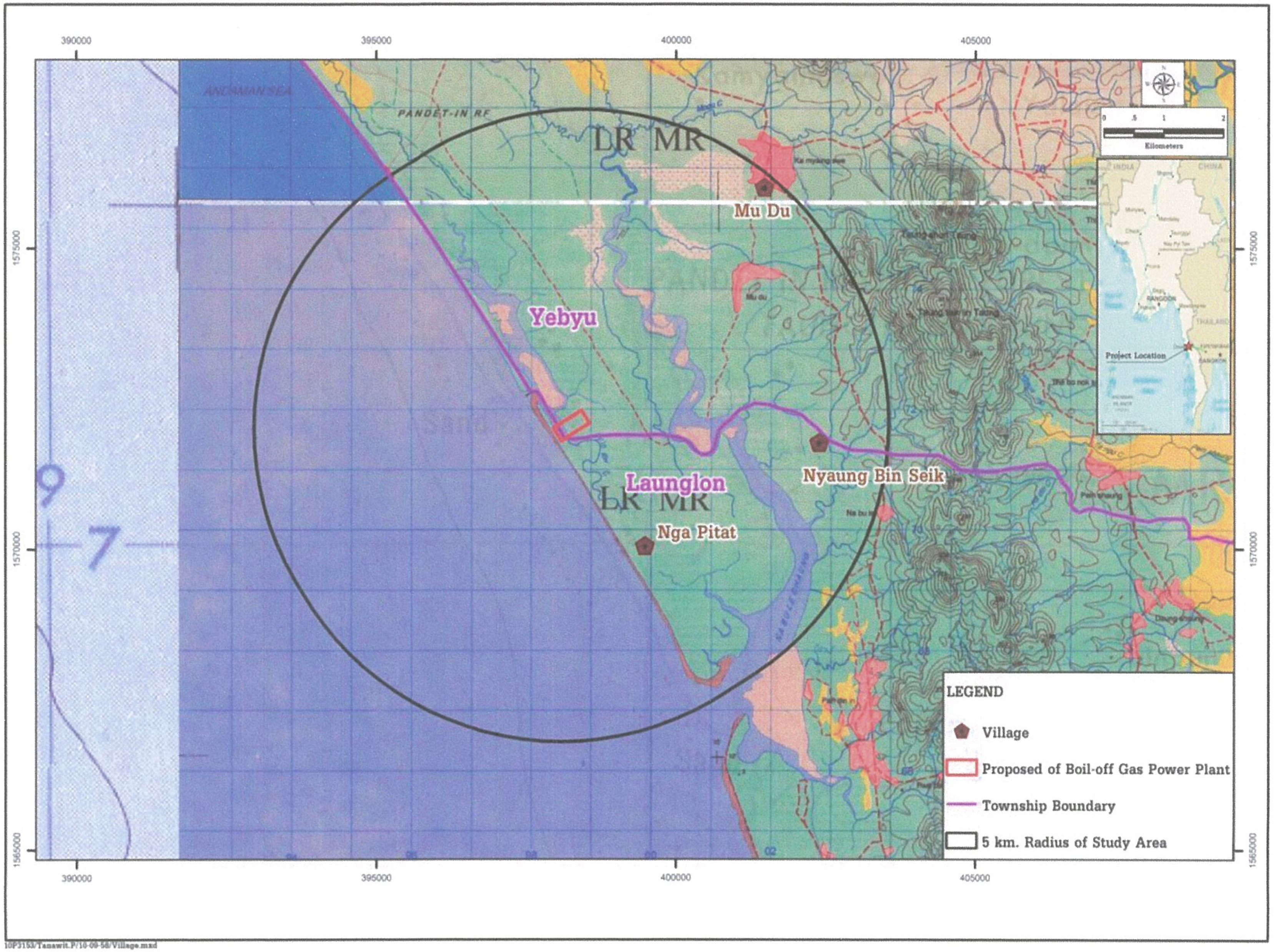
လျှပ်စစ်စက်ရုံတည်နေရာ

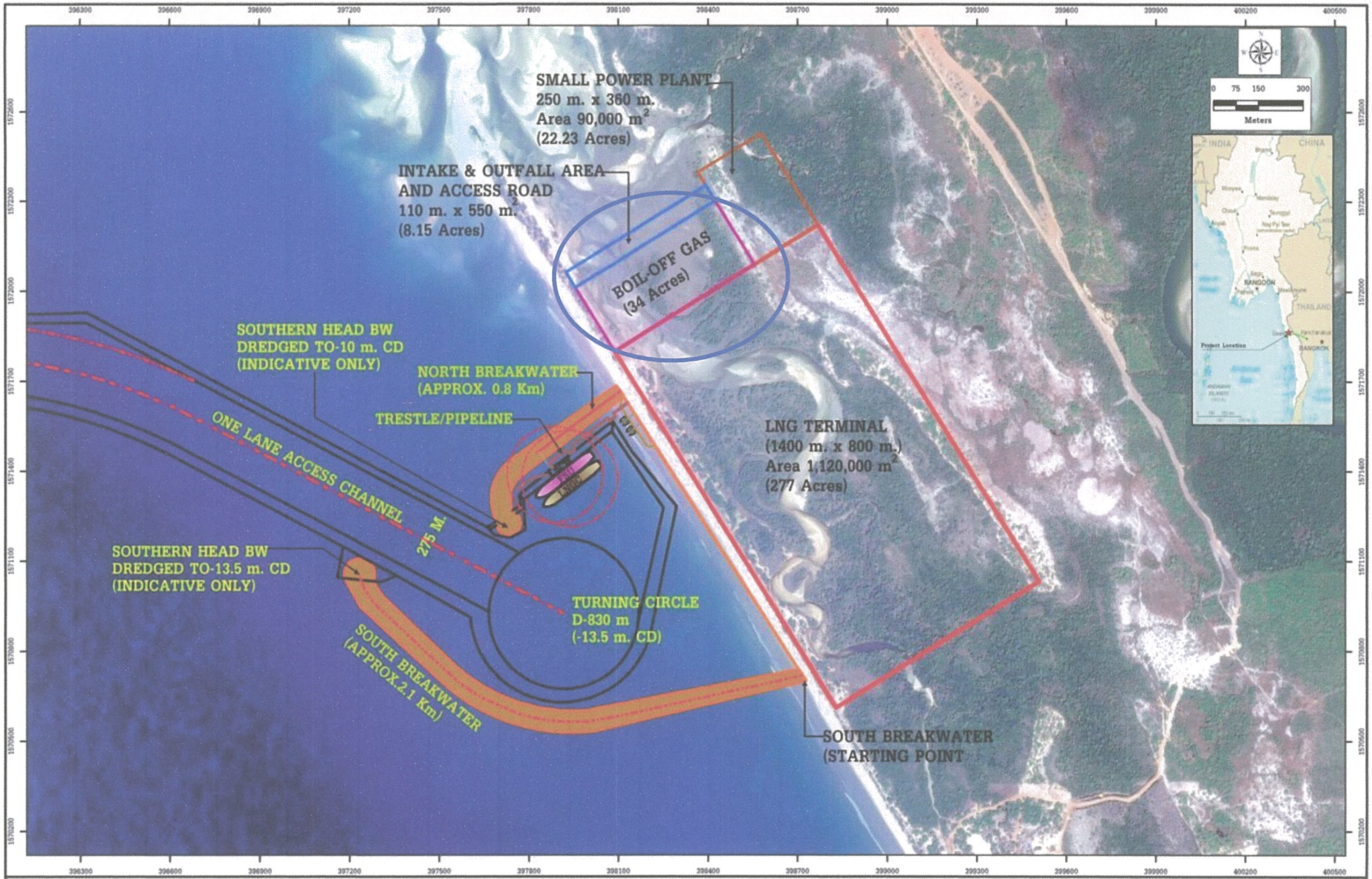


10P3153/Tanawit.P/10-09-58/Village.mxd

စီမံကိန်းတည်နေရာ

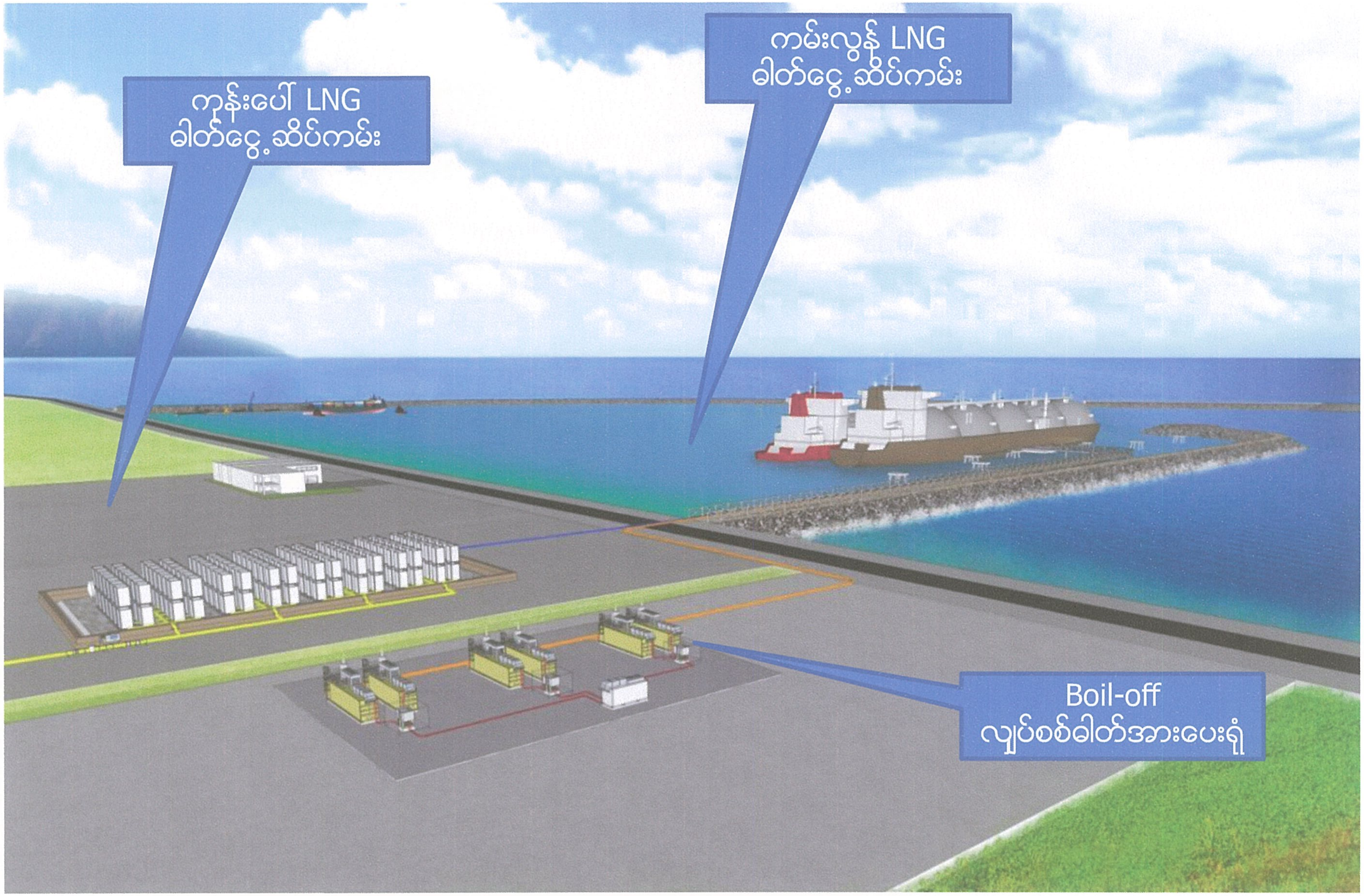
စီမံကိန်းပါဝင်မှု	မှတ်ချက်
Boil-off လျှပ်စစ်စက်ရုံ	- ပန်းတင်အင်းကျေးရွာအပိုင်မြေ၏အနောက်မြောက်ဘက် (၄.၆)ကီလိုမီတာအကွာ၊ LNG ဓါတ်ငွေ့ဆိပ်ကမ်း၏ အနောက်မြောက်ဘက် မီတာ (၅၀၀)အကွာတွင်တည်ရှိသည်

TEAM GROUP



10P3153/Tanawit.P/20-10-68/For Survey October_New.mxd

TEAM GROUP



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စီမံကိန်းအချက်အလက်များ

Reference : WARTSILA, 2015

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စီမံကိန်းအချက်အလက်များ

- Boil-off လျှပ်စစ်ဓါတ်အားပေးရုံ
- ❑ LNG ဓါတ်ငွေ့ရည်ကန်ထဲအပူချိန်ပေးသွင်းခြင်းဖြင့် Boil-off ဓါတ်ငွေ့ အဖြစ်ပြောင်းစေခြင်းဖြစ်သည်၊ ပုံမှန်အားဖြင့် လေထုထဲသို့ ဓါတ်ငွေ့ထုတ်လွှတ်သည်။ ယူဆောင်လာသည့်ဓါတ်ငွေ့သည်လျှပ်စစ်ဓါတ်အားထုတ်လုပ်ရန် အတွက်ဖြစ်သည်
- ပင်မ အစိတ်အပိုင်း
- ❑ စုစုပေါင်း (၃၄)ဧက
- ❑ ဓါတ်ငွေ့သုံးမီးစက် (၂)လုံး=(၁၅.၄၈၈)မီဂါဝပ်
- ❑ မီးခိုးခေါင်းတိုင်အမြင့်= (၂၇.၅)မီတာ
- ❑ လောင်စာအရင်းမြစ် =LNG လှောင်ကန်ထဲမှ Boil-off ဓါတ်ငွေ့
- ❑ လောင်စာသုံးစွဲမှု= ခန့်မှန်း 8,000 btu/kWh
- ❑ ဓါတ်ငွေ့ထုတ်လွှတ်မှု ဘေးကင်းစေသောထိန်းချုပ်ကိရိယာတပ်ဆင်ခြင်း

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စီမံကိန်းအချိန်ဇယား

BOIL-OFF GAS POWER PLANT

Description	Duration (days)	2016				2017				2018				2019	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Earth and Foundation works	45														
Building Structures (Concrete and Steel Structures)	120														
Fence and Gates	30														
Generator (Gas Engine) Installation	60														
Associated Equipment Installation	30														
Individual Inspection and Testing	30														
Load Test and Trial Energised Date	30														
Commission Test	30														
Completion Stage with the DSEZ MC	120														
Commencement of Power Plant															

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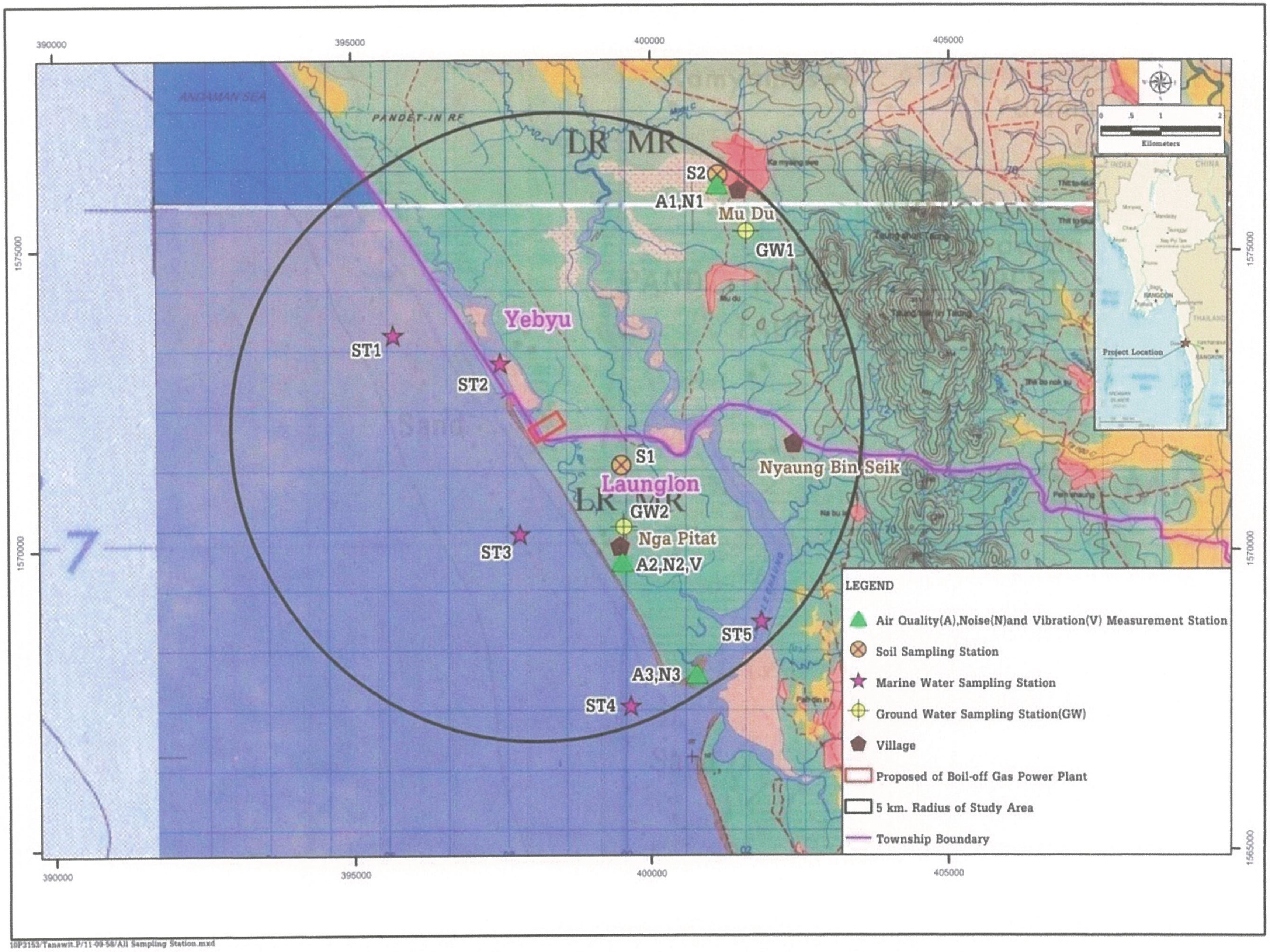
ပတ်ဝန်းကျင်အခြေနမူနာကောက်ခံသည့်နေရာများ



မူးဒူးကျေးရွာရှိ လေထုနှင့်ဆူညံသံ နမူနာကောက်ခံစဉ်

ငပိတက်ကျေးရွာရှိ လေထုနှင့်ဆူညံသံ နမူနာကောက်ခံစဉ်

လက်ရှိဆိပ်ကမ်းငယ်ရှိ လေထုနှင့်ဆူညံသံ နမူနာကောက်ခံစဉ်

ရှပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှုအစိတ်အပိုင်း

❖ လေထုအရည်အသွေးနှင့်ဆူညံသံအား မူးဒူးငပီတက်နှင့်လက်ရှိဆိပ်ကမ်းငယ်စသည့် (၃)နေရာတွင်နမူနာကောက်ယူတိုင်းတာခြင်း

➢ **လေထုအရည်အသွေး**

- လေထုအရည်အသွေးသတ်မှတ်ချက် (PM-10, TSP, NO2, SO2) တို့သည် ကမ္ဘာ့ဘဏ် အုပ်စု (၁၉၉၈နှင့် ၂၀၀၇)၏အမြင့်ဆုံးခွင့်ပြု သတ်မှတ်ချက် တန်ဖိုးထက်လျော့နည်းသည်။

- နမူနာကောက်ယူထားသောနေရာ(၃)နေရာလုံးမှလေထုသန့်စင်မှုရှိပါသည်

➢ **ဆူညံသံ**

- ပျမ်းမျှတိုင်းထွာသောဆူညံသံအဆင့် (Leq 24 hr) သည် အမေရိကန်EPA ၏စံနှုန်းသတ်မှတ်ချက်အောက်တွင်ရှိပါသည်။

TEAM GROUP

ရုပ်ပိုင်းဆိုင်ရာဖွဲ့စည်းပါဝင်မှုအစိတ်အပိုင်း

❖ ကမ်းခြေပင်လယ်ရေအရည်အသွေး

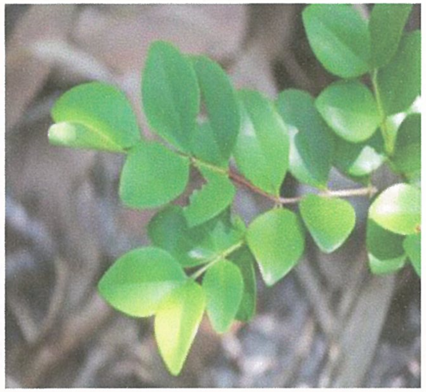
အန်ဒမန်ပင်လယ်အတွင်းရှိနမူနာကောက်ခံသည့်နေရာ (၄)နေရာ

- ❑ ရေနမူနာယူသည့်နေရာ (၄)နေရာစလုံးမှ ပင်လယ်ရေအရည်အသွေးသည်ကောင်းသည်ဟုသတ်မှတ်သည်။
  အောက်စီဂျင်ပျော်ဝင်မှုမြင့်မားပြီး၊ သတ္တုနှင့်အခြားအော်ဂဲနစ်ပျော်ဝင်မှု အလွန်နည်းပါးသည်။
- ❑ အဏ္ဏဝေဟာစံနစ်အတွက်သင့်တော်သောရေပြင်ဖြစ်သည်။

TEAM GROUP

ဇီဝပိုင်းဆိုင်ရာလက္ခဏာအစိတ်အပိုင်း

❖ ကုန်းတွင်းဂေဟစံနစ်



- အဆိုပြုထားသောစီမံကိန်းနေရာတွင်အပင်မျိုးစိတ် (၃၁)မျိုးနှင့် သတ္တဝါမျိုးစိတ် (၄၃)မျိုး တွေ့ရှိရသည်။
- ဖေါ်ထုတ်တွေ့ရှိထားသည့် အပင်မျိုးစိတ်နှင့် သတ္တဝါမျိုးစိတ်များ သည် မျိုးတုံးပျောက်ကွယ်တော့မည့်အမျိုးအစားများမဟုတ်ကြပါ

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ဇီဝပိုင်းဆိုင်ရာလက္ခဏာအစိတ်အပိုင်း

❖ ရေနေဂေဟနှင့်ငါးလုပ်ငန်း

- ရေနေအကောင်မွှားမျိုးစိတ်ဖြစ်သော (phyto-plankto) အမျိုးအစား (၁၆)မျိုး၊ (zooplankton)အမျိုးအစား (၁၂)မျိုးနှင့် (benthos)အမျိုးအစား (၁၀)မျိုးတွေ့ရှိရသည်။
- လေ့လာသည့် ၅ ကီလိုမီတာပတ်လည်တွင် ပင်လယ်မြက် နှင့်သန္တာကျောက်တန်းမတွေ့ရပါ။

TEAM GROUP

လူမှု-စီးပွားအခြေအနေလက္ခဏာအစိတ်အပိုင်း

❖ လူမှုစီးပွား စစ်တမ်း

ကျေးရွာ	မြို့နယ်	အိမ်ထောင်စု
မူဒူး	ရေဖြူ	684
ညောင်ပင်ဆိပ်	လောင်းလုံး	75
ငပိတက်	လောင်းလုံး	180
စုစုပေါင်း (၃)ရွာ နှင့် လူနေအရပ်တစ်နေရာ	2 townships	939

လူမှု-စီးပွားအခြေအနေ

- **မူဒူး နှင့်အနီးရှိလူနေရပ်ကွက်**
  - ခြံလုပ်ငန်းနှင့်ကျပန်းလုပ်ငန်းဖြင့်အသက်မွေးသူအများစုဖြစ်သည်
- **ညောင်ပင်ဆိပ်နှင့်ငပိတက်**
  - ရေလုပ်ငန်းနှင့်ဒီရေတောကိုမှီခိုပြီးအသက်မွေးသူအများစုဖြစ်သည်
- **လူမျိုးနှင့်ဘာသာ**
  - အားလုံးနီးပါးထားဝယ်စကားပြောသော၊ထားဝယ်-မြန်မာဖြစ်ပြီးထေရဝါဒ ဗုဒ္ဓဘာသာကိုးကွယ်ကြသည်
- **စီးပွားရေးအခြေအနေ**
  - တစ်နှစ်လျှင်အိမ်ထောင်စုတစ်စု၏ပျမ်းမျှဝင်ငွေမှာ အမေရိကန်ဒေါ်လာ(၅၀၀၀) ဖြစ်ပြီး ထွက်ငွေမှာ အမေရိကန်ဒေါ်လာအားဖြင့်(၄၀၀၀)ခန့်ဖြစ်သည်
  - အားလုံးနီးပါးငွေမစုဆောင်းနိုင်ကြပါ

လူမှု-စီးပွားလက္ခဏာအစိတ်အပိုင်း

❖ ငါးကီလိုမီတာပတ်လည်ရှိမြေအသုံးချမှုပုံစံ

အမျိုးအစား	အကျယ်အဝန်း	(%)
ကျေးရွာပိုင်မြေ/စိုက်ပျိုးမြေ	5,116.70	23.91
သစ်တောမြေ	4,419.71	20.65
အခြားမြေ	1,945.39	9.09
ရေမျက်နှာပြင်	9,917.74	46.35
စုစုပေါင်း	21,399.54	100.00

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စီမံကိန်းမြေနေရာအခြေအနေ

လက်ရှိအဆိုပြုထားသည့်နေရာ

- လမုတောနှင့် ဒီရေအတက်အကျရှိသောဇုံ

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ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်း

- ရုပ်ပိုင်းဆိုင်ရာလက္ခဏာ အစိတ်အပိုင်း
- ဇီဝပိုင်းဆိုင်ရာလက္ခဏာ အစိတ်အပိုင်း
- လူမှု-စီးပွားဆိုင်ရာလက္ခဏာ အစိတ်အပိုင်း
- ယဉ်ကျေးမှုနှင့်မျက်မြင်နိုင်သောသွင်ပြင်လက္ခဏာ အစိတ်အပိုင်း

အကြိုတည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

➢ **ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ**

1) မြေပြင်ရှင်းလင်းခြင်း၊မြေဖို့ခြင်းနှင့်မြေညှိခြင်းကြောင့်အခိုက်အတန့်ဖုံမှုန့်ထခြင်း။

2) ယာဉ်ယန္တယားများသွားလာခြင်း၊ပစ္စည်းကိရိယာများသယ်ယူပို့ဆောင်ခြင်းကြောင့် ဆူညံသံနှင့်တုန်ခါမှုများဖြစ်ပေါ်ခြင်း။
ဆောက်လုပ်သည့်ကာလတိုတောင်းသလို တည်ရှိသည့်နေရာသည်လည်းကျေးရွာမှ (၂.၂-၂.၄)ကီလိုမီတာအကွာတွင်ရှိသောကြောင့် အကျိုးသက်ရောက်မှုနည်းပါမည်။

3) ယာဉ်ယန္တယားများသွားလာခြင်းကြောင့်အများပြည်သူအသုံးပြုသည့်လမ်းမပေါ်ယာဉ်ကြော ပြဿနာနှင့်လမ်းအသုံးပြုသူဒေသခံများအတွက်ယာဉ်အန္တရာယ်ဖြစ်ပေါ်နိုင်ခြင်း။
ဆောက်လုပ်သည့်ကာလ တိုတောင်းသည့်အတွက် ထိခိုက်မှု နည်းပါမည်။

➢ **လျော့ကျစေသောနည်းလမ်းများ**

- ဆောက်လုပ်ရေးဧရိယာအတွင်း မြေတူးဖော်မှုကို ထိန်းချုပ်ခြင်း။
- လမ်းပေါ်နှင့် ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်းရေဖျန်းခြင်း။
- အသံထွက်နိမ့်ကျသော စက်နှင့်ပစ္စည်းကိရိယာများကိုအသုံးပြုခြင်း။
- တစ်နာရီ လျှင် ကီလိုမီတာ (၄၀)ထက်မပိုသောနှုန်းဖြင့်ယာဉ်များ၏အရှိန်ကိုကန့်သတ်ခြင်း
- လမ်းမျက်နှာပြင်ပျက်စီးမှုမှကာကွယ်ရန်ထရပ်ကားပေါ် အလေးချိန်တန်ပိုတင်ဆောင်မှုကို တင်းကြပ်စွာထိန်းချုပ်ခြင်း

တည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ

1) ပစ္စည်းကိရိယာများသယ်ဆောင်ခြင်းနှင့်ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့်ဖုံမှုန့်ထခြင်း

2) ယန္တယားကြီးများနှင့်စက်ပစ္စည်းကိရိယာများကြောင့် ဆူညံသံနှင့် တုန်ခါမှုဖြစ်ပေါ်ခြင်း။
လုပ်ငန်းကာလ တိုတောင်းပြီး ကျေးရွာမှ (၂.၂-၄.၈) ကီလိုမီတာအထိကွာဝေးသောကြောင့်
အကျိုးသက်ရောက်မှုနည်းပါးမည်။

3) စီမံကိန်းဆောက်လုပ်ရေးလုပ်ငန်းကြောင့်ကမ်းခြေရေအနယ်ကျခြင်း။
ထိခိုက်မှုလျော့ကျစေသည့်အစီအမံများအားသေချာစွာလိုက်နာပါက ထိခိုက်မှုနည်းပါးမည်။

လျော့ကျစေသောနည်းလမ်းများ

- ဆောက်လုပ်ရေးဇရိယာအတွင်း မြေတူးဖော်မှုကို ထိန်းချုပ်ခြင်း။
- လမ်းပေါ်နှင့် ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်းရေဖျန်းခြင်း။
- အသံထွက်နိမ့်ကျသော စက်နှင့်ပစ္စည်းကိရိယာများကိုအသုံးပြုခြင်း။
- ပိုင်ရိုက်သွင်းခြင်းအစား လွန်ဖြင့်တူးခြင်း စသည့် ဆူညံသံလျော့နည်းစေသည့်နည်းများကို အသုံးပြုရန်စဉ်းစားခြင်း။
- ရေထုအနီးရှိ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွက် အနယ်လက်ခံသည့် စံနစ်ထားရှိခြင်း
- ပစ္စည်းသိုလှောင်သည့်နေရာသည်ရေပြင်နှင့်ဝေးကွာသည့်အရပ်တွင်ရှိရမည်။

တည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ

- 4) ဒေသလမ်းကြောင်းပေါ် ပစ္စည်းကိရိယာများတင်ဆောင်သွားလာခြင်းကြောင့် ဒေသခံများအတွက် ယာဉ်အန္တရာယ်နှင့်ကျန်းမာရေးအန္တရာယ်ရှိနိုင်ခြင်း။
  လုပ်ငန်းဆောင်ရွက်သည့်ကာလတိုတောင်းသည့်အတွက်ထိခိုက်မှု နည်းပါးမည်။

ထိခိုက်မှုလျော့ကစေသောနည်းလမ်းများ

- ဆောက်လုပ်ရေးလုပ်ငန်းအစီအစဉ်အား သက်ဆိုင်ရာအာဏာပိုင်နှင့်ဒေသခံပြည်သူများအား အသိပေးအကြောင်းကြားခြင်း။
- တစ်နာရီလျှင် ကီလိုမီတာ (၄၀)ထက်မပိုသောနှုန်းဖြင့်ယာဉ်များ၏အရှိန်ကိုကန့်သတ်ခြင်း
- ဆောက်လုပ်ရေးဇုံအားထင်ရှားစွာလမ်းညွှန်ပြသသောသတိပေးဆိုင်းဘုတ်များကို လွယ်ကူစွာသတိပြုမြင်တွေ့နိုင်စေရန် အလုံအလောက်ပေးထားခြင်း

တည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

➢ ဖြစ်နိုင်ခြေအကျိုးသက်ရောက်မှုများ

5) လူမှုစီးပွား

ကောင်းကျိုး

- အလုပ်အကိုင်အခွင့်အလမ်းရှိလာခြင်း
- အခြားနေရာမှရောက်လာသောလုပ်သားများ၏ဝယ်ယူသုံးစွဲမှုကြောင့် ဒေသခံများဝင်ငွေတိုးလာခြင်း

ဆိုးကျိုး

- ပြင်ပအလုပ်သမားများနှင့် ဒေသခံများအကြားခိုက်ရန်ဖြစ်ပွားမှုဖြစ်ပေါ်နိုင်ခြင်း နိုင်ငံခြားသားဝန်ထမ်း စုစုပေါင်း(၁၇)ဦးသာရှိမည်ဖြစ်သောကြောင့် ဖြစ်နိုင်ခြေနည်းပါးသည်
- ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့် လေထုညစ်ညမ်းခြင်းနှင့် ယာဉ်ကြောရှုပ်ထွေးမှု ဖြစ်နိုင်ခြင်း။ အချိန်ကာလတိုတောင်းသည့်အတွက်အကျိုးသက်ရောက်မှုနည်းပါးသည်။

TEAM GROUP

တည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

- **ထိခိုက်မှုလျှော့ကျစေသည့်နည်းလမ်းများ**

- ဒေသခံများအတွက်အလုပ်အကိုင် ဦးစားပေးစဉ်းစားပေးခြင်းဖြင့်တခြားနေရာမှ ရောက်လာသည့်လုပ်သားများနှင့်ဒေသခံများအကြားဖြစ်နိုင်သည့်ပြဿနာကိုလျှော့ချစေခြင်း။
- အရည်အချင်းအလိုက်အလုပ်အကိုခန့်အပ်ရာတွင်မျှတသောလုပ်အားခပေးရန်လိုပြီးအလုပ်ခန့်သည့်လုပ်ငန်းစဉ်တွင်လည်း ပွင့်လင်းမြင်သာမှုနှင့်အတူမျှတမှုရှိရမည်။
- လေထုအရည်အသွေး၊ဆူညံသံနှင့်ယာဉ်သွားလာမှုတို့၏အကျိုးသက်ရောက်မှုကိုအနီးတွင်ရှိသောဒေသခံပြည်သူများ ခံစားရသက်သာစေရန်လျှော့ချသည့် နည်းလမ်းများကိုလုပ်ငန်းဆောင်ရွက်ရာတွင်တင်းကြပ်စွာလိုက်နာ ဆောင်ရွက်ဖို့ ကြပ်မတ်ရမည်။
- ဆောက်လုပ်ဆဲကာလအတွင်း ဆိုးကျိုးများရှိသည့်အခါဒေသခံပြည်သူများ၏ တိုင်ကြားမှုကိုလက်ခံစုဆောင်းပြီး ချက်ချင်းတုံ့ပြန်ဖြေရှင်းပေးရန်လိုပါသည်။

TEAM GROUP

တည်ဆောက်ဆဲကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

➢ ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ

1) လေထုညစ်ညမ်းခြင်း၊ ပုံမှန်အားဖြင့်ဓါတ်အားပေးစက်ရုံသည်(၁၅)မီဂါဝပ်သာရှိသောကြောင့်သေးငယ်ပါသည်။သဘာဝဓါတ်ငွေ့လောင်ကျွမ်းပြီး ဆာလဖာနှင့်အမှုံအမွှားအနည်းငယ်ပါသောမီးခိုးထွက်မည်။
မြန်မာနိုင်ငံ၏သတ်မှတ်ထားသောစံညွှန်းအတိုင်းမီးခိုးထိန်းချုပ်သည့်စံနစ်ရှိမည်။
ထို့ကြောင့်အင်ဂျင်မှထွက်သည့်မီးခိုးသည် အလွန်နည်းပါးလိမ့်မည်။

ထုတ်လွှတ်မှု	မြန်မာစံချိန်စံညွှန်း (for Reciprocating Engine)
SO_x	-
NO_x	200 mg/Nm^3
Particulate အမှုန်အမွှား	-

TEAM GROUP

လုပ်ငန်းလည်ပတ်သည့်ကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

- **ဖြစ်နိုင်ခြေရှိသောထိခိုက်မှုများ**

  2) **ဆူညံသံ၊** 65 dB(A) @ 600 ft (0.2 km) ထွက်သောဒီဇိုင်းအမျိုးအစားဖြစ်ပါသည်၊ ကျေးရွာမှ (၂.၂-၄.၈) ကီလိုမီတာအကွာအဝေးတွင်ရှိသည့်အတွက် အသံဆူညံမှုပြဿနာမရှိနိုင်ပါ။

  3) **စွန့်ပစ်ပစ္စည်းအတွက်အစီအမံ၊** နာရီပေါင်း (၂၀၀၀)လျှင် စွန့်ပစ်ချောဆီ (၃၀၀၀)လီတာခန့်ထွက်မည်။ လျှော့ချသည့်နည်းလမ်းများတင်းကြပ်စွာလိုက်နာရမည် ဖြစ်သည့်အတွက် အကျိုးသက်ရောက်မှု အလွန်နည်းပါမည်။

- **လျှော့ချစေသည့်နည်းလမ်း**
  - အသုံးပြုပြီးသားချောဆီများကို သင့်တော်သော နေရာတွင်သိုလှောင်သိမ်းဆည်းထားမည်။
  - ပြင်ပသို့ ကန်ထရိုက်ဖြင့်စနစ်တကျစွန့်ပစ်မှုမပြုခင် အန္တရာယ်ဖြစ်နိုင်သောစွန့်ပစ်ပစ္စည်းနှင့်အန္တရာယ်မရှိသောစွန့်ပစ်ပစ္စည်းများကိုကွန်တိန်နာ သို့မဟုတ်အဖုံးအကာဖြင့်ခွဲခြားသိုလှောင်ထားမည်။

လုပ်ငန်းလည်ပတ်သည့်ကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

- **ဖြစ်နိုင်ခြေရှိသော ထိခိုက်မှုများ**

  4) **ဓါတ်ငွေ့ယိုစိမ့်မှုဖြစ်ပွားပါက မီးလောင်ပေါက်ကွဲနိုင်ခြင်း၊** ကျေးရွာမှ (၂.၂-၄.၈)ကီလိုမီတာ အကွာတွင်ရှိနေသောကြောင့် အန္တရာယ်ဖြစ်နိုင်ခြေနည်းပါးသည်။

- **ထိခိုက်မှုလျော့ကျစေသည့်နည်းလမ်းများ**

- ဓါတ်ငွေ့အဖွင့်အပိတ်လုပ်သည့်ကိရိယာ စသည်တို့အားပုံမှန်စစ်ဆေးပြီး ချို့ယွင်းမှုတွေ့ရှိပါကချက်ချင်း ပြုပြင်ရန်။
- ယိုစိမ့်မှုဖြစ်ပွားခဲ့ပါက ဘေးကင်းလမ်းညွှန်ချက်များအတိုင်း ချက်ချင်းလိုက်နာဆောင်ရွက်ရန်။

- **ဖြစ်နိုင်ခြေရှိသော ထိခိုက်မှုအကျိုးဆက်များ**

  5) **လူမှုစီးပွား**

  ကောင်းကျိုး

  - အခြားနေရာမှရောက်လာသည့်လုပ်သားများဝယ်ယူသုံးစွဲခြင်းကြောင့်ဒေသခံများဝင်ငွေတိုးလာခြင်း

  ဆိုးကျိုး

  - လုပ်ငန်းလည်ပတ်မှုကြောင့်ညစ်ညမ်းခြင်းနှင့်ဘေးအန္တရာယ်ရှိနိုင်ခြင်း ထိခိုက်နိုင်မှု အလွန်နည်းပါသည်။
  - ပြင်ကြီးချောင်းအတွင်းဒေသခံငါးဖမ်းလှေများ ဆိုက်ကပ်သည့်နေရာဆုံးရှုံးခြင်း။ ဆုံးရှုံးမှုသည်ခေတ္တခဏမဟုတ်သည့်အတွက်ထိခိုက်မှုအဆင့် အလယ်အလတ်ရှိမည်။

TEAM GROUP

လုပ်ငန်းလည်ပတ်သည့်ကာလတွင်ဖြစ်နိုင်ခြေရှိသောအဓိကထိခိုက်မှုများ

ထိခိုက်မှုလျော့ကျစေသည့်နည်းများ

- အသက်မွေးဝမ်းကျောင်းပြန်လည်ထူထောင်ရေးနှင့်လူမှုဖွံ့ဖြိုးရေး လုပ်ငန်းများအတွက်ရန်ပုံငွေထူထောင်ပေးခြင်း။
- ဒေသခံနှင့်ဒေသအာဏာပိုင်တို့နှင့်နီးကပ်စွာအလုပ်လုပ်ကိုင်မည့် လူမှုအကျိုးပြု စီမံကိန်းများ(CSR) Programs ထူထောင်ပေးခြင်း။
- အနီးရှိဒေသခံပြည်သူများအတွက် ထိခိုက်နိုင်သောအကျိုးဆက်ကို လျော့ချရာတွင် စွန့်ပစ်ပစ္စည်း စီမံခြင်းတို့သည်တင်းကြပ်သော စည်းမျဉ်းများလိုက်နာရမည်။
- လေ့ဆိုက်ကပ်ဖို့အခြားနေရာအတွက်ဒေသခံပြည်သူများနှင့်ဆွေးနွေး တိုင်ပင်ခြင်း။

TEAM GROUP

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APPENDIX 9C-3

PRESENTATION FOR THE THIRD PUBLIC CONSULTATION MEETING

အပုစွမ်းအင်သုံး လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုရေးအပေါ် ထိခိုက်မှု ဆန်းစစ်ခြင်း

- နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာ အတည်ပြုချက် ရရှိခြင်း
- အပြီးသတ် ESIA အစီရင်ခံစာမူကြမ်းကို ၂၀၁၆ခုနှစ် ဩဂုတ်လတွင် တင်သွင်းခဲ့ပါသည်။
- ပြန်လည်ရေးသားထားသော အပြီးသတ် ESIA အစီရင်ခံစာ မူကြမ်းကို ၂၀၁၇ ခုနှစ် မေလတွင် ထပ်မံ တင်သွင်းခဲ့ပါသည်။
- ESIA အစီရင်ခံစာ အတည်ပြုချက်ကို ၂၀၁၈ခုနှစ် ဖေဖော်ဝါရီလ ၁၅ ရက်နေ့တွင် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ရရှိခဲ့ပါသည်။

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာနှင့် ESIAအစီရင်ခံစာအတွက် MONREC မှ အတည်ပြုချက်

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ရုံးအမှတ် (၅၃)၊နေပြည်တော်

စာအမှတ်၊ အီးအိုင်အေ-၂/၂/ (၁၃၀ /၂၀၁၇)
ရက်စွဲ ၊ ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလ ၃၀ ရက်

သို့

ဥက္ကဋ္ဌ
ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ Dawei Power Generating Co., Ltd. မှ ထားဝယ်အထူးစီးပွားရေးဇုန် ကနဦးအဆင့်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Boil-off Gas Power Plant နှင့်ပတ်သက်၍ ပြန်လည်တင်ပြလာသော နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာ (Scoping Report) အပေါ် အတည်ပြုပြန်ကြားခြင်း

ရည်ညွှန်းချက်။
(၁) ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ၏ ၃၀-၁၁-၂၀၁၅ ရက်စွဲပါ စာအမှတ်၊ ထဝ-၁/DSEZ/၂၀၁၅ (၂၂၃)
(၂) ဤဝန်ကြီးဌာန၏ ၁၄-၁၂-၂၀၁၅ ရက်စွဲပါစာအမှတ် ၃(၂)/ ၁၆ (ဃ) (၆)/ (၃၅၇၆/၂၀၁၅)
(၃) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏၁-၂-၂၀၁၆ ရက်စွဲပါ စာအမှတ် ထဝ-၁/DSEZ-၄/၂၀၁၆ (၀၃၃)
(၄) သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပြည်ထောင်စုဝန်ကြီးရုံး၏ ၂၇-၁-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ (သစ်တော) ၃/၁၆(ဃ) (၂၈၇/၂၀၁၇)

၁။ အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ Dawei Power Generating Co., Ltd. မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Boil-off Gas Power Plant စီမံကိန်းနှင့်ပတ်သက်၍ Scoping အစီရင်ခံစာအား ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်း (၁) ပါစာဖြင့် တင်ပြခဲ့ပြီး အဆိုပါတင်ပြမှုအပေါ် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနမှ ရည်ညွှန်း (၂) ပါစာဖြင့် သဘောထားမှတ်ချက် ပြန်ကြားခဲ့ရာ ပြန်လည်ပြုစုရေးဆွဲထားသည့် Scoping အစီရင်ခံစာအား ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်း (၃) ပါစာဖြင့် ပေးပို့လာပါသည်။

၂။ အဆိုပြုစီမံကိန်းနှင့်စပ်လျဉ်း၍ ပြန်လည်တင်ပြလာသည့် Boil-off Gas Power Plant စီမံကိန်း၏ Scoping အစီရင်ခံစာသည် သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနမှ

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော)၃(၂)/၁၆(ဃ)(/၂၀၁၈)
ရက်စွဲ ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ ရက်

သို့

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်တီ

အကြောင်းအရာ။ **တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အပူစွမ်းအင်သုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း**

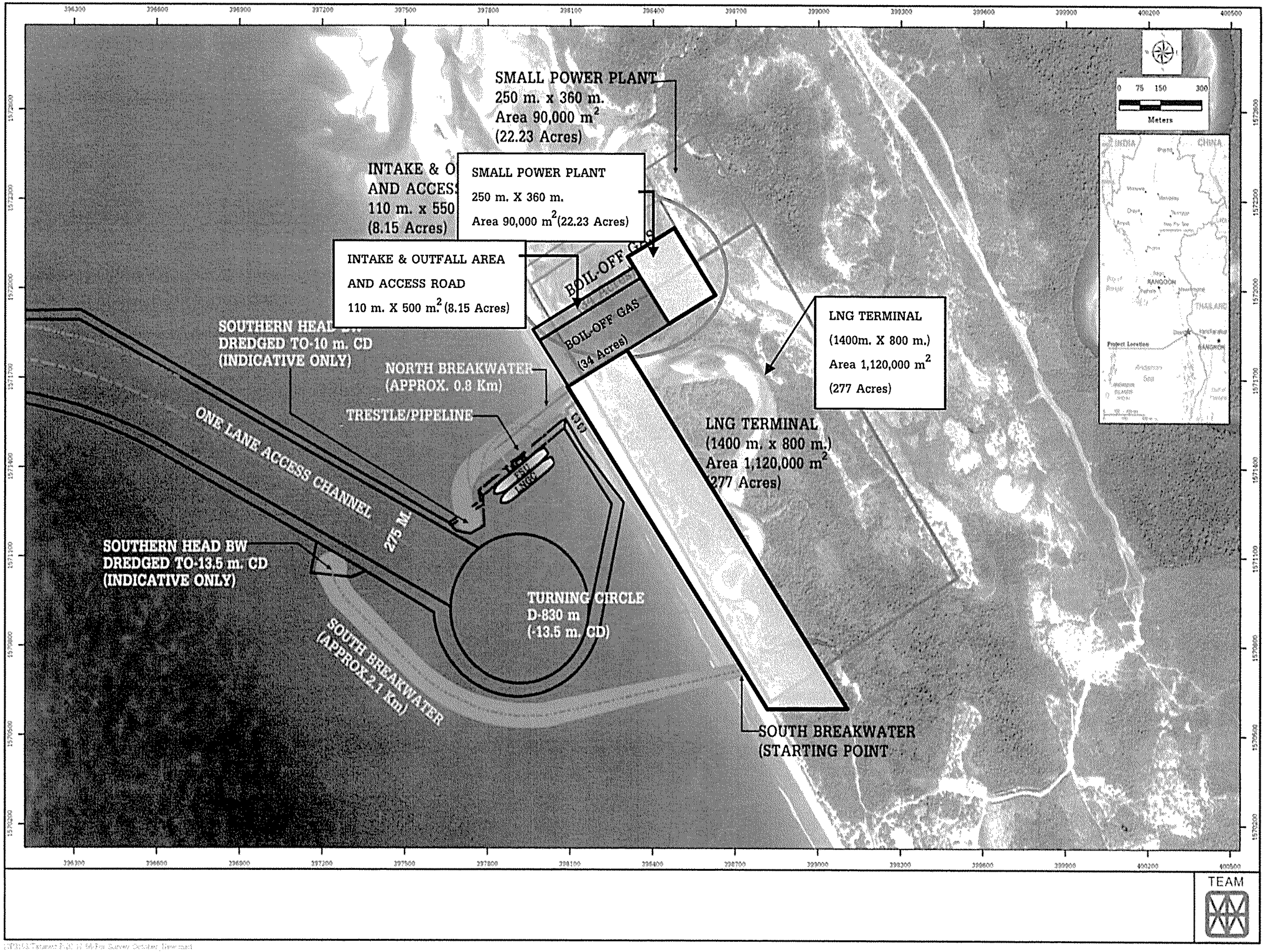
ရည်ညွှန်းချက် ။ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်တီ၏ ၁-၆-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ ဥညမ-ထဝ-၁၆ / DSEZ/ ၂၀၁၇ (၁၈၆)

၁။ ထားဝယ်လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ရေး(DPG) ကုမ္ပဏီလီမိတက်မှ တနင်္သာရီတိုင်းဒေသကြီး၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အပူစွမ်းအင်သုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment-EIA) အစီရင်ခံစာကို ရည်ညွှန်းပါစာဖြင့် ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်တီမှ အစီရင်ခံစာ စိစစ်သုံးသပ်ရေးအဖွဲ့၏ သဘောထားအကြံပြုချက်များနှင့်အညီပြန်လည်ပြုစုပေးပို့လာသည့် အပြီးသတ် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ (Final Revised EIA Report) အား သဘောထားမှတ်ချက်ပြန်ကြားပေးပါရန် တင်ပြလာပါသည်။

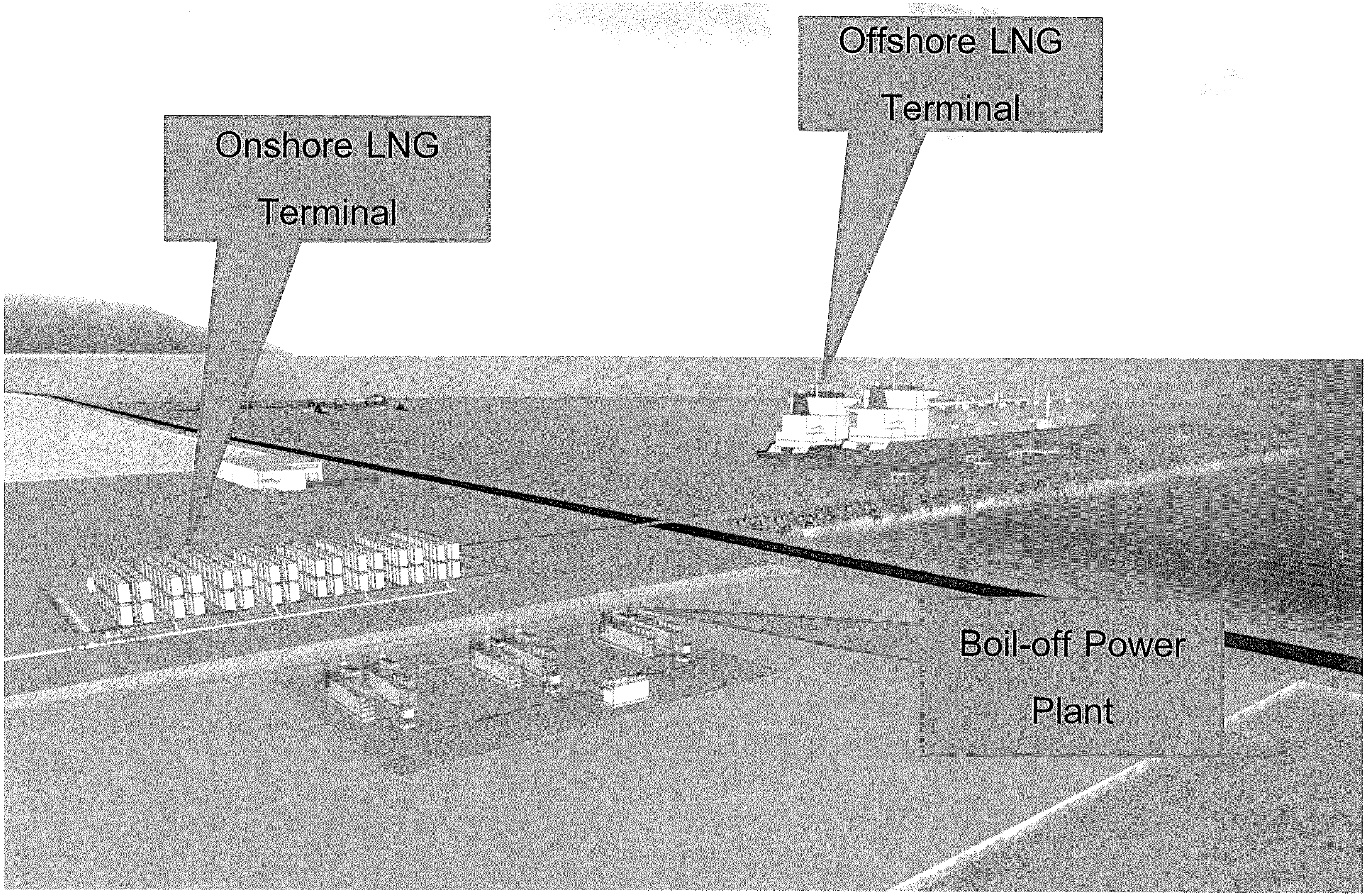
၂။ အဆိုပါတင်ပြလာမှုနှင့်ပတ်သက်၍ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနအနေဖြင့် စိစစ်ရာ၌ တင်ပြလာသည့် အစီရင်ခံစာသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၃ပါအချက်များနှင့် ကိုက်ညီမှုရှိကြောင်း တွေ့ရှိရသဖြင့် အတည်ပြုပါကြောင်းနှင့် ကုမ္ပဏီအနေဖြင့် စီမံကိန်းများ အကောင်အထည်ဖော်ဆောင်ရွက်ရာတွင် အောက်ဖော်ပြပါအချက်များကို အလေးထားလိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း သဘော ထားမှတ်ချက်ပြန်ကြားအပ်ပါသည်-

(က) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်နိုင်မှုများကို လျော့ချမည့်နည်းလမ်းများ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များ၊ ၎င်းနှင့်ဆက်စပ်သည့်အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် နည်းလမ်းများ အပါအဝင်ဆောင်ရွက်ရမည့် ကိစ္စရပ်များအားလုံးကို အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ဖော်ပြထားသည့်အတိုင်း လိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

TEAM GROUP


SMALL POWER PLANT
250 m. x 360 m.
Area 90,000 m^2
(22.23 Acres)
SMALL POWER PLANT
250 m. X 360 m.
Area 90,000 m^2 (22.23 Acres)
INTAKE & OUTFALL AREA
AND ACCESS ROAD
110 m. X 500 m^2 (8.15 Acres)
BOIL-OFF GAS
BOIL-OFF GAS
(34 Acres)
LNG TERMINAL
(1400m. X 800 m.)
Area 1,120,000 m^2
(277 Acres)
LNG TERMINAL
(1400 m. x 800 m.)
Area 1,120,000 m^2
(277 Acres)
SOUTHERN HEAD BW
DREDGED TO-10 m. CD
(INDICATIVE ONLY)
NORTH BREAKWATER
(APPROX. 0.8 Km)
TRESTLE/PIPELINE
ONE LANE ACCESS CHANNEL
275 M.
SOUTHERN HEAD BW
DREDGED TO-13.5 m. CD
(INDICATIVE ONLY)
TURNING CIRCLE
D-830 m
(-13.5 m. CD)
SOUTH BREAKWATER
(APPROX.2.1 Km)
SOUTH BREAKWATER
(STARTING POINT
Meters
INDIA
CHINA
THAILAND
RANGOON
BANGKOK
Project Location
TEAM

TEAM GROUP


Onshore LNG Terminal
Offshore LNG Terminal
Boil-off Power Plant

စီမံကိန်း အချက်အလက်

Reference : WARTSILA, 2015

TEAM GROUP

စီမံကိန်း အချက်အလက်

- အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ

- ❑ LNG Tank ၏ ပတ်ဂန်းကျင်အပူကြောင့် ထွက်ရှိလာသော အငွေ့ကို အပူစွမ်းအင်အဖြစ် အသုံးပြုပါသည်။ ပုံမှန်အားဖြင့် ၎င်းဓါတ်ငွေ့ကို လေထုထဲသို့ စွန့်ထုတ်ဖြစ်သည်။ သို့သော် ယခုစီမံကိန်းသည် ၎င်းဓါတ်ငွေ့ကို ရယူပြီး လျှပ်စစ်ဓါတ်အားထုတ်လုပ်မည် ဖြစ်ပါသည်။

- အဓိက အဆောက်အဦးများ

- ❑ ၃၄ ဧက
- ❑ ၂ x ဓါတ်ငွေ့ဂျန်နရေတာအစုံ = ၁၅ မဂ္ဂါဝပ်
- ❑ ခေါင်းတိုင် အမြင့် = ၂၇.၅ မီတာ
- ❑ လောင်စာ အရင်းအမြစ် = LNG Tank မှထွက်ရှိလာသော အပူဓါတ်ငွေ့
- ❑ လောင်စာသုံးစွဲမှုနှုန်း = ပျမ်းမျှ ၈၀၀၀ btu/kWh
- ❑ ဓါတ်ငွေ့ထုတ်လွှတ်မှုနှင့် ဘေးကင်းလုံခြုံရေး ထိန်းချုပ်မှု ကိရိယာ

ပတ်ဝန်းကျင်နှင့် အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ

- ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အခြေခံ:
  - ❑ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)
  - ❑ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄)
- EIA ဖြစ်စဉ်နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်းနှင့် ကာကွယ်ခြင်း
  - ❑ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)
  - ❑ အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
  - ❑ ပတ်ဝန်းကျင်ဆိုင်ရာ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ယေဘူယျ လမ်းညွှန်ချက် (၂၀၁၇) နှင့် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လမ်းညွှန်ချက် (၂၀၀၈)
  - ❑ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စွမ်းဆောင်ရည်စံနှုန်း (၂၀၁၂)

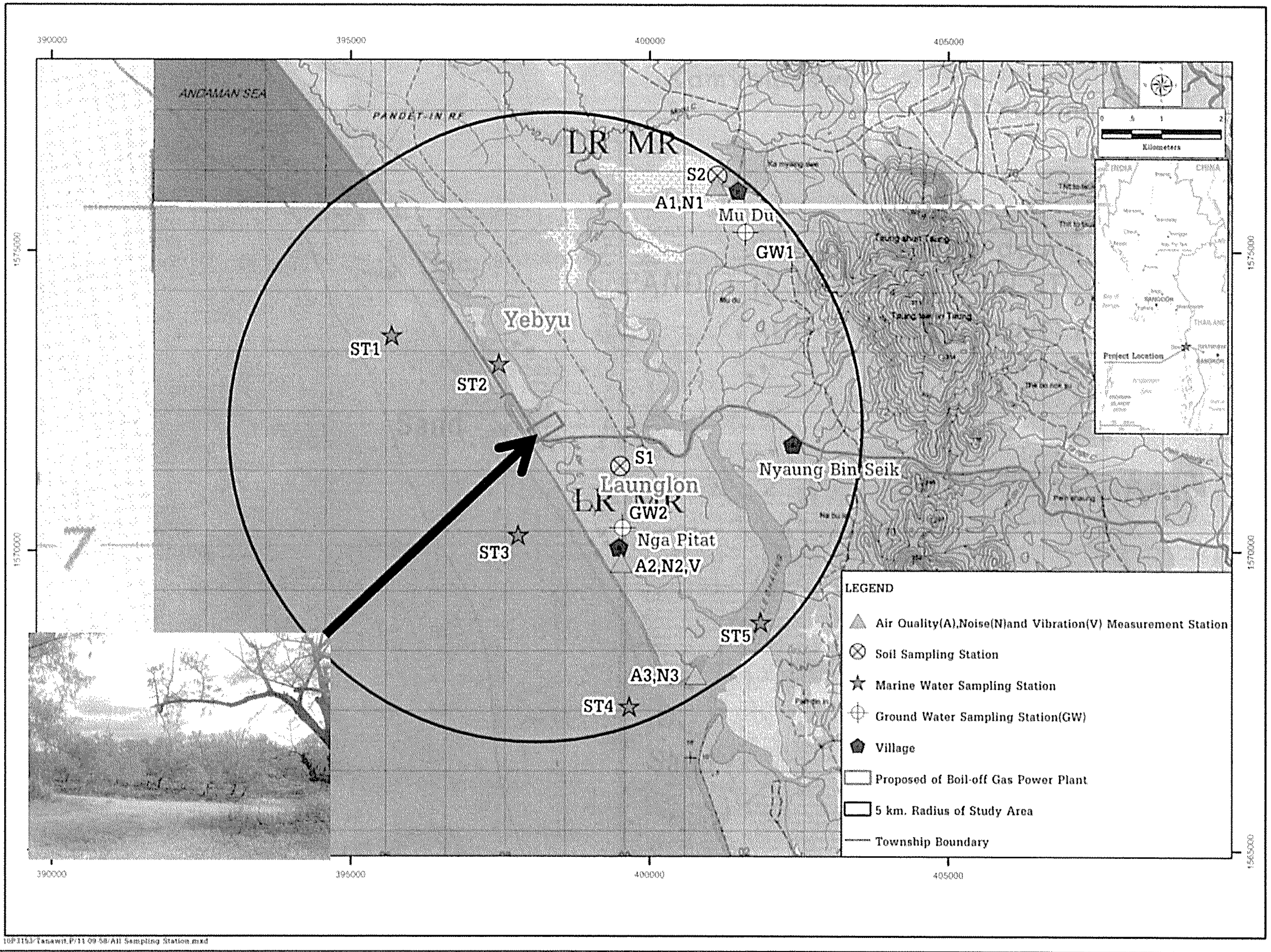
TEAM GROUP

ပတ်ဝန်းကျင်နှင့် အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ

- လုပ်ငန်းခွင်ရှိ ... လူမှုရေးဆိုင်ရာထိခိုက်မှုစီမံခန့်ခွဲခြင်းနှင့် သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ
  - ❑ ပြည်သူ့ကျန်းမာရေး ဥပဒေ (၁၉၇၂)
  - ❑ လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂)
  - ❑ အနည်းဆုံးအခကြေးငွေ ဥပဒေ (၂၀၁၃), အခကြေးငွေပေးချေရေးဥပဒေ (၂၀၁၆)
  - ❑ အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ (၂၀၁၃)
  - ❑ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ (၁၉၉၃)
  - ❑ လျှပ်စစ်ဥပဒေ (၂၀၁၄), ရေနံနည်းဥပဒေများ (၁၉၃၇)
  - ❑ ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)
  - ❑ စသည်တို့ဖြစ်ပါသည်။

TEAM GROUP

လေ့လာမှု ဧရိယာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာနမူနာကောက်ခံရာ နေရာ



EAM GROUP

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ဖုန်မှုန့်	• စီမံကိန်းပြင်ဆင်ခြင်းနှင့် အမျိုးအစား ခွဲခြင်းတို့မှ ထွက်ပေါ်လာသော ဖုန်မှုန့်များကို ဖိနှိပ်ရပါမည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းများ ပြီးစီးသည်နှင့် အသုံးပြုထားသော ဧရိယာများကို ပြန်လည်ထူထောင်ခြင်း၊ ပြန်လည်ပြုပြင်ခြင်းများ ချက်ချင်းပြုလုပ်ပေးရပါမည်။ • ဆောက်လုပ်ရေးဧရိယာအတွင်း အမှိုက်မီးရှို့ခြင်းမပြုလုပ်ရပါ။ • ဆောက်လုပ်ရေးဝန်ထမ်းအားလုံး အား ဖုန်မှုန့်ကာကွယ်နိုင်သော မျက်နှာဖုံးများ ထောက်ပံ့ပေးရပါမည်။	• နေရာ - ငပိတက်ကျေးရွာနှင့် ဆောက်လုပ်ရေးလုပ်ငန်းခွင် • ပါရာမီတာ - TSP and PM-10 • အကြိမ်အရေအတွက် - စီမံကိန်းနေရာ ရှင်းလင်းခြင်းနှင့် ဓါတ်အားပေးစက်ရုံ တပ်ဆင်ခြင်းအချိန်တွင် (၃)လ တစ်ကြိမ် စစ်ဆေးပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူရပါမည်။ • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည်ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက်ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ဆူညံသံ	• အသံဆူညံမှုထွက်ပေါ်သော လုပ်ငန်းလုပ်ဆောင်မှုများကို နေ့အချိန်တွင်သာ ပြုလုပ်ရန် ကန့်သတ်ထားရပါမည်။ • ဆူညံသံများ လျော့ကျစေရန် ၃မီတာမြင့်သော စတီးအသံကာတံတိုင်းများကို တပ်ဆင်ပေး ရပါမည်။ • ဆူညံသော လုပ်ငန်းခွင်တွင် လုပ်ကိုင်နေသော အလုပ်သမားများအား နားကြပ် သို့မဟုတ် နားအကာအကွယ်များကို ထောက်ပံ့ပေးသွားမည် ဖြစ်ပါသည်။	• နေရာ - ငပိတက်ကျေးရွာနှင့် ဆောက်လုပ်ရေး လုပ်ငန်းခွင် • ပါရာမီတာ - Lmax, Leq 24 hr, Ldn, L90 • အကြိမ်အရေအတွက် - စီမံကိန်းနေရာ ရှင်းလင်းခြင်း နှင့် ဓါတ်အားပေးစက်ရုံ တပ်ဆင်ခြင်း အချိန်တွင် (၃)လ တစ်ကြိမ် စစ်ဆေးပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူ ရပါမည်။ • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည်ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှဆောင်ရွက်ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
စွန့်ပြစ်ရေဆိုး/ ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ	• စီမံကိန်းလုပ်ငန်းပြင်ဆင်ခြင်း လုပ်ဆောင်မှုများကို ပွင့်လင်းရာသီတွင်သာ ပြုလုပ်ရပါမည်။ • ယာယီရေသွားမြောင်းစနစ်ကို တည်ဆောက်ပြီး ဆောက်လုပ်ရေးဧရိယာမှ မျက်နှာပြင်ရေများကို စုဆောင်းရပါမည်။ • ၄င်းစုဆောင်းထားသောရေများကို မစွန့်ပြစ်မီ ထိန်းသိမ်းကန်သို့ ပို့ဆောင်သွားပါမည်။ • သန့်စင်ခန်းကို ကောင်းမွန်စွာ တည်ဆောက်ပေးပြီး လူသုံးရေဆိုးများကို မိလ္လာကန်ဖြင့် စုဆောင်းပါမည်။	**စွန့်ပြစ်ရေဆိုး** • နေရာ - စွန့်ပြစ်ရာနေရာများမှထွက်သော စွန့်ပြစ်ရေဆိုး • ပါရာမီတာ - BOD, Oil and Grease, pH, Total Suspended Solid, နှင့် Total Nitrogen • အကြိမ်အရေအတွက် - တစ်လလျှင် တစ်ကြိမ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည်ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက်ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
စွန့်ပြစ်ရေဆိုး/ ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ (အဆက်)		**ကမ်းရိုးတန်းရေ** • နေရာ - ၁) စီမံကိန်းနေရာ ကမ်းရိုးတန်း နှင့် ၂) မြောက်မှ တောင် မီတာ ၅၀၀ ရှိသော စီမံကိန်းနေရာ ကမ်းရိုးတန်း စသည်တို့ပါဝင်သော ကမ်းရိုးတန်းရေနမူနာ ကောက်ယူခြင်း နေရာ (၃) နေရာ • ပါရာမီတာ - DO, suspended solid, pH, Oil and Grease, နှင့် Nitrate-Nitrogen • အကြိမ်အရေအတွက် - တစ်လလျှင် တစ်ကြိမ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည် ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက်ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
လူမှု-စီးပွား ကဏ္ဍ	• စီမံကိန်းလုပ်ငန်းခွင်နှင့် နီးသော ကျေးရွာများမှ ကျေးရွာသူ/သားတို့ကို ဒေသခံဝန်ထမ်းများ အဖြစ် ဦးစားပေးခန့်အပ်သွားမည် ဖြစ်ပါသည်။. • အလုပ်အကိုင်အခြေအနေတို့သည် သတ်မှတ်ထားသော အလုပ်သမားဥပဒေ၊ လူမှုဖူလုံရေး ဥပဒေ၊ အခကြေးငွေပေးချေရေး ဥပဒေ နှင့် အခြားသော သက်ဆိုင်ရာ ဥပဒေ နှင့် စည်းမျဉ်းများကို လိုက်နာပါမည်။ • ဒေသခံ ကျေးရွာသူ/သား များနှင့် တံငါသည် များအတွက် ငါးဖမ်းနေရာနှင့် လှေဆိပ် ဧရိယာတို့ကို ပြောင်းရွှေ့အကောင်အထည် ဖော်ပေးရပါမည်။	• နေရာ - ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူး ကျေးရွာများ • စောင့်ကြည့်လေ့လာခြင်း - ကျေးရွာ ရုံးနှင့် ကျေးရွာကော်မတီ သို့မဟုတ် ကျေးရွာလူကြီးများဖြင့် စုပေါင်း တိုင်ပင်ဆွေးနွေးထားသော အစည်းအဝေးမှ ရရှိလာသော ဆုံးရှုံးနစ်နာမှုများ၏ လူမှု-စီးပွား ထိခိုက်မှုများ • အကြိမ်အရေအတွက် - (၃)လလျှင် တစ်ကြိမ် • တာဝန်ခံ - စီမံကိန်းအကောင် အထည်ဖော်သူနှင့် အစိုးရ အာဏာပိုင်များ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
လေထုအရည်အသွေး	• Continuous Emission Monitoring System (CEMS) ကိုတပ်ဆင်ခြင်းအားဖြင့် NO_x, O_2, flow rate and ဓါတ်ငွေ့တို့၏ အပူချိန်တို့ကို သိရှိနိုင်ပါသည်။ • Dry Low NO_x Combustor ကိုတပ်ဆင်ရပါမည်။ • CEMs ကို ပုံမှန်စစ်ဆေးပြီး ထိန်းသိမ်းသွားရမည် ဖြစ်ပါသည်။	**ဓါတ်ငွေ့ထုတ်လွှတ်မှု** • နေရာ - ခေါင်းတိုင် • ပါရာမီတာ - NO_x နှင့် PM-10 • အကြိမ်အရေအတွက် - နေ့စဉ် • ကုန်ကျစရိတ် - လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်း ကုန်ကျစရိတ်တွင် ပါဝင်ပါသည်။ **လေထုအရည်အသွေး** • နေရာ - ငပိတက်နှင့် မူဒူးကျေးရွာ • ပါရာမီတာ - NO_2 ၊ PM-10 နှင့် လေတိုက်နှုန်း/ လေတိုက်ရာ ဦးတည်ချက် • အကြိမ်အရေအတွက် - တစ်နှစ်လျှင် နှစ်ကြိမ် (မိုးရာသီနှင့် ခြောက်သွေ့ရာသီ)တိုင်းတာပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူ ရပါမည်။ • တာဝန်ခံ - စီမံကိန်းအကောင်အထည် ဖော်သူ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
စွန့်ပြစ်ရေဆိုး/ ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ	• အဆီများပါဝင်နေသော ဆေးကြောရေများကို အဆီဖယ်ရှားပြီး ၎င်း အဆီမပါဝင်သော ဆေးကြောရေများကို အခြားသော ရေဆိုးများဖြင့်ပေါင်းကာ သန့်စင်မှုများ ပြုလုပ်မည် ဖြစ်ပါသည်။ • မြေပေါ်ရေများကို စုဆောင်းရန် ရေမြောင်းစနစ်ကို ပြုလုပ်ပေးသွားမည် ဖြစ်ပြီး မိုးရေကို သန့်စင်ကန်သို့မဟုတ် ပင်လယ်ရေထဲသို့ တိုက်ရိုက် စွန့်ပြစ်မည် ဖြစ်ပါသည်။ • ပင်လယ်ရေထဲသို့ မစွန့်ပြစ်မီ စွန့်ပြစ်ရေဆိုးများသည် သတ်မှတ်ထားသော စံနှုန်းနှင့် ကိုက်ညီစေရန် သန့်စင်မှုများ ပြုလုပ်ရပါမည်။	**စွန့်ပြစ်ရေဆိုး** • နေရာ - စွန့်ပြစ်ရာနေရာများမှထွက်သော စွန့်ပြစ်ရေဆိုး • ပါရာမီတာ - BOD, Oil and Grease, pH, Total Suspended Solid, နှင့် Total Nitrogen • အကြိမ်အရေအတွက် - တစ်နှစ်လျှင် နှစ်ကြိမ် (လုပ်ငန်းလည်ပတ်ဆောက်ရွက်သည့် ပထမနှစ်မှ ပဥ္စမနှစ် အထိ) • တာဝန်ခံ - စီမံကိန်း အကောင်အထည်ဖော်သူ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

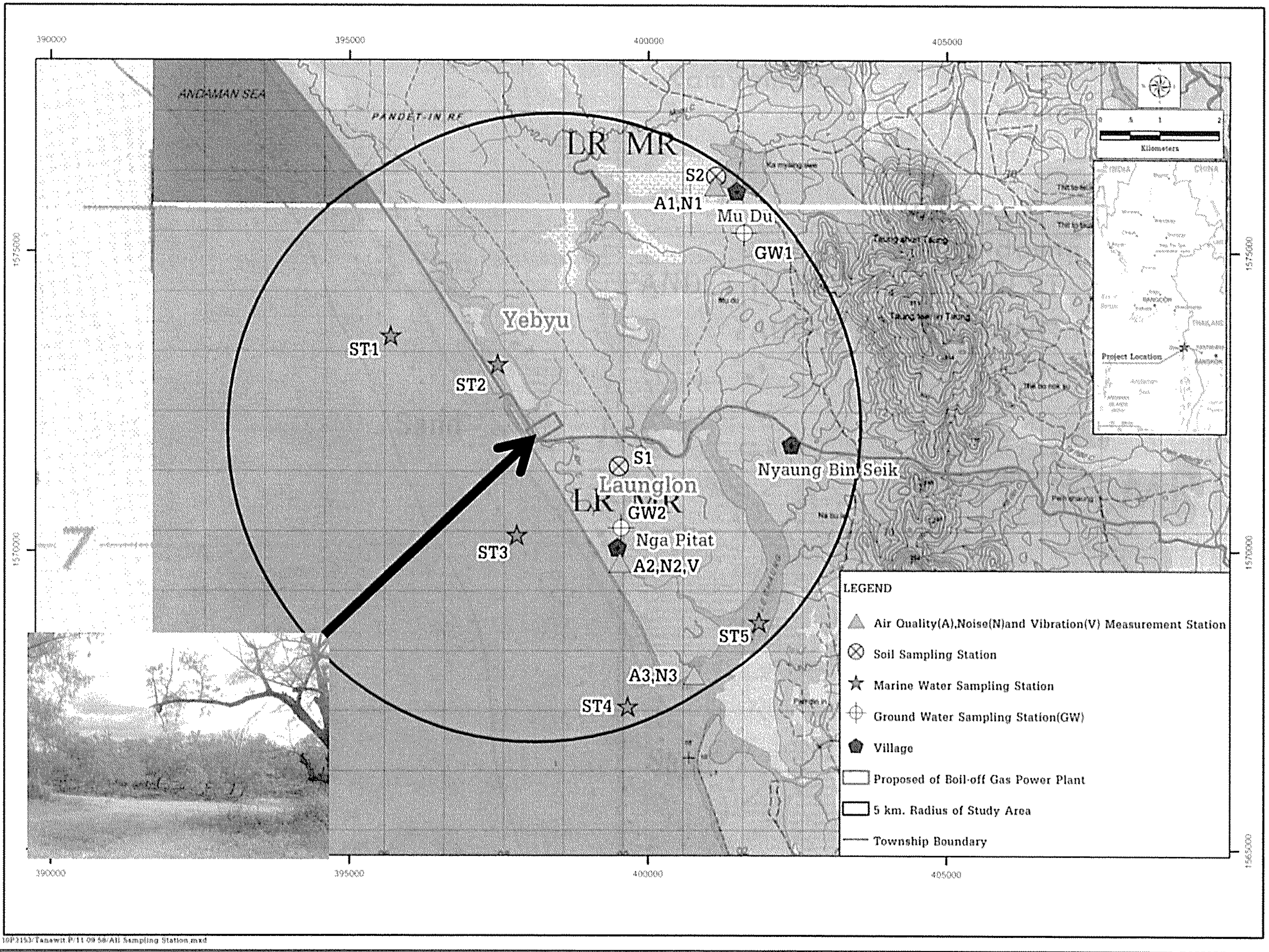
အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
စွန့်ပြစ်ရေဆိုး/ ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ (အဆက်)		**ကမ်းရိုးတန်းရေ** • နေရာ - ၁) စီမံကိန်းနေရာ ကမ်းရိုးတန်း နှင့် ၂) မြောက်မှ တောင် မီတာ ၅၀၀ ရှိသော စီမံကိန်းနေရာ ကမ်းရိုးတန်း စသည်တို့ပါဝင်သော ကမ်းရိုးတန်းရေနမူနာ ကောက်ယူခြင်း နေရာ (၃) နေရာ • ပါရာမီတာ - DO, suspended solid, pH, Oil and Grease, နှင့် Nitrate-Nitrogen • အကြိမ်အရေအတွက် - တစ်နှစ်လျှင် နှစ်ကြိမ် (လုပ်ငန်းလည်ပတ်ဆောက်ရွက် သည့် ပထမနှစ်မှ ပဉ္စမနှစ် အထိ) • တာဝန်ခံ - စီမံကိန်း အကောင်အထည် ဖော်သူ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျှော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ
လူမှု-စီးပွား ကဏ္ဍ	• လေထုအရည်အသွေး/ စွန့်ပြစ်ရေဆိုး/ ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ တို့အတွက် လျှော့ချရေး နည်းလမ်းများကို လိုက်နာ အကောင်အထည်ဖော် ရမည်ဖြစ်ပါသည်။	• နေရာ - ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူး ကျေးရွာများ • စောင့်ကြည့်လေ့လာခြင်း - ကျေးရွာ ရုံးနှင့် ကျေးရွာကော်မတီ သို့မဟုတ် ကျေးရွာလူကြီးများဖြင့် စုပေါင်း တိုင်ပင်ဆွေးနွေးထားသော အစည်းအဝေးမှ ရရှိလာသော ဆုံးရှုံးနစ်နာမှုများ၏ လူမှု-စီးပွား ထိခိုက်မှုများ • အကြိမ်အရေအတွက် - လုပ်ငန်းလည်ပတ်ဆောင်ရွက် သည့်ကာလတစ်လျှောက်လုံးတွင် တစ်နှစ်လျှင် နှစ်ကြိမ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် SWB သို့မဟုတ် အစိုးရ အာဏာပိုင်များ

TEAM GROUP

ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်လေ့လာခြင်းနေရာများ



TEAM GROUP

စီမံကိန်း အကောင်အထည်ဖော်မှုကာလတွင် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များ

- ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာတွင် ဖော်ပြထားသော ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်မှု၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ခွဲများ၊ စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်များအတွက် လျော့ချရေးနည်းလမ်းများကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

- ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ခွဲများ အကောင်အထည်ဖော်ဆောင်ရွက်ခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်အတွက် ဘတ်ဂျက်အသုံးပြုမှုများကို ထိန်းချုပ်ရန် ကော်မတီများ ထားရှိမည် ဖြစ်ပါသည်။

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄)၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) နှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တို့ကို လိုက်နာပါမည်။

- ကန်ထရိုက်တာနှင့် ကန်ထရိုက်တာခွဲတို့အားလုံးသည် သက်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေနှင့် လုပ်ထုံးလုပ်နည်းအားလုံးကို လိုက်နာရန် တာဝန်ယူရပါမည်။

- IFC ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ယေဘူယျ လမ်းညွှန်ချက် (၂၀၀၇) နှင့် အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လမ်းညွှန်ချက် (၂၀၀၈)နှင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေး ရေရှည်တည်တံ့မှုဆိုင်ရာ လုပ်ဆောင်ချက်များ (၂၀၁၂) တို့ကို လိုက်နာရပါမည်။

- ကမ္ဘာ့ဘဏ်၏ ပတ်ဝန်းကျင်လေထုအရည်အသွေးစံနှုန်းများအရ ဖုန်မှုန့်ထွက်ရှိမှုသည် ၂၃၀µg/m3 ထက် မကျော်လွန်ရပါ။

- ဓါတ်ငွေ့ထုတ်လွှတ်မှု စံနှုန်းအတွက် IFC ၏ အပူစွမ်းအင်သုံး ဓါတ်အားပေးစက်ရုံ လမ်းညွှန်ချက် (၂၀၀၈) ကို လိုက်နာရပါမည်။

- ဆူညံသံထွက်ပေါ်မှုအတွက် (၃)မီတာမြင့်သော စတီးအသံကာတံတိုင်းများကို တပ်ဆင်ပေးကာ IFC မှ ၂၀၀၇ခုနှစ်တွင် ထုတ်ပြန်ထားသော ပတ်ဝန်းကျင်ဆိုင်ရာ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ယေဘူယျ လမ်းညွှန်ချက်တို့ကို လိုက်နာရပါမည်။

- အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများအတွက် လိုင်စင်ရရှိထားသော ကန်ထရိုက်တာမှ စုဆောင်းစွန့်ပစ်ရပါမည်။

- ကတိကဝတ်အရ စွန့်ပစ်အရည်များကို ခွဲခြားကာ ထိုင်းနိုင်ငံသို့ ပြန်လည်သယ်ဆောင်ကာ သန့်စင်ရမည် ဖြစ်ပါသည်။ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း အရည်များကို စီမံကိန်းနေရာအတွင်းတွင် မစွန့်ပစ်ပါ။

- အကြိုတည်ဆောက်ရေးလုပ်ငန်းဆောင်ရွက်ခြင်းနှင့် တည်ဆောက်ဆဲလုပ်ငန်းလုပ်ဆောင်မှုများကြောင့်ထွက်ပေါ်လာသော လေထုအရည်အသွေးကို လျော့ချရန် ရေဖြန်းခြင်းနှင့် သယ်ယူပို့ဆောင်ရေးယာဉ်များသွားလာခြင်းကို တစ်နာရီတွင် (၄၀) ကီလိုမီတာထက် မပိုစေရန် ကန့်သတ်ထားရပါမည်။

- စီမံကိန်း ဧရိယာအတွင်း ရှေးဟောင်း ပစ္စည်းများ ရှာဖွေတွေ့ရှိခဲ့ပါက စီမံကိန်း အကောင်အထည်ဖော်သူမှ နီးစပ်ရာ ကျေးရွာအုပ်ချုပ်ရေးရုံးသို့ သတင်းပေးရပါမည်။
- လူမှုစီးပွားပူးပေါင်းတာဝန်ခံမှု အစီအစဉ် (CSR) ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရပါမည်။
- ဒေသခံများနှင့် အမြဲတွေ့ဆုံပြီး ၎င်းတို့၏ သုံးသပ်ချက် နှင့် အကြံပေးချက်များကို အလေးထားရပါမည်။
- ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာသည် အစိုးရထံမှ အတည်ပြုချက်ရရှိပြီးကြောင်းကို ဒေသခံများအား ကြေငြာရပါမည်။

ကျေးဇူးတင်ပါသည်။