MYANDAWEI INDUSTRIAL ESTATE COMPANY LIMITED

FINAL REPORT
Environmental and Social Impact Assessment (ESIA)

FOR

SMALL PORT

DAWEI SEZ INITIAL PHASE DEVELOPMENT

Prepared by

TEAM Consulting Engineering and Management Public Company Limited

TOTAL Business Solution Co., Ltd.

April 2018

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပြည်ထောင်စုဝန်ကြီးရုံး

စာအမှတ် (သစ်တော)၃(၂)/၁၆(ဃ)(၃၅၉၈ /၂၀၁၇)
ရက်စွဲ ၊ ၂၀၁၇ ခုနှစ်၊ နိုဝင်ဘာလ ၂၂ ရက်

သို့

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ **Myandawei Industrial Estate Company Limited မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Small Port စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental and Social Impact Assessment-ESIA)အစီရင်ခံစာအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း**

ရည်ညွှန်းချက် ။ (၁) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁-၉-၂၀၁၆ ရက်စွဲပါစာအမှတ်၊ ထဝ-၁ / DSEZ / ၂၀၁၆ (၁၁၆)

(၂) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁-၆-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ ထဝ-၁၆ / DSEZ / ၂၀၁၇ (၁၈၆)

၁။ Myandawei Industrial Estate Company Limited သည် ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Small Port စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးထိခိုက်မှုဆန်းစစ်ခြင်း(Environmental and Social Impact Assessment-ESIA)အစီရင်ခံစာ တင်ပြလာခြင်းကိစ္စနှင့်ပတ်သက်၍ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်းစာ(၂)ဖြင့် ပြန်လည်ပြုစုပေးပို့လာသည့် အပြီးသတ်မူကြမ်းအား သဘောထားမှတ်ချက်ပြန်ကြားပေးပါရန် တင်ပြလာပါသည်။

၂။ အဆိုပါတင်ပြလာမှုနှင့်ပတ်သက်၍သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနအနေဖြင့် စိစစ်ရာ၌ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၃ပါ အချက်များနှင့် ကိုက်ညီမှုရှိကြောင်း စိစစ်တွေ့ရှိရပါသဖြင့် တင်ပြလာသည့် အစီရင်ခံစာကို အတည်ပြုပါကြောင်းနှင့် ကုမ္ပဏီအနေဖြင့် လုပ်ငန်းဆောင်ရွက်ရာတွင် အောက်ပါအချက်များကို အလေးထားလိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်စေရန် လိုအပ်ကြောင်း သဘောထားမှတ်ချက်ပြန်ကြားအပ်ပါသည်-

(က) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်းကတိကဝတ်အားလုံးနှင့်စည်းကမ်းချက်များကို အပြည့်အဝ အကောင်အထည်ဖော်ရမည့်အပြင် ယင်း၏ကိုယ်စား စီမံကိန်းကို ဆောင်ရွက်ပေးသူ ကန်ထရိုက်တာနှင့် လက်ခွဲ

ဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာများ အားလုံးက စီမံကိန်းအတွက် လုပ်ငန်းများဆောင်ရွက်ရာတွင်သက်ဆိုင်ရာဥပဒေ၊နည်းဥပဒေများ၊ ဤလုပ်ထုံးလုပ်နည်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စည်းကမ်းချက်များအားလုံးကို အပြည့်အဝလိုက်နာဆောင်ရွက်ရန်၊

(ခ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်နိုင်မှုများကို လျော့ချမည့် နည်းလမ်းများ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များ၊ ၎င်းနှင့်ဆက်စပ်သည့် အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် နည်းလမ်းများ အပါအဝင်ဆောင်ရွက်မည့် ကိစ္စရပ်များအားလုံးကို အတည်ပြုထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ဖော်ပြထားသည့်အတိုင်း လိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ဂ) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် အစီအစဉ်ခွဲများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များအတွက် လုံလောက်သည့် ရန်ပုံငွေထားရှိသုံးစွဲရန်နှင့်၎င်းအစီအစဉ်များကို အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်းများဖွဲ့စည်းဆောင်ရွက်ရန်၊

(ဃ) စီမံကိန်းအဆိုပြုသူသည် အတည်ပြုထားသည့်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို အများပြည်သူသိရှိနိုင်စေရေး ထုတ်ဖော်ကြေငြာရန်၊

(င) ဒေသခံပြည်သူများ (stakeholders) နှင့်စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်းတို့၏အကြံပြုချက်နှင့်လိုလားချက်များအား အလေးထားပေါင်းစပ်ဆောင်ရွက်ရန်၊

(စ) စီမံကိန်းအဆိုပြုသူသည် အောက်ဖော်ပြပါစံချိန်စံညွှန်းပါ ပြဋ္ဌာန်းချက်များအတိုင်း လိုက်နာဆောင်ရွက်ရန်၊

(၁) အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)၊

(၂) WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environment Air Emissions and Ambient Air Quality of International Finance Corporation, 2007၊ Environmental, Health, and Safety Guidelines: General EHS Guide: Environmental Noise Management, IFC, 2007 ၊ Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008၊ International Association for Impact Assessment (IAIA) NOAA Screen Quick Reference Table, 2004 ၊ WHO's Guidelines for Drinking Water Quality, 2011 ၊ U.S. Environmental

Protection Agency Office of Noise Abatement and Control: Information on Levels of Envrionmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (1975) စသည့် နိုင်ငံတကာ စံချိန်စံညွှန်းများနှင့်လမ်းညွှန်ချက်များ၊

(၃) အပြည်ပြည်ဆိုင်ရာဘဏ္ဍာရေးကော်ပိုရေးရှင်း (IFC) ၏ Performance Standards on Environmental and Social Sustainability (January1 st, 2012)၊ Environmental , Health and Safety General Guidelines (April 30th 2007) ၊ Environmental , Health and Safety Guidelines for Thermal Power Plants (December 19th 2008)၊

(ဆ) စီမံကိန်းတည်ဆောက်မှုဒီဇိုင်းသည် ဖွဲ့စည်းပုံဒီဇိုင်းအတွက် ယူရိုကုဒ်၊ ရေကြောင်းဖွဲ့စည်းပုံနှင့် တူးမြောင်းဒီဇိုင်းအတွက်စသည့် ဒီဇိုင်းကုဒ်များ၊ စံနှုန်းများနှင့် လမ်းညွှန်ချက်များကို လိုက်နာဆောင်ရွက်ရန်၊

(ဇ) စီမံကိန်းဧရိယာအတွင်းရှိ အပင်၊ သတ္တဝါ မျိုးစိတ်များကို စစ်တမ်းကောက်ယူပြီး မျိုးသုဉ်းနိုင်သော မျိုးစိတ်များတွေ့ရှိပါက ကာကွယ်ရေးစိမ့်မြေနှင့် ဒီရေတော ဧရိယာအတွင်းသို့ ပြောင်းရွှေ့ပေးရန်၊

(ဈ) DSEZ ပြင်ပတွင် ဆုံးရှုံးသွားသော ဒီရေတောဧရိယာများကို ပြန်လည်အစားထိုးပေးလျော်ရန် ဒီရေတောဧရိယာများ အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ည) စီမံကိန်းဧရိယာပတ်လည်တွင် စိမ်းလန်းသော ကြားခံဇုန်ကို အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

(ဋ) ဆူညံမှုဖြစ်ပေါ်ရာနေရာတွင် အလုပ်လုပ်ကိုင်နေသော ဝန်ထမ်းများအတွက် နားစိုများ ထောက်ပံ့ပေးရန်နှင့် ယာယီအသံကာတံတိုင်းများ တပ်ဆင်ပေးရန်၊

(ဌ) သောင်တူးဖော်ခြင်းမှ စုပုံလာသော အနည်အနှစ်များကြောင့် ရေနေသတ္တဝါများ ထိခိုက်မှုလျော့နည်းစေရေးဆောင်ရွက်ရန်နှင့် ဆိပ်ကမ်းအနီးတွင်နေထိုင်သော ဒေသတွင်းငါးဖမ်းသမားများအား ဆောက်လုပ်ရေးလုပ်ဆောင်မှုအချိန်ဇယားနှင့် သောင်တူးဖော်ခြင်းလုပ်ငန်းဧရိယာတို့၏ သတင်းအချက်အလက်များကို ဖြန့်ဝေရန်၊

(ဍ) စက်သုံးဆီများ ပင်လယ်အတွင်းသို့ ဖိတ်ကျမှုမရှိစေရန် စစ်ဆေးထိန်းသိမ်းခြင်း၊ အနည်အနှစ်များ ပင်လယ်အတွင်းသို့ လျှံကျမှုမရှိစေရန် HD(Hopper Dredger) နှင့် CSD (Cutting Suction Dredger) တို့ကို စစ်ဆေးထိန်းသိမ်းခြင်းတို့ ဆောင်ရွက်ရန်၊

(ဃ) ကမ်းလွန်ဆောက်လုပ်ရေးဧရိယာပတ်လည်တွင် အမှတ်အသားများနှင့် သတိပေး အမှတ်အသားများ (ဆောက်လုပ်ရေးဧရိယာမှ မီတာ ၂၀၀) ကို တပ်ဆင်ရန်နှင့် ရေကြောင်းသွားလာမှုဧရိယာတွင် လုံလောက်သော ရေကြောင်းမှတ်ဘောများထား ရှိပြီး ရေကြောင်းသွားလာမှု တူးမြောင်းနှင့် ဆိပ်ကမ်းနယ်နိမိတ်ကို ရှင်းလင်းစွာ ဖော်ပြရန်၊

(ဏ) သင်္ဘောမှ စွန့်ပစ်သော အညစ်အကြေးများကို MARPOL နှင့်အညီ သင့်တော် သော ထိန်းချုပ်မှုများပြုလုပ်ရန်၊

(တ) စီမံကိန်း ကမ်းရိုးတန်းလမ်း၏ အခြေအနေကို ပုံမှန်စစ်ဆေးခြင်း၊ ပြင်ဆင်ခြင်း၊ ပြုပြင်ခြင်းတို့ဆောင်ရွက်ရန်၊

(ထ) ဒေသခံပြည်သူများ၏ အကူအညီလိုအပ်ချက်ကို ထောက်ပံ့ပေးနိုင်ရန် CSR အစီ အစဉ်ဆောင်ရွက်ရန်၊

(ဒ) ပိတ်သိမ်းမှုအစီအစဉ် မစတင်ခင် ၃ လနှင့် ပိတ်သိမ်းမှုပြီးစီးသည့် အချိန်တွင် ကမ်းလွန်အဆောက်အဦးများအနီးရှိ ကမ်းရိုးတန်း ရေအရည်အသွေးနှင့် အဏ္ဏဝါ ဂေဟစနစ်တို့ကို စောင့်ကြည့်ရန်၊

(ဓ) လုပ်ငန်းပိတ်သိမ်းမှု ပြီးစီးသွားလျှင် ဟင်းလင်းပြင်မြေအား ဒီရေတောများ စိုက် ပျိုးခြင်း၊ ဆိပ်ကမ်းဧရိယာကို အာဏာပိုင်များအား လွှဲပြောင်းပြီး အသုံးပြုစေရန် သက်ဆိုင်ရာ အာဏာပိုင်များ၊ ဒေသခံ ပြည်သူများနှင့် ဆွေးနွေးညှိနှိုင်းရန်၊

(န) စီမံကိန်းမတည်ဆောက်မီနှင့် တည်ဆောက်ဆဲကာလအတွင်း Grievance Redress Mechanism ကို ပြင်ဆင်ရန်၊

(ပ) ဆုံးရှုံးသွားသော ဒီရေတောဧရိယာများကို ပြန်လည်အစားထိုးပေးလျော်ရန် ဒီရေ တောပြန်လည်စိုက်ပျိုးတည်ထောင်မည့် လုပ်ငန်းအစီအစဉ်အသေးစိတ်ကို ပြန်လည် တင်ပြရန်၊

(ဖ) စီမံကိန်းဧရိယာပတ်လည်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Greening plan ကို ပြန်လည်တင်ပြရန်၊

(ဗ) အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်းလုပ်ငန်းစဉ်အား ၂၀၁၇ ခုနှစ်အတွင်း တစ်ကြိမ်ဆောင်ရွက်ရန်၊

(ဘ) ဒေသခံပြည်သူများ (stakeholders) နှင့်စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်း တို့၏ အကြံပြုချက်နှင့်လိုလားချက်များအား အလေးထားပေါင်းစပ်ဆောင်ရွက်ရန်၊

(မ) ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးမှုအစီရင်ခံစာကို သယံဇာတ နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ (၆) လတစ်ကြိမ် တင်ပြရန်၊

(ယ) ဆက်လက်လုပ်ဆောင်ရန်ရှိသည့် EIA လုပ်ငန်းစဉ်များ (ဥပမာ primary data ကောက်ယူခြင်း၊ သတင်းအချက်အလက်နှင့် အစီရင်ခံစာများ တင်ပြခြင်း၊ Management Plans များတင်ပြခြင်း စသဖြင့်) ကို EIA followup အစီရင်ခံစာအဖြစ် စုစည်းတင်ပြရန်၊

(ရ) ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုသည့် အစီရင်ခံစာကို (၆) လတစ်ကြိမ် သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြရန်နှင့်အများပြည်သူ သိရှိနိုင်စေရေး ထုတ်ဖော်ကြေငြာရန်။

ပြည်ထောင်စုဝန်ကြီး(ကိုယ်စား)
(ဝင်းဇော် ၊ ဒုတိယအမြဲတမ်းအတွင်းဝန်)

မိတ္တူကို

ညွှန်ကြားရေးမှူးချုပ်
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

Myandawei Industrial Estate Company Limited

The Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

No: (Forest) 3 (2)/16(D) (3578/2017)

Date: 7th November, 2017

To

Dawei Special Economic Zone Committee

Subject: Matter about submitting to reply the confirmation for Environmental Impact Assessment-ESIA Report of Small Port Project which plan to implement at DSEZ Initial Phase

Reference: Letter No. Hta Wa-1/DSEZ/2017 (116), dated on 1-9-2016 by DSEZ Management Committee

Letter No. 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 with complete response of review team members comments of Myandawei Industrial Estate Co., Ltd for Small Port Project, which plan to implement at DSEZ Initial Phase, together with reference letter (2) of by DSEZ Management Committee, for Small Port Project 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 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.
    b) 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.
    c) Project developer needs to establish the committees which need to control the implementation of EMP and sub-EMP, control budget for monitoring plan.
    d) Project developer has to announce the final Environmental Impact Assessment Report to public.
    e) Need to connect continuously with stakeholders. Need to emphasis their comments and suggestion.
    f) Project developer has to follow the following standard,
        1) National Environmental Quality (Emission) Guidelines (2015)

2) International standard: WHO Ambient Air Quality Guidelines stated on Environmental, Health and Safety Guidelines: Environmental Air Emissions and Ambient Air Quality of International Finance Corporation, 2007, Environmental, Health, and Safety Guidelines: General EHS Guide: Environmental Noise Management, IFC, 2007, Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008, International Association for Impact Assessment (IAIA) NOAA Screen Quick Reference Table, 2004, WHO's Guidelines for Drinking Water Quality, 2011, U.S. Environmental Protection Agency Office of Noise Abatement and Control: Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (1975), etc.
3) Performance Standards on Environmental and Social Sustainability (January 1st, 2012), Environmental, Health and Safety General Guidelines (April 30th 2007), Environmental, Health and Safety Guidelines for Thermal Power Plants (December 19th 2008) of International Finance of Corporation (IFC).

g) Need to follow Eurocode for project structural design, design code, standards and guidelines for maritime structure and canal design.
h) If endangered flora and fauna species are found, they should be moved to protected swamps and mangrove areas.
i) Green buffer zone needs to implement in surrounding project area.
j) Provide ear plugs or ear muffs to workers operating in the excessive noise areas.
k) The dredging activities need to mitigate the impact to marine ecology and provide information on the construction schedule and dredging area to local fishermen living near the port.
l) Check and maintenance all machine and equipment to prevent oil leakage into sea and check and maintenance HD (Hopper Dredger) and Cutting Suction Dredger (CSD) to ensure that no sediment overflow into the sea.
m) Install signs and warning signs that can be clearly seen (200 meter from the construction area) to show the boundary of offshore construction areas.
n) The port operation office will need to enforce appropriate controls on the discharge of ship wastes in line with MARPOL.
o) Costal road needs maintenance, repair and setting up regularly.
p) Corporate Social Responsibility need to implement.
q) The project developer/contractor must monitor the coastal water quality and marine ecology around offshore facilities at least 3 months prior to demolition activities and after demolition complete.

r) Developer should design with discuss with concerned authority and local villagers to management on the open land after demolition complete.
s) Grievance Redress Mechanism has to prepare during pre-construction and construction phase.
t) Detail mangrove reforestation plan should be implement for losing area of mangrove forest.
u) Greening plan around project area should be present.
v) Another public consultation meeting should implement in 2017.
w) Need to connect continuously with stakeholders. Need to emphasis their comments and suggestion.
x) ESIA report must submit to MONREC in every 6 months.
y) Continuous process of EIA (eg. Primary data collection, information and report submission, management plan submission) needs to submit as a EIA followup report.
z) Project developer must submit Monitoring Report to ECD and announce to public in every (6) months.

Signature

Behalf of Union Minister
Win Zaw, Vice Permanent
Secretary

Cc to;
- Director
- Environmental Conservation Department

Myandawei Industrial Estate Company Limited

MYANDAWEI INDUSTRIAL ESTATE COMPANY LIMITED

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စာအမှတ် - MIE ၀၂/၂၀၁၈

၂၀၁၈ခုနှစ် ဧပြီလ ၃၀ရက်
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ရုံးအမှတ် (၁၉)
နေပြည်တော်၊ မြန်မာ

ရည်ညွှန်းချက်။ ဦးလှမောင်သိန်း
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန

အကြောင်းအရာ။ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) တွင် အကောင်အထည်ဖော်တည်ဆောက်မည့် ဆိပ်ကမ်းငယ် စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် EMP နှင့် RAP ပါဝင်သော) တင်ပြခြင်း

သို့
ဦးအုန်းဝင်း

Myandawei Industrial Estate Company Limited (MIE)၏ ညွှန်ပြချက်များနှင့် TEAM Consulting Engineering and Management Co., Ltd. မှ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံး လုပ်နည်း (၂၀၁၅ခုနှစ်၊ ဒီဇင်ဘာလ ၂၉ ရက်နေ့)နှင့်အညီ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း (ESIA) ကိုပြင်ဆင်ပြီး Myandawei Industrial Estate Company Limited မှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန (ECD) သို့ ၂၀၁၇ခုနှစ် မေလ ၂၉ ရက်နေ့တွင် တရားဝင် တင်သွင်း ခဲ့ပါသည်။.

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

က။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှု ဆန်းစစ်ခြင်း (ESIA) အားပြီးမြောက်မှန်ကန်ကြောင်း ထောက်ခံ အတည်ပြုပါသည်။

ခ။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) သည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနံပါတ် အပါအဝင် မြန်မာနိုင်ငံ၏ ဥပဒေများနှင့်အညီ အတိအကျလိုက်နာ ပြင်ဆင်ထားကြောင်း တာဝန်ယူ အတည်ပြုခြင်းနှင့် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၆ခုနှစ် မတ်လ ၂၂ရက်တွင်အသိအမှတ်ပြုခဲ့ပြီး ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန(ECD) မှ အသိအမှတ်ပြုသက်သေလက်မှတ် စာအမှတ် EIA - ၂/၂ (၁၃၁/၂၀၁၇) ကို ၂၀၁၇ခုနှစ် ဇန်နဝါရီလ ၃၀ရက်တွင် ရရှိခဲ့ပါသည်။

ဂ။ ယခုစီမံကိန်းသည် Myandawei Industrial Estate Company Limited မှ အကောင်အထည် ဖော်သော ဆိပ်ကမ်းငယ် စီမံကိန်းဖြစ်ပြီး (က) EIA တွင် ပါဝင်ရမည့် ကတိကဝတ်များနှင့် တာဝန်ဝတ္တရားများ (ခ) အစီအစဉ်အားလုံးနှင့် အမျိုးမျိုးသော အစိတ်အပိုင်းများအတွက် အကန့်အသတ်မဲ့ခြင်း၊ ထိခိုက်မှုရှောင်ရှားခြင်း၊ လျှော့ချခြင်းနှင့် 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 ပြစ်ဒဏ်ပေးလျော်ခြင်း တို့ကို သဘောတူ လက်ခံပြီး သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC)မှ သတ်မှတ်သော ကုန်ကျစရိတ်များနှင့် သင့်တော်သော ပြုပြင်မှုများအတွက် Myandawei Industrial Estate 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 Myandawei Industrial Estate Company Limited မှ တာဝန်ယူလုပ်ပိုင်ခွင့်ရထားပြီး လက်မှတ်ရေးထိုးခွင့် ခွင့်ပြုချက်ပေးအပ်သော ရှေ့နေ၏ အာဏာနှင့် အောက်ဖော်ပြရာနေရာတွင် တာဝန်ရှိသူတစ်ဦးမှ အတိအလင်း လက်မှတ်ရေးထိုးလိုက်ပါသည်။

....

မှ Myandawei Industrial Estate Company Limited

အမည် Dr.Somchet Thinaphong

ရာထူး မန်နေးဂျင်း ဒါရိုက်တာ

MYANDAWEI INDUSTRIAL ESTATE COMPANY LIMITED

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Reference No. MIE 02 / 2018

30th April 2018

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

Attn: U Hla Maung Thein
Environmental Conservation Department

Re: Environmental and Social Impact Assessment Report in respect of the Dawei SEZ Initial Phase Development of Small Port Project (the "ESIA including EMP and RAP")

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 Myandawei Industrial Estate Company Limited (MIE) and formally submitted by Myandawei Industrial Estate Company Limited to Environmental Conservation Department (ECD) under letter dated 29th May 2017.

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

a. Endorse and confirm to Ministry of Natural Resource 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 22nd March 2016 as approved by Ministry of Natural Resource and Environmental Conservation/MONREC on 30th January 2017 as evidenced by No. EIA-2/2 (131/2017) and

c. Confirm and undertake to Ministry of Natural Resource and Environmental Conservation/ MONREC that the project company established by Myandawei Industrial Estate Company Limited in respect of the Small Port 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 Resource and Environmental Conservation/MONREC and payment of any applicable penalties under the law or under the project's concession agreement and its appendixes, Myandawei Industrial Estate Company Limited shall be responsible to Ministry of Natural Resource 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 Resource 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 Myandawei Industrial Estate 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: Myandawei Industrial Estate Company Limited
Name: Dr.Somchet Thinaphong
Title: Managing Director

ဆိပ်ကမ်းငယ်စီမံကိန်း

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။
အပိုင်း ၃.၂ - မြန်မာနိုင်ငံ၏ ပေါ်လစီနှင့် ဥပဒေဆိုင်ရာ မူဘောင်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအတွက် ဥပဒေမူဘောင်များကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၁ - ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အခြေခံများအတွက် ပေါ်လစီနှင့် ဥပဒေဆိုင်ရာ မူဘောင်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ပေါ်လစီ (၁၉၉၄)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်း ရေး နည်းဥပဒေ (၂၀၁၄) တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၂ - ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့် စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) နှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည် အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တို့ကို လိုက်နာဆောင်ရွက် သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၃ - လူမှုရေး ထိခိုက်မှု စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြတို့ကို လိုက်နာသွားမည် ဖြစ်ပါသည်။ *<u>ပတ်ဝန်းကျင်ကာကွယ်ခြင်းနှင့် သက်ဆိုင်နေသော ဥပဒေ</u>* • ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) • ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄) • အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု)လမ်းညွှန်ချက် များ (၂၀၁၅) *<u>လူမှုရေးဆိုင်ရာထိခိုက်ခြင်း စီမံခန့်ခွဲခြင်းနှင့် သက်ဆိုင်နေသော ဥပဒေနှင့် စည်းမျဉ်းများ</u>* • 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

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	• ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂ • ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂၊ ၁၅ နှင့် ၂၀ (စ) • တိုင်းရင်းသားလူမျိုးများ အကျိုးစီးပွား ကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၅ • ကူးစက်ရောဂါများ ကာကွယ်နှိမ်နင်းရေးဥပဒေ (၁၉၉၅) - အပိုဒ် ၅၊ ၈၊ ၉ • 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) • ဆိပ်ကမ်းအာဏာပိုင် ဥပဒေ (၂၀၁၅) - အပိုဒ် ၂၃ *ယဉ်ကျေးမှုအပေါ်ထိခိုက်မှုနှင့် သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ* • ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈) - အပိုဒ် ၁၃၊ ၂၂ • ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂ • ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅) - အပိုဒ် ၁၂၊ ၁၅ နှင့် ၂၀ (စ) *ပတ်ဝန်းကျင်နှင့် ဂေဟဗေဒနှင့် သက်ဆိုင်သော ဥပဒေများနှင့် စည်းမျဉ်းများ* • အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ပေါ်လစီ (၁၉၉၄), • ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) အပိုဒ် - ၇၊ ၁၄၊ ၁၅၊ ၂၄၊ ၂၅၊ ၂၉ • ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ (၂၀၁၄) အပိုဒ် - ၆၈ (က) (ခ) • 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 ရေကြောင်းဖုန် ဥပဒေ (၁၉၇၇) တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၂.၄ - စီမံကိန်းနေရာ အတွက်သီးသန့် ဥပဒေ	• 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 -	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြတို့ကို လိုက်နာသွားမည်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
အပြည်ပြည်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ စာချုပ်များနှင့် သဘောတူညီချက်များ	ဖြစ်ပါသည်။ • အပြည်ပြည်ဆိုင်ရာရေကြောင်းအဖွဲ့အစည်း၏ သဘောတူညီချက် (၁၉၄၈) • အရှေ့တောင်အာရှနှင့် ပစိဖိတ်ဒေသများအတွက် ဓါတ်အားပေးစက်ရုံ ကာကွယ်ရေး သဘောတူညီချက်၊ ရောမ၊ ၁၉၅၆ခုနှစ် • ကမ္ဘာ့ယဉ်ကျေးမှုနှင့် သဘာဝ အမွေအနှစ်များ ကာကွယ်ခြင်းညီလာခံ၊ ပဲရစ်(စ်)၊ ၁၉၇၂ • MARPOL ၇၃/၇၈ (၁၉၇၈) • ကုလသမဂ္ဂ၏ ပင်လယ်ဆိုင်ရာ ဥပဒေ သဘောတူညီချက်၊ ၁၉၈၂ ခုနှစ် • သဘာဝပတ်ဝန်းကျင်နှင့် သဘာဝအရင်းအမြစ်များ ထိန်းသိမ်းရေး အာဆီယံ (ASEAN) သဘောတူညီမှု ၊ ကွာလာလမ်ပူ၊ ၁၉၈၅ • ကုလသမဂ္ဂ ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ညီလာခံ (UNFCCC)၊ နယူးယောက်၊ ၁၉၉၂ခုနှစ် • ဇီဝမျိုးကွဲများဆိုင်ရာ ညီလာခံ၊ ရီယိုဒီ ဂျနေရိုး၊ ၁၉၉၂ခုနှစ် • ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာ ကျိုတိုသဘောတူညီမှု ၊ ကျိုတို၊ ၁၉၉၇ ခုနှစ် • ကာတာဂျီနာ (Catagena) ဇီဝလုံခြုံမှု သဘောတူညီမှုစာချုပ် ကာတာဂျီနာ၊ ၂၀၀၀ ခုနှစ် တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၄.၁ - အမျိုးသားဆိုင်ရာ နှင့် ကမ္ဘာ့အဆင့်အလိုက် အစီအစဉ်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) လက်အောက်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်း ရေးဦးစီးဌာန (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 (DSEZ MC) တို့ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
ဇယား ၃.၄-၁ - ထားဝယ်အထူး စီးပွားရေးဇုန် (DSEZ)မှ 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 • ရင်းနှီးမြှုပ်နှံခြင်းနှင့် ကုမ္ပဏီအုပ်ချုပ်ရေး ဦးစီးဌာန • အကောက်ခွန် ဦးစီးဌာန • ဥပဒေ၊ တရားရုံးနှင့် တရားမျှတမှု ဦးစီးဌာန • မြို့တော်စည်ပင် ဦးစီးဌာန • တနင်္သာရီတိုင်းဒေသကြီး၏ ကိုယ်စားပြုအဖွဲ့အစည်းတို့ဖြစ်ပါသည်။
အပိုင်း ၃.၅.၁ - IFC ၏ စံနှုန်းများနှင့် လမ်းညွှန်ချက်များ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို . လိုက်နာသွားမည် ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်နှင့် လူမှုရေးရေရှည်တည်တံ့မှုဆိုင်ရာ လုပ်ဆောင်မှု စံနှုန်းများ၊ ၂၀၁၂ခုနှစ် ဇန်နဝါရီလ ၁ရက်နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လမ်းညွှန်ချက်များ၊ ၂၀၀၇ခုနှစ် ဧပြီလ ၃၀ရက် တို့ဖြစ်ပါသည်။
အပိုင်း ၃.၅.၂ - ကမ္ဘာ့ဘဏ်	စီမံကိန်းအကောင်အထည်ဖော်သူသည် သန့်ရှင်းသောထုတ်လုပ်မှုများဆီ ဦးတည်သော

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ကမ္ဘာ့ဘဏ်၏ ၁၉၉၈ ခုနှစ်တွင် ထုတ်ပြန်သော ညစ်ညမ်းမှု ကာကွယ်ရေးနှင့် လျော့ချရေး လက်စွဲစာအုပ် (PPAH) ကို လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
ဇယား ၃.၆-၁ သက်ဆိုင်ရာ အပြည်ပြည်ဆိုင်ရာ ပတ်ဝန်းကျင် လမ်းညွှန်ချက်များနှင့် စံနှုန်းများ	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါတို့ကို စီမံခန့်ခွဲပြီး ထိခိုက်မှုများကို ထိန်းချုပ်သွားမည် ဖြစ်ပါသည်။ • ပတ်ဝန်းကျင်လေထု အရည်အသွေး • ပတ်ဝန်းကျင်ဆူညံသံ အဆင့်များ • တုန်ခါမှု • ကမ်းရိုးတန်းရေအရည်အသွေး • အနယ်အနှစ်အရည်အသွေး • မြေအောက်ရေ အရည်အသွေး တို့ဖြစ်ပါသည်။
ဇယား ၃.၆-၂ - အမျိုးသားစံနှုန်း	စီမံကိန်း အကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်လေထု၊ ဆူညံသံအဆင့်နှင့် စွန့်ထုတ်သောအညစ်အကြေးအဆင့်များကို အမျိုးသား စံနှုန်းများဖြစ်သော အောက်ဖော်ပြပါ ပါရာမီတာများနှင့် ကိုက်ညီအောင် ဆောင်ရွက်ရပါမည်။ • Nitrogen Dioxide • PM-10 • Sulfur Dioxide • One Hour LAeq (dBA) (daytime and nighttime) • Biological Oxygen Demand • Chemical Oxygen Demand • Oil and Grease • pH • Total Coliform Bacteria • Total Nitrogen • Total Phosphorus • Total Suspended Solids
အခန်း (၄) - စီမံကိန်းဖော်ပြချက်နှင့် အခြားသော ရွေးချယ်နည်းလမ်းများ	
အပိုင်း ၄.၁ - စီမံကိန်း နောက်ခံ	စီမံကိန်းသည် ထားဝယ်အထူးစီးပွားရေးဇုန် ကနဦးကာလ ဖွံ့ဖြိုးတိုးတက်မှုကဏ္ဍ၏ အခြေခံအဆောက်အဦး ဖွံ့ဖြိုးတိုးတက်မှု လမ်းပမ်းဆက်သွယ်အပိုင်းအတွက် အထောက်အပံ့ဖြစ်ပါသည်။
အပိုင်း ၄.၂ - စီမံကိန်း ယေဘူယျအမြင်	စီမံကိန်းတွင် လက်ရှိဖောက်လုပ်ပြီးသား ၂လမ်းသွားလမ်းအား ထိုင်းနိုင်ငံ အဝေးပြေး ဦးစီးဌာနမှ သတ်မှတ်ထားသော အဆင့်(၄)ရှိသည့် အဝေးပြေးလမ်းဒီဇိုင်း အဆင့်မြှင့်တင်ထားသော လမ်းဖြင့် ဆိပ်ကမ်းငယ်သို့ ဆက်သွယ်ဖောက်လုပ်ထားပါသည်။
အပိုင်း ၄.၃ - စီမံကိန်း ဖွံ့ဖြိုးတိုးတက်ရေးနှင့် အကောင်အထည်ဖော်မည့် အချိန်ဇယား	စီမံကိန်းတည်ဆောက်မှုသည် ၁၅လ ကြာမြင့်မည် ဖြစ်ပြီး ၂၀၁၅ ခုနှစ် ဩဂုတ်လ အစောပိုင်းတွင် ခွင့်ပြုချက်ရရှိခဲ့ပြီး ၂၀၁၇ ခုနှစ်တွင် စီမံကိန်းလည်ပတ်ရန်အတွက် ပြီးစီးမည် ဖြစ်ပါသည်။
အပိုင်း ၄.၄ - စီမံကိန်း အသေးစိတ်နှင့် ဒီဇိုင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် စီမံကိန်းအဓိက အဆောက်အဦးများဖြစ်သည့် ချဉ်းကပ်တူးမြောင်း၊ လိုင်းကာ၊ မြေထိန်းအကာ၊ ကုန်တင်/ချနေရာများကို ဆောက်လုပ်သွားမည် ဖြစ်ပြီး အောက်ဖော်ပြပါတို့ကို လိုက်နာသွားမည် • စီမံကိန်းလမ်း ဘူမိဒီဇိုင်းကို ထိုင်းနိုင်ငံ အဝေးပြေးစံနှုန်း ဖြစ်သော ၂၀၀၄ခုနှစ်တွင် ထုတ်ပြန်သော "အဝေးပြေးနှင့်လမ်းမ ဘူမိဒီဇိုင်း ပေါ်လစီ" AASHTO စံနှုန်းကို လိုက်နာမည် ဖြစ်ပါသည်။ • တံတားများ၏ ဖွဲ့စည်းတည်ဆောက်ပုံဒီဇိုင်းများကို AASHTO LRFD တံတားဒီဇိုင်း ဖော်ပြချက်နှင့် အဝေးပြေးစံနှုန်း HL-၉၃ ကို လိုက်နာမည် ဖြစ်ပါသည်။ • စီမံကိန်းလမ်းကို လမ်းအသုံးပြုခ ကောက်ခံသည့်နေရာများပါဝင်သောစနစ်ဖြင့်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ထိန်းချုပ် လုပ်ဆောင်သွားပါမည်။ • ဆင်ခြေလျှောအသေးစိတ်ဒီဇိုင်း၊ မြေပြိုခြင်းကိုထိန်းချုပ်ခြင်းများအတွက် အောက်ဖော်ပြပါ စံနှုန်းများကို လိုက်နာရပါမည်။ - အာဆီယံ (ASEAN) အဝေးပြေးဒီဇိုင်းစံနှုန်း - AASHTO - မြန်မာနိုင်ငံ၏ နည်းပညာဆိုင်ရာ အဝေးပြေးဒီဇိုင်းစံနှုန်း - အဝေးပြေးစွမ်းရည် လက်စွဲစာအုပ် - ထိုင်းနိုင်ငံ၏ အဝေးပြေးလမ်း ဦးစီးဌာန တို့ဖြစ်ပါသည်။
အပိုင်း ၄.၅ - စီမံကိန်း အခြားရွေးချယ်စရာများ	ဆိပ်ကမ်းငယ်အတွက် အခြားရွေးချယ်စရာ နေရာ (၂) ခုရှိပါသည်။ ၎င်းတို့မှာ - • အခြားရွေးချယ်စရာနေရာ (၁) သည် ပန်ဒအင်မြစ်ဝမှ အတွင်းဘက်နေရာတွင် တည်ရှိပါသည်။ • အခြားရွေးချယ်စရာနေရာ (၂) သည် ပန်ဒအင်မြစ်ဝ၏ အပြင်ဘက် ကမ်းရိုးတန်းရေထဲတွင် တည်ရှိပါသည်။
အပိုင်း ၄.၆ - စီမံကိန်း အခြားရွေးချယ်စရာများအား နှိုင်းယှဉ်ခြင်းနှင့် ရွေးချယ်ခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဆိပ်ကမ်းငယ်နေရာအတွက် အခြားရွေးချယ်စရာ (၁) နှင့် (၂)၏ ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများဖြစ်သော • အဏ္ဏဝါရေ ဂေဟစနစ် • ရေကြောင်းသွားလာမှု • ကမ်းရိုးတန်းရေ အရည်အသွေး စသည်တို့ကို နှိုင်းယှဉ်လေ့လာရပါမည်။
အခန်း (၆) - ထိခိုက်သက်ရောက်မှု ဆန်းစစ်ခြင်းနှင့် လျော့ချရေးနည်းလမ်းများ	
အပိုင်း ၆.၁ - ထိခိုက်မှုနှင့် ဘေးအန္တရာယ် ဆန်းစစ်ခြင်း နည်းလမ်း	စီမံကိန်း အကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံး လုပ်နည်း (၂၀၁၅) နှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည် အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တို့ကို လိုက်နာဆောင်ရွက် သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၆.၂ - စီမံကိန်း အကြိုတည်ဆောက်ရေး ကာလ ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်း အကောင်အထည်ဖော်သူသည် အောက်ဖော်ပြပါ လျော့ချရေးနည်းလမ်းများကို လိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ ဒီရေတော၊ ကမ်းခြေသစ်တောနှင့် ရွံ့နွံအိုင်နေရာများ ပျက်စီးခြင်း စီမံကိန်းနေရာ ရှင်းလင်းမှုများ မပြုလုပ်ခင်တွင် သစ်ပင်ပန်းမန်နှင့် သတ္တဝါမျိုးစိတ်စစ်တမ်းကို ကောက်ခံထားရမည် ဖြစ်ပြီး ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဒီရေတော ပြန်လည်ထူထောင်ရေး အစီအစဉ် လုပ်ဆောင်ရန် သက်ဆိုင်ရာ အာဏာပိုင်များဖြစ်သော သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC)၊ သစ်တောဦးစီးဌာနနှင့် ဒေသခံများနှင့် တွေ့ဆုံဆွေးနွေးရပါမည်။ စီမံကိန်းနေရာ ပတ်လည်တွင် စိမ်းလန်းသော ကြားခံဇုန်ကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ သစ်ပင်ခုတ်ခြင်းကို တတ်နိုင်သမျှနည်းအောင် ဆောင်ရွက်သွားမည်ဖြစ်ပြီး စီမံကိန်းမန်နေဂျာ၏ ခွင့်ပြုချက် မပါဘဲ ခုတ်ထွင်ရှင်းလင်းခြင်း မပြု လုပ်ရပါ။ စီမံကိန်းနေရာရှင်းလင်းခြင်းကြောင့်ထွက်ပေါ်လာသော ဇီဝအမှိုက်များအား စွန့်ပစ်ခြင်း ဇီဝအမှိုက်များတွင် သစ်ပင် ပင်စည်များ၊ အကိုင်း၊ အခက်၊ အလက်နှင့် သစ်ရွက်များ ပါဝင်ပါသည်။ ၎င်းတို့ကို ဆောက်လုပ်ရေးတွင်ပြန်လည်အသုံးပြုခြင်း၊ မီးသွေးဖုတ်ခြင်းနှင့် ထင်းအဖြစ်အသုံးပြုခြင်းတို့ကို ပြုလုပ်အသုံးပြုသွားပါမည်။ ပြန်လည်အသုံးပြု၍မရသော အမှိုက်များကို အရွယ်အစားသေးငယ်အောင် ဖြတ်တောက်၍ စီမံကိန်း၏ သတ်မှတ်ထားသော အမှိုက်ပုံတွင် စွန့်ပစ်ရပါမည်။ မီးရှို့ခြင်းမပြုလုပ်ရပါ။ ကျေးရွာသူ/သားများ၏ အသက်မွေးဝမ်းကြောင်းအပေါ် ထိခိုက်မှုများ စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဒေသခံများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များနှင့်ပူပေါင်းကာ ထိခိုက်ခံစားရသူများအတွက် အသက်မွေးဝမ်းကြောင်း ပြန်လည် ထူထောင်ရေး အစီအစဉ် (LRP) ကို အကောင်အထည်ဖော်သွားမည် ဖြစ်ပါသည်။ ထိခိုက်ခံစားရသော အိမ်ထောင်စု (၁၂) စု၊ ကျေးရွာအုပ်ချုပ်ရေးမှူး၊ ဝပိတက်ရွာမှ

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ကော်မတီများနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များဖြစ်သော သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) တို့နှင့် တွေ့ဆုံဆွေးနွေးကာ ပြန်လည်နေရာချထားပေးမည့် အစီအစဉ်ကို ပြင်ဆင်ရပါမည်။ ဖုန်မှုန့်၊ ဆူညံသံနှင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှုများကြောင့် ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင် အနှောက်အယှက်ပေးမှုများ *ဖုန်မှုန့်* - ဆောက်လုပ်ရေးဧရိယာများနှင့် လမ်းများကို မြေပြင်သိပ်သည်းခြင်းလုပ်ငန်းများ လုပ်ဆောင်နေချိန်တွင် ရေဖြန်းခြင်းအားဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကို လျော့နည်းစေပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းများပြီးစီးသွားသည့်အခါတွင် ထိခိုက်ခံရသောနေရာကို ပြန်လည်ထိန်းသိမ်းခြင်း၊ မြေမျက်နှာပြင်ညှိပေးခြင်းနှင့် ပြန်လည်ထူထောင်ရေးများကို ပြုလုပ်ပေးရပါမည်။ *ဆူညံသံ* - ရွေ့လျားကိရိယာများမှ ထွက်ပေါ်သော ဆူညံသံသည် ထိန်းချုပ်ရန် ခက်ခဲပါသည်။ ဆူညံသံများသော ပတ်ဝန်းကျင်နေရာတွင်လုပ်ကိုင်နေသည့် အလုပ်သမားများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရပါမည်။ ဆိပ်ကမ်းငယ်စီမံကိန်းနှင့် စီမံကိန်းကမ်းခြေလမ်းအတွက် စီမံကိန်းနေရာရှင်းလင်းခြင်းနှင့် မြေဖို့ခြင်းလုပ်ငန်းများမှ ထွက်ပေါ်သော ဆူညံသံကြောင့် ငပိတက်ရွာနှင့် စခန်းသစ်ရွာတွင် ထိခိုက်မှုလျော့နည်းစေရန် ယာယီအသံကာ တံတိုင်းများကို တပ်ဆင်ပေးရပါမည်။ *ဓါတ်ငွေ့ထုတ်လွှတ်မှုကြောင့်ဖြစ်ပေါ်လာသော ထိခိုက်မှု* - လုပ်ငန်းခွင်တွင် အသုံးပြုသော ကိရိယာများကို ထုတ်လုပ်သူ၏ ညွှန်ကြားချက်များအတိုင်း သင့်တော်သော လုပ်ငန်းခွင် အနေအထားတွင် အသုံးပြုပြီး ထိန်းသိမ်းမှုများ ပြုလုပ်ရပါမည်။ စီမံကိန်းတွင် အသုံးပြုသောယာဉ်များကို လမ်းပေါ်အင်ဂျင်တပ်ဆင်အသုံးပြုရပါမည် (အကယ်၍ လမ်းပြင်ပတွင်မောင်းနှင်သော အင်ဂျင်ထက် ထုတ်လွှတ်မှုနည်းခဲ့ပါက)။ ကိရိယာကြီးများနှင့် ယာဉ်ကြီးများမှထွက်ပေါ်သော ဆူညံသံကြောင့် ထိခိုက်ခံရသော စခန်းသစ်ကျေးရွာနှင့် ငပိတက်ကျေးရွာ ဆူညံသံထွက်ပေါ်သော အဓိကဆောက်လုပ်ရေးလုပ်ငန်းများကို နေ့အချိန်တွင်သာ လုပ်ဆောင်ရန် ကန့်သတ်ထားရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်များ၏ အရှိန်နှုန်းသည် တစ်နာရီလျှင် ၄၀ ကီလိုမီတာထက် မကျော်လွန်ရပါ။ ဆောက်လုပ်ရေး ကိရိယာများ၏ ဆူညံသံထွက်ပေါ်မှုကို စာချုပ်ဖော်ပြချက်တွင် ရှင်းလင်းစွာ ဖော်ပြရမည် ဖြစ်ပါသည်။ ရွေ့ပြောင်းမရသော ကိရိယာများကို အသံကာ တံတိုင်းများ တပ်ဆင်ပေးရပါမည်။ EPC ကန်ထရိုက်တာသည် ဆူညံသံထွက်ပေါ်နေသော ကာလတွင် ထိခိုက်ခံစားရသောနေရာ၏ ပတ်ဝန်းကျင်ဆူညံသံအဆင့်ကို အမြဲစောင့်ကြည့် လေ့လာနေရပါမည်။
အပိုင်း ၆.၃ - စီမံကိန်း တည်ဆောက်ဆဲကာလ ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဆောက်လုပ်ရေးလုပ်ငန်းများပြုလုပ်ခြင်းကြောင့် ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်ဆိုင်ရာ အောက်ဖော်ပြပါ ပြဿနာများကို စီမံခန့်ခွဲပြီး လျော့ချရေးနည်းလမ်းများနှင့် ကိုက်ညီအောင် လုပ်ဆောင်ရပါမည်။ ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟာစနစ်အား ထိခိုက်မှု *သောင်တူးခြင်း လုပ်ဆောင်မှုများ* - အနယ်အနှစ်များအား ပြန်လည်ပျံ့နှံ့မှုများ ဖြစ်ပေါ်မှုတွင် အဏ္ဏဝါဂေဟာ ထိခိုက်မှုအား အနည်းဆုံးဖြစ်အောင် နည်းပညာများ အသုံးပြုရပါမည်။ ကန်ထရိုက်တာသည် သောင်တူးဖော်မှုပြုလုပ်ခြင်း၏ ကမ်းရိုးတန်းရေ အရည်အသွေး စံနှုန်းများကို တာဝန်ရှိသူများအား ပေးပို့ထားပြီး သောင်တူးခြင်း လုပ်ဆောင်မှုများပြုလုပ်ချိန် ၃လတွင် သောင်စွန့်ပစ်မှုနေရာအား နေ့စဉ် စောင့်ကြည့်လေ့လာမှုများ ပြုလုပ်ရပါမည်။ အနယ်အနှစ်များ ပို့ဆောင်သော ပိုက်လိုင်းမှ ပျက်စီးမှုများဖြစ်ပေါ်ပြီး အနယ်အနှစ်များ ပင်လယ်ထဲသို့ ဖိတ်စင်မှုမရှိစေရန် နေ့စဉ် စစ်ဆေး ထိန်းသိမ်းမှုများ ပြုလုပ်သွားရပါမည်။ စီမံကိန်းအင်ဂျင်နီယာသည် သောင်တူးဖော်ခြင်းမှ အနယ်အနှစ်များအား ပင်လယ်တွင်း နှင့် သောင်တူးဖော်မှုစွန့်ပစ်ခြင်း ဧရိယာ ပြင်ပတွင် စွန့်ပစ်ခြင်းများကို တင်းကြပ်စွာ ထိန်းချုပ်တားဆီးရပါမည်။ စွန့်ပစ်မှု - ကမ်းရိုးတန်းရေအရည်သွေးနှင့် အဏ္ဏဝါဂေဟာအား ထိခိုက်မှုအား ကာကွယ်ရန်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ကမ်းလွန်တွင် စွန့်ပစ်ခြင်းကို ရှောင်ရှားရပါမည်။ သောင်တူးဖော်၍ ရရှိလာသော သဲများကို ကုန်းတွင်းပိုင်း ကနဦးကာလ စက်မှုဇုန်တိုးချဲ့ရန်အတွက် အသုံးပြုသွားမည် ဖြစ်ပါသည်။
	အဏ္ဏဝါဂေဟစနစ် - သောင်တူးဖော်ခြင်းပြုလုပ်ချိန်တွင် အဏ္ဏဝါ ဂေဟစနစ်ကို စောင့်ကြည့်လေ့လာခြင်းများ ပြုလုပ်ပြီး ရလဒ်များကို သက်ဆိုင်ရာ တာဝန်ရှိသူများအား ပေးပို့ပါမည်။ ဆောက်လုပ်ရေးအချိန်ဇယားနှင့် သောင်တူးဖော်ခြင်းဧရိယာကို စီမံကိန်း အနီးတွင်နေထိုင်သော ဒေသခံရေလုပ်သားများအား သတင်းအချက်အလက်များ ပေးပို့ရပါမည်။ သန္တာကျောက်တန်းများနှင့် အဏ္ဏဝါအရင်းအမြစ်များအား ကာကွယ်ရန် ဒေသခံအာဏာပိုင်များနှင့် ပူးပေါင်း ဆောင်ရွက်ရပါမည်။
	ရေဆိုးများထွက်ရှိခြင်း
	မြေမျက်နှာပြင်ရေစီးဆင်းမှု - စီမံကိန်းနေရာရှင်းလင်းခြင်း လုပ်ဆောင်မှုများကို ခြောက်သွေ့ရာသီတွင် လုပ်ဆောင်ခြင်းအားဖြင့် နောက်ကျိမှုများပြားသော မြေမျက်နှာပြင် ရေစီးဆင်းမှုကို ရှောင်ရှားနိုင်မည် ဖြစ်ပါသည်။ ညစ်ညမ်းမှုများဖြစ်ပေါ်စေသော အရာများကို အဖုံးအကာဖြင့်ထားခြင်းဖြင့် မြေမျက်နှာပြင်ရေစီးဆင်းမှုတွင် ညစ်ညမ်းမှုများ လျော့ကျစေပါသည်။ ဆိပ်ကမ်းငယ်နှင့် ကမ်းရိုးတန်းလမ်း ဖောက်လုပ်ဆောက်လုပ်ခြင်း နေရာများတွင် ယာယီရေမြောင်းများပြုလုပ်ပြီး မြေမျက်နှာပြင်စီးဆင်းရေများကို သိမ်းဆည်းခြင်းဖြင့် ပင်လယ်တွင်းသို့ မြေမျက်နှာပြင် စီးဆင်းရေများကို တားဆီး နိုင်ပါသည်။
	လူသုံးရေဆိုး - မိလ္လာရေများကို လူသုံးရေဆိုးများနှင့် ခွဲကာ မိလ္လာကန်ထဲသို့ စွန့်ပစ်ရပါမည်။ မီးဖိုချောင်နှင့် ထမင်းစားဆောင်မှ ရေဆိုးများကို အဆီစစ်ကန်သို့ စွန့်ပစ်ပြီးမှသာ ထိန်းသိမ်းကန်ထဲသို့ ပို့ဆောင်ရပါမည်။ ထိန်းသိမ်းကန်ကို ဟိုက်ဒရောလစ် ထိန်းသိမ်းချိန် (၇) ရက်ရှိသည့် အောက်ဆီဂျင်ပေးသည့်ကန်အဖြစ် ဒီဇိုင်းပြုလုပ် ထားပါသည်။
	ဆေးကြောရေ - ကွန်ကရစ်ဆေးကြောရေနှင့် ကားဘီးဆေးကြောရေများကို ကွန်ကရစ်အနယ်ကျကန် သို့စွန့်ပစ်ရပါမည်။ ထိန်းသိမ်းကန်မှရေများကို ဆောက်လုပ်ရေး နေရာတွင် ဖုန်မှုန့်များ သိပ်သည်းအောင် ရေဖြန်းခြင်း၊ သစ်ပင်များရေလောင်းခြင်း၊ ကွန်ကရစ်များဆေးကြောခြင်းနှင့် ကားဘီးများ ဆေးကြောရာတွင် အသုံးပြုသွားမည် ဖြစ်ပါသည်။
	ဆောက်လုပ်ရေးလုပ်ငန်းခွင်မှ စွန့်ပစ်ပစ္စည်းများထွက်ရှိခြင်း
	ယေဘူယျလိုအပ်ချက်များ - အကျိုးဖြစ်ထွန်းစေသော စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှုစနစ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရန်လိုအပ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းစွန့်ပစ် ပစ္စည်းများကို စွန့်ပစ်ရာနေရာတွင် အမျိုးအစားခွဲရန် လိုအပ်သည်။ ဆောက်လုပ်ရေး လုပ်ငန်းစွန့်ပစ်ပစ္စည်းများကို လုပ်ငန်းခွင်အတွင်း/အပြင်တွင် စုပုံစွန့်ပစ်ခြင်းကို တားဆီးပြီး အမှိုက်မီးရှို့ခြင်းကို ခွင့်မပြုရပါ။
	ဆောက်လုပ်ရေးနှင့် လုပ်ငန်းခွင်ရှင်းလင်းခြင်း စွန့်ပစ်ပစ္စည်းများ - စီမံကိန်းရှင်းလင်းခြင်း စွန့်ပစ်ပစ္စည်းများကို သက်ဆိုင်ရာအာဏာပိုင်များ၏ ခွင့်ပြုချက်ဖြင့် ရွေးချယ် သတ်မှတ်ထားသော သင့်တော်သည့်အမှိုက်ပုံနေရာတွင် စွန့်ပစ်ရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်း စွန့်ပစ်ပစ္စည်းများကို သိမ်းဆည်းခြင်းနှင့် စွန့်ပစ်ခြင်းများကို လက်ရှိပြုလုပ်နေသော စည်ပင်သာယာမှ တာဝန်ယူ စွန့်ပစ်ရမည် ဖြစ်ပါသည်။
	ဆောက်လုပ်ရေးလုပ်ငန်းမဟုတ်သော စွန့်ပစ်ပစ္စည်း - ဆောက်လုပ်ရေးလုပ်ငန်းမဟုတ်သော စွန့်ပစ်ပစ္စည်းများကို ဆောက်လုပ်ရေးလုပ်ငန်းမှ စွန့်ပစ်ပစ္စည်းများနှင့် အတူတကွ စွန့်ပစ်မည် ဖြစ်ပါသည်။ အဖုံးအကာပါပြီး လုံလောက်သောပမာဏ အမှိုက်ပုံးများကို ထောက်ပံ့ပေးထားရမည် ဖြစ်ပြီး နေ့စဉ် အမှိုက်သိမ်းဆည်းပေးရပါမည်။
	အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ - အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများကို အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများကို ကိုင်တွယ်ခွင့် လိုင်စင်ရထားသော ကန်ထရိုက်တာမှသာ ကိုင်တွယ်ရမည် ဖြစ်ပါသည်။ စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုစနစ်သည်

ကာတိကာဝတ်ဖော်ပြရာနေရာ	ကာတိကာဝတ်
	အစိုးရမှ ချမှတ်ထားသော စည်းမျဉ်းများနှင့် ကိုက်ညီရပါမည်။ <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။ ဆောက်လုပ်ရေးလုပ်ငန်း လမ်းတစ်လျောက်လုံးတွင် သတိပေးဆိုင်းဘုတ်များကို တပ်ဆင်ထားပေးရပါမည်။ ဒေသခံလမ်းများပေါ်တွင် ဆောက်လုပ်ရေးလုပ်ငန်းများ လုပ်ကိုင်မှုကြောင့် ဖြစ်ပေါ်လာသော မတော်တဆထိခိုက်မှုများ လျော့နည်းအောင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို အကောင်အထည်ဖော်ဆောင်ရန် လိုအပ်ပါသည်။ ဆောက်လုပ်ရေး လုပ်ငန်းများကြောင့် ယာဉ်သွားလာမှုများ ပြောင်းလဲလာခြင်းအတွက် ဒေသခံများအား သတိပေးကာ ယာဉ်အန္တရာယ်အခြေအနေ သတိပေးသင်္ကေတများထားရှိပေးခြင်းနှင့် ယာဉ်အန္တရာယ် ကင်းဝေးစေရန် အခြား သင့်တော်သော နည်းလမ်းများကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ငပိတက်ရွာမှ ဒေသခံအလုပ်သမားများနှင့် ဆောက်လုပ်ရေးကာတွင် ဒေသခံများ လမ်းဖြတ်ကူးရန် အတွက် သင်္ကေတများ ထားရှိပေးရပါမည်။ လုပ်ငန်းခွင်ကားများ ရပ်နားခြင်းအတွက် အလုပ်သမားများအား ယာဉ်ရပ်နားပေါ်လစီကို အကောင်အထည်ဖော်ပြင်ဆင်ထားခြင်း အားဖြင့် ဒေသခံလမ်းများတွင် ယာဉ်ရပ်နားခြင်းကို ရှောင်ရှားနိုင်မည် ဖြစ်ပါသည်။ <u>ရေကြောင်းသွားလာမှု</u> အများနှင့်သက်ဆိုင်သော သင်္ဘောသွားလာမှု စနစ်နှင့် သတင်းအချက်အလက်ဆိုင်ရာ စီမံခန့်ခွဲမှုစနစ် (VTS MIS) သည် ယခု ဆိပ်ကမ်းအတွက် လိုအပ်ပါသည်။ ကမ်းလွန်ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နယ်နိမိတ် (ဆောက်လုပ်ရေးလုပ်ငန်းနေရာမှ မီတာ ၂၀၀အကွာ) ကို ရှင်းလင်းစွာသိမြင်အောင် သတိပေးဆိုင်းဘုတ်များ တပ်ဆင်ပေးရပါမည်။ ငါးဖမ်းသင်္ဘောများအား ကမ်းလွန်ဆောက်လုပ်ရေးလုပ်ငန်းနေရာ နယ်နိမိတ်အား အသိပေး ထားရပါမည်။ ကမ်းလွန်ဆောက်လုပ်ရေးနေရာတွင် လုပ်ကိုင်နေသော ဝန်ထမ်းများ အားလုံးအား ရေကြောင်းဘေးအန္တရာယ်ကင်းရှင်းမှုအတွက် လေ့ကျင့် သင်ကြားပေးမှုများ ပြုလုပ်ပေးရပါမည်။ သင်္ဘောများထိန်းသိမ်းခြင်းနှင့် စစ်ဆေးခြင်းများသည် ဘေးအန္တရာယ် ကင်းရှင်းမှုလမ်းညွှန်ချက်များကို လိုက်နာရပါမည်။ ရေကြောင်း မတော်တဆဖြစ်ပွားမှုများ နှင့် ပတ်သက်၍ အရေးပေါ်အစီအစဉ်ကို အကောင်အထည်ဖော် ပြင်ဆင်ထားရန် လိုအပ်ပါသည်။ <u>ဒေသခံကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုံခြုံရေး</u> *ကျန်းမာရေး အန္တရာယ်* - အလုပ်သမားအားလုံးသည် အဓိကကျန်းမာရေး ဆေးစစ်ချက်ဖြစ်သော ကူးစက်ရောဂါ ဆန်းစစ်ခြင်းကို ဝန်ထမ်းမဖြစ်ခင်စစ်ဆေးခံ ရပါမည်။ ထို့အပြင် ကျန်းမာရေး စစ်ဆေးမှုကို တစ်နှစ်လျှင်တစ်ကြိမ် ပြုလုပ်ပေးရပါမည်။ အလုပ်သမားများအား ကျန်းမာရေးနှင့် သန့်ရှင်းမှု၊ ကူးစက်ရောဂါများအကြောင်း ဗဟုသုတ တိုးပွားစေရန် သင်ကြားမှုများ ပြုလုပ်ပေးပါမည်။ *လုံခြုံရေး အန္တရာယ်* - EPC ကန်ထရိုက်တာသည် စီမံကိန်းနေရာ လုံခြုံရေးနှင့် မူးယစ်ဆေးဝါးသုံးစွဲမှု ပိတ်ပင်ခြင်း အပါအဝင် အခြားသော သင့်တော်သော နည်းလမ်းများကို အကောင် အထည်ဖော် ဆောင်ရွက်သွားရမည် ဖြစ်ပါသည်။ <u>ဒေသခံလူထု</u> *ဒေသခံစီးပွားရေး* - ဆောက်လုပ်ရေးလုပ်ငန်းခွင်နှင့် နီးကပ်သော ကျေးရွာများမှ ကျေးရွာသူ/သားများကို ဦးစားပေး အလုပ်ခန့်အပ်သွားမည် ဖြစ်ပါသည်။ အတွေ့အကြုံနှင့် အရည်အချင်းပေါ်မူတည်၍ လစာနှုန်းထားသတ်မှတ်သွားမည်ဖြစ်ပြီး အလုပ်ခန့်ထားမှု အစီအစဉ်သည် မျှတပြီး ပွင့်လင်းမြင်သာမှု ရှိရမည် ဖြစ်ပါသည်။ ဝန်ထမ်းခန့်အပ်ခြင်းသည်

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	အလုပ်သမား ဥပဒေ၊ လူမှုဖူလုံရေး ဥပဒေနှင့် အခကြေးငွေပေးချေရေး ဥပဒေတို့အပြင် အခြားသော သက်ဆိုင်ရာ ဥပဒေများ၊ စည်းမျဉ်းများနှင့် ကိုက်ညီရန် လိုအပ်ပါသည်။ ဆောက်လုပ်ရေး အစိတ်အပိုင်းများနှင့် ပတ်သတ်သည့် သတင်းအချက်အလက်များကို ဆိုင်းဘုတ်များထောင်၍ ကြေငြာခြင်းနှင့် ကျေးရွာအုပ်ချုပ်ရေးမှူးအား အသိပေးခြင်းများ ပြုလုပ်ရပါမည်။ ဒေသခံများ စိတ်ဝင်စားမှု၊ ဒေသခံများ၏ ပြဿနာများကို စစ်တမ်းများ ကောက်ယူရပါမည်။ *အသက်မွေးဝမ်းကြောင်း* - စီမံကိန်းအကြို/တည်ဆောက်ရေးကာလတွင် ဖော်ပြထားသော အကောင်အထည် ဖော်ပေးမည့် အသက်မွေးဝမ်းကြောင်း အသိပညာများကို ဆက်လက် လုပ်ကိုင်ခြင်း အားဖြင့် ကောင်းမွန်သော အသက်မွေးဝမ်းကြောင်း ဖြစ်ပေါ်စေပါမည်။ *အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများ* - ဆောက်လုပ်ရေးကိရိယာများ သယ်ဆောင်ရာတွင် ယာဉ်အသွားအလာများသောအချိန်ကို ရှောင်ရှား၍ သယ်ဆောင် ရပါမည်။ အများသုံးလမ်းများတွင် ယာဉ်ကြီးများ သွားလာမှုအရှိန်ကို ကန့်သတ်ထား ခြင်းဖြင့် လမ်းမကြီးပျက်စီးမှုများ လျော့နည်းနေစေပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင် တွင် ရေထောက်ပံ့ပေးခြင်း၊ အမှိုက်သိမ်းဆည်းခြင်း၊ မိလ္လာကန်နှင့် ကျန်းမာရေး ဝန်ဆောင်မှုများပါဝင်မည် ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းသုံးယာဉ်များကြောင့် လမ်းများပျက်စီးမှု ဖြစ်ပေါ်လာလျှင် စီမံကိန်းမှ အမြန်ဆုံး ပြင်ဆင်ပေးရမည် ဖြစ်ပါသည်။ ဒေသခံများကို ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့် ယာဉ်သွားလာမှုများပြားလာနိုင်သည် ကို အကြောင်းကြားရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် ရှေးဦးသူနာပြု ဝန်ဆောင်မှုကို ထားရှိပေးရပါမည်။ *ရိုးရာနှင့် ယဉ်ကျေးမှု* - စီမံကိန်းအားလုံးရှိလူတိုင်းသည် ဒေသခံများ၏ ရိုးရာ၊ ယဉ်ကျေးမှုများနှင့် ထုံးစံများအား လိုက်နာရန်လိုအပ်ပါသည်။ စီမံကိန်းအကောင်အထည် ဖော်သူသည် ဒေသခံများ နှင့် ကောင်းမွန်သော ဆက်ဆံ ရေးရှိပြီး ဒေသခံများ၏ ရိုးရာ ယဉ်ကျေးမှုပွဲတော်များကို တက်ကြွစွာ ပါဝင်ထောက်ပံ့ ပေးရပါမည်။
အပိုင်း ၆.၄ - စီမံကိန်း လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့်ကာလ ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလ လုပ်ဆောင်မှုများကြောင့် ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်ဆိုင်ရာ အောက်ဖော်ပြပါ ပြဿနာများကို စီမံခန့်ခွဲပြီး လျော့ချရေးနည်းလမ်းများနှင့် ကိုက်ညီအောင် လုပ်ဆောင်ရပါမည်။ <u>ပတ်ဝန်းကျင်လေထုအရည်အသွေး</u> ဆာလဖာပါဝင်မှုနည်းသော ဒီဇယ်ဆီကို အသုံးပြုရပါမည်။ ယာဉ်များ၏ အိတ်ဇောမှ ထွက်သော မီးခိုးငွေ့များ လျော့နည်းစေရန် ပုံမှန်စစ်ဆေးခြင်းနှင့် ထိန်းသိမ်းခြင်းကို ပြုလုပ်ရပါမည်။ ဆိပ်ကမ်းသို့ချဉ်းကပ်လာသော သင်္ဘောများ၏ အမြန်နှုန်းကို လျော့ချခြင်း အားဖြင့် နိုက်ထရိုဂျင်အောက်ဆိုဒ် ထွက်ရှိမှုကို သိသာစွာလျော့ချနိုင်ပါသည်။ လုပ်ငန်း လည်ပတ်ဆောင်ရွက်သည့်ကာလတွင် လေထုအရည်အသွေးကို စောင့်ကြည့်လေ့လာပြီး ထိန်းချုပ်ရပါမည်။ <u>ဆူညံသံ</u> စီမံကိန်း၏ ယာဉ်များနှင့် သင်္ဘောများအမြန်နှုန်းကို တစ်နာရီတွင် ၄၀ကီလိုမီတာ ကန့်သတ်ထားခြင်း၊ နေ့အချိန်တွင်သာ သယ်ယူပို့ဆောင်ရေးများ ပြုလုပ်ခြင်း၊ ယာယီအသံကာတံတိုင်းများ တပ်ဆင်ခြင်းနှင့် လမ်းမျက်နှာပြင်အား ကောင်းမွန်သော အခြေအနေဖြစ်အောင် ထိန်းသိမ်းခြင်းတို့ဖြစ်ပါသည်။ <u>သောင်တူးဖော်ခြင်း ထိန်းသိမ်းမှု</u> တည်ဆောက်ဆဲကာလတွင် အကောင်အထည်ဖော်သော လျော့ချနည်းလမ်းများအတိုင်း လိုက်နာဆောင်ရွက်ရပါမည်။ <u>ကမ်းရိုးတန်းတည်ရှိမှု</u> စီမံကိန်း ကမ်းခြေတွင် ပို့ချသဲများ (မြေသြဇာပြည့်ဝသော) နှစ်စဉ် ပို့ချမှုကြောင့် ဆုတ်ယုတ်လာခဲ့သည် ကမ်းရိုးတန်းအနေအထားကို စစ်ဆေးကာ တောင့်တင်းသော

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ဖွံ့ဖြိုးစည်းပုံရှိသည့် ကမ်းခြေတိုက်စားမှုကာကွယ်ရေး သို့မဟုတ် ဆုတ်ယုတ်မှုလိုင်းကို ပြင်ဆင်ထားရပါမည်။ ရေဆိုး *သင်္ဘောစွန့်ပစ်ပစ္စည်း* - ဆိပ်ကမ်းလုပ်ငန်းလည်ပတ်မှုရုံးမှ သင်္ဘောစွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်ခြင်းကို MARPOL ၏ သတ်မှတ်ချက်များနှင့်အညီ စွန့်ပစ်ပြီး အရေးပေါ် အစီအစဉ်များ ပြင်ဆင်ထားရပါမည်။ ဆီနှင့် ဓာတုဓါတ်ပစ္စည်းများ ဖိတ်စင်ခြင်းများကို ထိန်းချုပ်ပြီး အစီရင်ခံစနစ်ကို လုပ်ဆောင်သွားရပါမည်။ *ဆိပ်ကမ်းရေဆိုးများ* - လူသုံးမိလ္လာရေဆိုးနှင့် အခြားသော ဆိပ်ကမ်းရေဆိုး များကို ဗဟိုရေဆိုးစုဆောင်းရေးနှင့် သန့်စင်စနစ်ဖြင့် သန့်စင်သွားမည် ဖြစ်ပါသည်။ ရေဆိုးများကို ပြန်လည်အသုံးပြုပြီး ဆိပ်ကမ်းမှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းအားလုံးနှင့် ရေဆိုးများကို ကပ္ပလီပင်လယ်အတွင်းသို့ စွန့်ပစ်ခြင်းကို တားဆီးရပါမည်။ စွန့်ပစ်ပစ္စည်း *အသုံးပြုပြီးသား စက်သုံးဆီ* - စက်ပြုပြင်စခန်းနှင့် အင်ဂျင်ထိန်းသိမ်းခြင်း အဆောက် အအုံများမှ အသုံးပြုပြီးသား စက်သုံးဆီနှင့် အင်ဂျင်ဝိုင်များအား စုဆောင်းသိမ်းဆည်းခြင်း လုပ်ဆောင်မှုများကို တပ်ဆင်ထားရပါမည်။ ကန်ထရိုက်တာသည် စက်သုံးဆီများနှင့် အဆီများ ဖယ်ရှားစွန့်ပစ်မှုကို ပြုလုပ်ရပါသည်။ *ရေဆိုးသန့်စင်ခြင်းစက်ရုံမှ စွန့်ထုတ်လိုက်သော အစိုင်အခဲ စွန့်ပစ်ပစ္စည်းများ* - Activated sludge process နှင့် လေသွင်းအလွှာပါးစနစ်မှ အော်ဂဲနစ် အစိုင်အခဲကို ထုတ်လုပ်ပြီး ၎င်းအပို အစိုင်အခဲများကို အမှိုက်အဖြစ်စွန့်ပစ်ခြင်း သို့မဟုတ် သစ်ပင်များအတွက် မြေသြဇာအဖြစ် အသုံးပြုခြင်းများ ပြုလုပ်ရပါမည်။ *အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ* - အန္တရာယ်ရှိသော အမှိုက်များ အမျိုးအစားခွဲခြင်း၊ စုဆောင်းခြင်း၊ ထိန်းသိမ်းခြင်း၊ လွှဲပြောင်းခြင်းနှင့် စွန့်ပစ်ခြင်းစသော အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲခြင်းကို ဆိပ်ကမ်းလုပ်ငန်းလည်ပတ်မှုရုံးမှ တာဝန်ယူ လုပ်ဆောင်ပြီး အစိုးရမှ ချမှတ်ထားသော စည်းမျဉ်းများနှင့်အညီ လုပ်ဆောင်ရပါမည်။ *အမှိုက်* - ဆိပ်ကမ်းဧရိယာတွင် အစိုးရမှ အမှိုက်သိမ်းဆည်းခြင်း ဝန်ဆောင်မှုများ မပြုလုပ်ပေးနိုင်လျှင် တစ်နေ့လျှင် (၂) တန်အောက် အမှိုက်ထွက်ရှိနှုန်းရှိပါက ရိုးရှင်းသော အမှိုက်စီမံခန့်ခွဲမှုစနစ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရပါမည်။ အမှိုက်သိမ်းဆည်း သော အမှိုက်ပုံးများကို သင့်တော်သော အရေအတွက်ထားရှိပေးပြီး ဆိပ်ကမ်းဧရိယာ အတွင်း သို့မဟုတ် အပြင်ရှိ အမှိုက်စွန့်ပြစ်ရာ အမှိုက်ပုံအား နေ့စဉ် သိမ်းဆည်း ပေးရပါမည်။ ကုန်လမ်းသွားလာခြင်း ဆိပ်ကမ်းလုပ်ငန်းလည်ပတ်ဆောင်ရွက်စဉ်ကာလတွင် ပိုမိုများပြားလာသော ယာဉ်သွား လာမှုများကြောင့် ဒေသခံလမ်းများ ဘေးအန္တရာယ်ကင်းရှင်းရေး ပိုမိုကောင်းမွန်လာစေရန် တိုးတက်မှုအစီအစဉ်ကို ပြင်ဆင် အကောင်အထည်ဖော်ရန်လိုအပ်ပါသည်။ စီမံကိန်း ကမ်းရိုးတန်းလမ်းတွင် ငပိတက်ကျေးရွာသူ/သားများနှင့် ကလေးငယ်များ လမ်းဖြတ်ကူးရန် အတွက် တံတားကို ငပိတက်ရွာတွင် ထည့်သွင်းတည်ဆောက်ပေးသွားမည် ဖြစ်ပါသည်။ ဆိပ်ကမ်းဧရိယာတွင် ယာဉ်သွားလာမှု အမြန်နှုန်းကို တစ်နာရီတွင် ကီလိုမီတာ (၄၀)ထက် မပိုစေရန် ဒေသခံ အုပ်ချုပ်ရေးများမှ စည်းမျဉ်းသတ်မှတ်ကာ ကန့်သတ်ထားရပါမည်။ ရေကြောင်းသွားလာခြင်း ဆိပ်ကမ်း၏ သင်္ဘောသွားလာခြင်း စီမံခန့်ခွဲမှုစနစ်တွင် ရေကြောင်းသွားလာမှု ဘေးအန္တရာယ်ကင်းရှင်းခြင်းနှင့် ဆိပ်ကမ်းသို့ ဝင်/ထွက်သော သင်္ဘောများ၏ မှတ်တမ်းတင်ထားရှိခြင်းတို့ပါဝင်သည်။ ရေကြောင်းဧရိယာတွင် ချဉ်းကပ်လမ်းကြောင်းနှင့် ဆိပ်ကမ်းနယ်နိမိတ်အား သိသာထင်ရှားစေရန် ဖော်ယာများအလုံအလောက်ဖြင့် သတ်မှတ်ပြထားရမည် ဖြစ်ပါသည်။ ဒေသခံလူထုဖွံ့ဖြိုးတိုးတက်ရေး အထောက်အပံ့များ စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဒေသခံခေါင်းဆောင်များ၊ သက်ဆိုင်ရာ

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	အာဏာပိုင်များနှင့် တိုင်ပင်ဆွေးနွေးကာ ဒေသခံများအတွက် အကျိုးအညီများကို ထောက်ပံ့ပေးမည့် CSR အစီအစဉ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။
အပိုင်း ၆.၅ - လုပ်ငန်းရပ်စဲခြင်း ကာလ ထိခိုက်မှု သတ်မှတ်ခြင်း၊ ဆန်းစစ်ခြင်းနှင့် လျော့ချခြင်း	စီမံကိန်းအကောင်အထည်ဖော်သူသည် လုပ်ငန်းရပ်စဲခြင်းကာလ လုပ်ဆောင်မှုများကြောင့် ဖြစ်ပေါ်လာသော ပတ်ဝန်းကျင်ဆိုင်ရာ အောက်ဖော်ပြပါ ပြဿနာများကို စီမံခန့်ခွဲပြီး လျော့ချရေးနည်းလမ်းများနှင့် ကိုက်ညီအောင် လုပ်ဆောင်ရပါမည်။ <u>ပတ်ဝန်းကျင်တွင် အနှောက်အယှက်များဖြစ်ပေါ်စေသည့် ဖုန်မှုန့်နှင့် ဆူညံသံ</u> စီမံကိန်း ဖျက်သိမ်းခြင်းကဏ္ဍများအတွက် သယ်ယူပို့ဆောင်ရေး ပြုလုပ်ခြင်းဖြင့် ဖုန်မှုန့်ထွက်ပေါ်မှုဖြစ်ပေါ်စေပါသည်။ ဖုန်မှုန့်များသိပ်သည်းစေရန် ရေဖြန်းခြင်းဖြင့် ဖုန်မှုန့်ထွက်ရှိမှု၏ ၇၅% ကို လျော့နည်းစေပါသည်၊ ရွှေ့လျားကိရိယာများမှထွက်ရှိသော ဆူညံသံများသည် ထိန်းချုပ်ရခက်ပါသည်။ ကာကွယ်နည်းလမ်း အနေဖြင့် ၎င်းဆူညံသံများထွက်ပေါ်သောလုပ်ငန်းခွင်တွင် လုပ် ကိုင်နေသည့် အလုပ်သမားများအား နားအကာအကွယ်များ ထောက်ပံ့ပေးရပါမည်။ ထို့အပြင် အနီးဆုံးကျေးရွာဖြစ်သော ငပိတက်ကျေးရွာနှင့် စခန်းသစ်ကျေးရွာသို့ ဆူညံသံထိခိုက်မှုများ လျော့နည်းစေရန် မိတ်အားပေး စက်ရုံဖျက်သိမ်းမှုနေရာတွင် ယာယီအသံကာ တံတိုင်းများကာရံပေးရပါမည်။ <u>ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်</u> ကမ်းလွန်အဆောက်အဦးများ ဖြိုဖျက်ခြင်းကို ရှောင်ရှားရပါမည်။ လှိုင်းကာအနီးတွင် ဒီရေတောများ စိုက်ပျိုးခြင်းအားဖြင့် ကမ်းလွန်အဆောက်အဦးများ ဖြိုဖျက်သည့်အခါတွင် ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ် ထိခိုက်မှုများ လျော့ကျစေနိုင်ပါသည်။ စီမံကိန်းအကောင်အထည်ဖော်သူ/ကန်ထရိုက်တာသည် ကမ်းလွန်အဆောက်အဦးများအား ဖြိုဖျက်ခြင်းမပြုလုပ်ခင် (၃)လ မှစ၍ ဖြိုဖျက်ခြင်းပြီးစီးသည်အထိ ကမ်းရိုးတန်းရေ အရည်အသွေးနှင့် အဏ္ဏဝါဂေဟစနစ်အား စောင့်ကြည့်လေ့လာခြင်းမျာ ပြုလုပ်ရပါမည်။ <u>စွန့်ပစ်ပစ္စည်း</u> ကန်ထရိုက်တာသည် အမှိုက်အမျိုးအစားခွဲမှု လုပ်ထုံးလုပ်နည်းအတိုင်း အမှိုက်ခွဲခြားမှုစနစ်ကို အလုပ်သမားအားလုံးကို အတိအကျ လိုက်နာစေပါမည်။ အမှိုက်အမျိုးအစားခွဲခြားမှုကို အထောက်အပံ့ဖြစ်သော သင့်တော်သော အမျိုးအစားဖြင့် ပြုလုပ်ထားသော အနေတော်အရွယ်အစားရှိသည့် အမှိုက်ပုံးများကို အလုံအလောက်ထားရှိပေးပါမည်။ ပြန်လည်အသုံးပြုခြင်း၊ ပြန်လည်အသုံးချခြင်းနှင့် စွန့်ပစ်ရမည့် အမှိုက်ဟူ၍ အမျိုးအစားများ ခွဲခြားထားရပါမည်။ <u>မြေယာပြန်လည်ပြုပြင်ခြင်း</u> စီမံကိန်းအကောင်အထည်ဖော်သူသည် သက်ဆိုင်ရာ အာဏာပိုင်များ၊ ဒေသခံများနှင့် တိုင်ပင်၍ စီမံကိန်းဖျက်သိမ်းပြီးလျှင်၎င်းဧရိယာအား စီမံခန့်ခွဲရန် တိုင်ပင်ဆွေးနွေးရပါမည်။ ဟင်းလင်းပြင်မြေများကို ဒီရေတောပြန်လည်တူထောင် ရေးလုပ်ငန်းများ၊ စိုက်ပျိုးမြေများ အကောင်အထည်ဖော်ပေးခြင်း၊ ဆိပ်ကမ်းနေရာ အဖြစ်အသုံးပြုခြင်းနှင့် ဒေသခံအာဏာပိုင်များထံမှ အသုံးပြုရန် ခွင့်ပြုချက် ယူရပါမည်။
အခန်း (၈) - ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များ	
အပိုင်း ၈.၆.၁ - စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ခွဲ (အကြိုတည်ဆောက်ရေး ကာလနှင့် တည်ဆောက်ဆဲကာလများ)	စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် ကန်ထရိုက်တာခွဲသည့် အောက်ဖော်ပြပါ စီမံခန့်ခွဲမှုနှင့် အစီအစဉ်ခွဲများကို အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ (၁) ယေဘူယျဆောက်လုပ်ရေး (၂) ဒီရေတောစီမံခန့်ခွဲခြင်း၊ (၃) လေထုအရည်အသွေး စီမံခန့်ခွဲခြင်း၊ (၄) ဆူညံသံ (၅) သောင်တူးဖော်ခြင်းနှင့် စွန့်ပစ်ခြင်း၊ (၆) စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း (စီမံကိန်းနေရာရှင်းလင်းခြင်းနှင့် ဆောက်လုပ်ရေးစွန့်ပစ်ပစ္စည်း)၊ (၇) ရေဆိုး စီမံခန့်ခွဲခြင်း (၈) အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲခြင်း၊ (၉)

ကတိကဝတ်ဖော်ပြချက်နေရာ	ကတိကဝတ်
	ရေကြောင်းစီမံခန့်ခွဲခြင်း (၁၀) ယာဉ်သွားလာမှု စီမံခန့်ခွဲခြင်း (၁၁) လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းမှု စီမံခန့်ခွဲခြင်း (၁၂) သဘာဝအရင်းအမြစ် အသုံးချမှု စီမံခန့်ခွဲခြင်း၊ (၁၃) လူမှုပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲခြင်း၊ (၁၄) ရိုးရာယဉ်ကျေးမှု စီမံခန့်ခွဲခြင်း (၁၅) ရေကြီးခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံးအတွက် အရေးပေါ်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် (၁၆) မတော်တဆမီးလောင်မှုအတွက် အရေးပေါ် စီမံခန့်ခွဲမှု အစီအစဉ် တို့ဖြစ်ပါသည်။
အပိုင်း ၈.၆.၂ - လျော့ချရေး နည်းလမ်းများ အကောင် အထည်ဖော်မှု အစီအစဉ် (အကြိုတည်ဆောက် ရေးကာလ/တည်ဆောက်ဆဲ ကာလများ)	ကန်ထရိုက်တာသည် ပိုင်ရှင်၏ တည်ဆောက်ဆဲကာလ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (CEMP) ကို သေချာစွာပြင်ဆင်အဆင့်မြှင့်တင်ပြီး ကန်ထရိုက်တာ၏ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို စီမံကိန်းပိုင်ရှင်၏ စီမံကိန်းမန်နေဂျာမှ အတည်ပြုပေးရပါမည်။ ကန်ထရိုက်တာသည် ကန်ထရိုက်တာ၏ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို ဆောက်လုပ်ရေးအကြံပေးများနှင့် ထားဝယ်အထူး စီးပွားရေးဇုန်စီမံခန့်ခွဲမှု ကော်မတီ၏ စီမံကိန်းမန်နေဂျာ၏ စောင့်ကြည့်လေ့လာမှု များနှင့် အကောင်အထည်ဖော်ရပါမည်။
အပိုင်း ၈.၆.၃ - စောင့်ကြည့် လေ့လာခြင်း၊ အကဲဖြတ် ခြင်းနှင့် အစီရင်ခံခြင်း (အကြို တည်ဆောက်ရေး ကာလ/ တည်ဆောက်ဆဲ ကာလ)	ကန်ထရိုက်တာသည် စောင့်ကြည့်လေ့လာခြင်း အစီရင်ခံစာတစ်ခုကို စီမံကိန်းအတွင် အသုံးပြု၍ အခြားအစီရင်ခံစာတစ်ခုကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) နှင့် အခြားသက်ဆိုင်ရာ အာဏာပိုင်များအား တစ်နှစ်လျှင် နှစ်ကြိမ်ပြုစု တင်ပြရပါမည်။
အပိုင်း ၈.၆.၈ - အများပြည်သူ တိုင်ပင်ဆွေး နွေးခြင်းနှင့် ထုတ်ဖော် ကြေငြာခြင်း (အကြို တည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလ)	CEMP သည် အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော်ကြော်ငြာခြင်းတွင် သုံးပွင့်ဆိုင် ကော်မတီကို အဓိကအဖြစ် တင်ပြရပါမည်။
အပိုင်း ၈.၆.၉ - အငြင်းပွားမှု တိုင်းကြားဖြေရှင်းရေး (အကြို တည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲကာလ)	စီမံကိန်းအကောင်အထည်ဖော်သူသည် အကြိုတည်ဆောက်ရေးကာလ/ တည်ဆောက်ဆဲ ကာလများအတွက် အငြင်းပွားမှုတိုင်ကြားဖြေရှင်းရေးအစီအစဉ်ကို ပြင်ဆင်ရပါမည်။
အပိုင်း ၈.၇.၁ - စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ခွဲ (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် ကန်ထရိုက်တာခွဲသည့် အောက်ဖော်ပြပါ စီမံခန့်ခွဲမှုနှင့် အစီအစဉ်ခွဲများကို အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ (၁) ဒီရေတောပြန်လည်စိုက်ပျိုးခြင်း စီမံခန့်ခွဲခြင်း၊ (၂) သောင်တူးဖော်ခြင်းနှင့် စွန့်ပစ်မှု စီမံခန့်ခွဲခြင်း၊ (၃)ရေကြောင်း စီမံခန့်ခွဲခြင်း၊ (၄) ကမ်းရိုးတန်းတိုက်စားမှု စီမံခန့်ခွဲခြင်း၊ (၅) လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းခြင်း၊ (၆) လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း၊ (၇) roll-over နှင့် လျှပ်စစ်မီးပွားဖြစ်ပေါ်မှုတားဆီးမှု စီမံခန့်ခွဲခြင်း၊ (၈) သင်္ဘောသွားလာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး စီမံခန့်ခွဲခြင်း၊ (၉) လုပ်ငန်းလည်ပတ်မှု ဝန်ထမ်း စီမံခန့်ခွဲခြင်း၊ (၁၀) ရေကြီးခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံးအတွက် အရေးပေါ်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် (၁၁) မတော်တဆမီးလောင်မှုအတွက် အရေးပေါ် စီမံခန့်ခွဲမှု အစီအစဉ် တို့ဖြစ်ပါသည်။
အပိုင်း ၈.၇.၄ - စောင့်ကြည့်လေ့လာခြင်း၊ အကဲဖြတ်ခြင်းနှင့် အစီရင်ခံခြင်း (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	ကန်ထရိုက်တာသည် စောင့်ကြည့်လေ့လာခြင်း အစီရင်ခံစာတစ်ခုကို စီမံကိန်းတွင် အသုံးပြု၍ အခြားအစီရင်ခံစာတစ်ခုကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) နှင့် အခြားသက်ဆိုင်ရာ အာဏာပိုင်များအား တစ်နှစ်လျှင် နှစ်ကြိမ်ပြုစု တင်ပြရပါမည်။

ကတိကဝတ်ဖော်ပြရက်နေရာ	ကတိကဝတ်
အပိုင်း ၈.၇.၇ - အများပြည်သူ တိုင်ပင်ဆွေးနွေးခြင်းနှင့် ထုတ်ဖော် ကြေငြာခြင်း (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	တည်ဆောက်ဆဲကာလတွင် တည်ထောင်ထားသော သုံးပွင့်ဆိုင် ကော်မတီသည် ဆက်လက်ထိန်းသိမ်းမှုများ ပြုလုပ်သွားရမည် ဖြစ်ပါသည်။ သို့သော် ၄င်းတို့သည် ဒေသထောက်ပံ့ရေးအစီအစဉ်များ အကောင်အထည်ဖော်ရာတွင် အကြံဉာဏ်များ ထောက်ပံ့ပေးရပါမည်။ သုံးပွင့်ဆိုင်ကော်မတီ၏ အစိတ်အပိုင်းနှင့် လုပ်ငန်းတာဝန် များကို သတ်မှတ်ထားပြီးဖြစ်ပါသည်။
အပိုင်း ၈.၇.၈ - အငြင်းပွားမှု တိုင်းကြားဖြေရှင်းရေး (လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့် ကာလ)	စီမံကိန်း အကောင်အထည်ဖော်သူသည် လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့်ကာလများ အတွက် အငြင်းပွားမှုတိုင်ကြားဖြေရှင်းရေးအစီအစဉ်ကို ပြင်ဆင်ရပါမည်။
အပိုင်း ၈.၈	စီမံကိန်းအကောင်အထည်ဖော်သူသည် ဆိုးရွားသော ရာသီဥတု၊ ဘေးအန္တရာယ်များ၊ သဘာဝတိမ်းမှောက်ခြင်းနှင့် မတော်တဆမီးလောင်ကျွမ်းမှုအတွက် အရေးပေါ်အခြေအနေ အစီအစဉ်နှင့် ဘေးအန္တရာယ်များကို ကာကွယ်ခြင်းနှင့် ထိခိုက်မှုလျော့နည်းစေသော နည်းလမ်းများကို ပြင်ဆင်ဆောင်ရွက်ထားရန် လိုအပ်ပါသည်။

မှ Myandawei Industrial Estate Company Limited

အမည် Dr.Somchet Thinaphong

ရာထူး Managing Director

SMALL PORT 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 Policy	The Project Proponent will formulate an environmental and social management policy to guide its environmental and social management during the construction and operation phase.
Section 3.2: Policy and Legal Framework in Myanmar	The Project Proponent will adherence to compliance with and legal framework of the environmental management.
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), and Environmental Conservation Rules (2014) is to make it truly effective.
Section 3.2.2: Regulations related to Environmental Impact Assessment and Management	The Project Proponent will comply the Environmental Impact Assessment Guidelines (2014), Environmental Impact Assessment Procedure (2015), and National Environmental Quality (Emission) Guidelines (2015).
Section 3.2.3: Laws and Regulations related to Environmental Protection and Social Impact Management	The Project Proponent will follow: *Law Related to Environmental Protection* • Environmental Conservation Law (2012) • Environmental Conservation Rules (2014) • National Environmental Quality (Emission) Guidelines (2015) *Laws Related to Social Impact Management* • 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)) • 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) ,

Commitment Source	Commitment
	• 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)). • The Port Authority Law (2015) (section 23) *Laws and Regulations Related to Cultural Impact* • The Protection and Preservation of Cultural Heritage Regions Law (1998) (section 13 and 22) • The Protection and Preservation of Antique Objects Law (2015) (section 12) • The Protection and Preservation of Ancient Monuments Law (2015) (section 12, 15 and 20(f)) *Laws and Regulations Related to Environmental and Ecological Concerned* • 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	• 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: • Convention on the International Maritime Organization (1948) • Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome (1956) • The Convention for the Protection of the World Culture and Natural Heritage, Paris (1972) • MARPOL 73/78 (1978) • United Nations Convention on the Law of the Sea (1982) • ASEAN Agreement on the Conservation of Nature and Nature Resources, Kuala Lumpur (1985) • United Nations Framework Convention on Climate Change, New York (1992) (UNFCCC) • Convention on Biological Diversity, Rio de Janeiro (1992) • Kyoto Protocol to the Convention on Climate Change, Kyoto (1997) • Catagena Protocol on Biosafety, Cartagena (2000)
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.
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

Commitment Source	Commitment
	Management Committee.
Table 3.4-1: Roles and Responsibilities of Relevant Departments Functioning in DSEZ	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 the Performance Standards on Environmental and Social Sustainability (January 1, 2012) and Environmental, Health and Safety-General Guidelines (April 30, 2007).
Section 3.5.2: World Bank	The Project Proponent will follow the World Bank's Pollution Prevention and Abatement Handbook (1998) (PPAH) Toward Cleaner Production.
Table 3.6-1: Relevant International Environmental Guidelines and Standards	The Project Proponent will manage and control environmental impacts as followings: • Ambient Air Quality • Ambient Noise Levels • Vibration • Coastal Water Quality • Sediment Quality • Groundwater Quality
Table 3.6-2: National Standards	The Project Proponent will manage and control impacts of ambient air, noise levels and effluents levels to comply with the National Standards such as parameters: • Nitrogen Dioxide • PM-10 • Sulfur Dioxide • One Hour LAeq (dBA) (daytime and nighttime) • Biological Oxygen Demand • Chemical Oxygen Demand • Oil and Grease • pH • Total Coliform Bacteria • Total Nitrogen • Total Phosphorus • Total Suspended Solids
Chapter 4 Project Description and Alternatives	
Section 4.1: Project Background	Project is part of the infrastructure development under the initial phase development of DSEZ, will involve physical development in sectors-transport.
Section 4.2: Project Overview	Project will upgrade the existing two-lanes un-paved road based on Class 4 of the Highway Design Standards of the Department of Highways (DOH), Thailand, and construct a small port to serve.
Section 4.3: Project Development and Implementation Schedule	Project's construction will take about 15 months to complete, the concession agreement was obtained in early August 2015, and should be complete for operation in 2017.
Section 4.4: Project Details	The Project Proponent constructs the major facilities such as access

Commitment Source	Commitment
and Design	channel, breakwater, revetment and stock yard, and the project will follow: • The geometric design of the Project road follows the Standard of Highways in Thailand with AASHTO Standard "A Policy on Geometric Design of Highways and Street" 2004. • The structural design of bridges and viaduct structures is based on AASHTO LRFD Bridge Design Specifications and HL-93 standard highway loading. • The Project road will be operated as a toll road with controlled access and toll booths. • The detailed design of slope stability and erosion control, various design standards are adopted as follows; - ASEAN Highway Design Standard - AASHTO - Myanmar Technical Standard for Highway Design - Highway Capacity Manual - Department of Highway, Thailand
Section 4.5: Project Alternatives	There are two alternative sites for the Small Port as follows: • Alternative Site 1 will be located inside the estuary reach of Pan Din In River. • Alternative Site 2 is in the coastal water outside the Pan Din In River estuary.
Section 4.6: Comparison and Selection of Project Alternatives	The Project Proponent will focus on the potential impacts of Alternative Site 1 to Alternative Site 2 for Small Port as follows: • Marine Ecology • Navigation • Coastal Water Quality
Chapter 6 Impact and Risk Assessment and Mitigation Measures	
Section 6.1: Impact and Risk Assessment Methodology	The Project Proponent will follow Environmental Impact Assessment Procedure (2015), Environmental Impact Assessment Guidelines (2014), and National Environmental Quality (Emission) Guidelines (2015).
Section 6.2: Pre-Construction Phase Impact Identification, Assessment and Mitigation	The Project Proponent will comply the mitigation measures as follow: Degrade of Mangrove, Beach Forest and Swamp Areas Survey and record flora and fauna species in the Project site before land clearing and consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers, design and implement a mangroves reforestation program in areas outside DSEZ. Created the green buffer zones around the boundaries of the project site. Avoided tree cutting and cannot be done without prior permission from the project manager. Biomass Waste Disposal by Clearance of Vegetation Cover The biomass waste will consist of trunks, stems, branches and leaves that use for construction, charcoal making, and firewood. The remaining unusable components should be reduced in size and disposed of in the Project site by land fill. No open burning should be allowed. Impacts on Livelihood of Villagers Design and implement a long term of livelihood restoration program (LRP) for the affected people in consultation with them and the concerned authorities. Prepare a detailed of resettlement plan in consultation with the 12 affected households, village headman and committees of Nga Pitat Village, and concerned authorities including MONREC. Environmental Disturbances Caused by Dust, Noise and Gaseous Emissions *Fugitive Dust*: Spray water at around the construction areas, and access roads during the compaction, could reduce 75% of the dust.

Commitment Source	Commitment
	Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of construction or disturbance. *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. Temporary sound barrier should be setting during land clearance and land filling small port and project coastal road to reduce noise impact to Sakhanthit and Nga Pitat Villages. *Impact from Gaseous Emission*: Maintain all equipment and vehicles in proper working conditions according to the manufacturer's specifications. Perform on-site material hauling with trucks equipped with on road engines (if determined to be less emissive than the off-road engines). Noise from Heavy Equipment and Vehicle affected to Sakhanthit and Nga Pitat Village 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 performances 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.
Section 6.3: Construction Phase Impact Identification, Assessment and Mitigation	The Project Proponent will comply the mitigation measures, and environmental issues to be manage during construction work as follow: Affected to Coastal Water and Marine Aquatic Ecology *Dredging Activities*: Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments. Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities, then send to all concerned agencies. Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea. Project engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the seas and outside designated disposal area. *Disposal*: Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology. Use the dredged materials for on-land disposal within the Initial Industrial to the maximum extent. *Marine Ecology*: Monitoring marine ecology especially during dredging activities and the results must be sent to all concerned agencies. Provide information on the construction schedule and dredging area to local fisherman living near the port. Coordinate with local authorities to protect coral and other marine resources. Wastewater will be Generated *Surface Runoff*: The site preparation activities should be carried out during the dry season to avoid the problem of surface runoff with high turbidity. To prevent contamination of the surface runoff, potential contamination sources will be covered with roof. Construct a temporary drainage system to collect the surfaced runoff from the construction area for both small port and project coastal road to avois the discharge of surface runoff into the open sea. *Domestic Wastewater*: Toilet wastes will be separated from grey water or salvage, and discharge into septic tank. Kitchen and canteen wastewater will be discharged into oil and grease trap tank before draining into a retention pond. The retention pond will be designed as an oxidation pond with hydraulic retention time of about 7 days.

Commitment Source	Commitment
	Wash Waters: The concrete wash water and the wheel wash will be discharged into a concrete settling basin. 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. Construct Waste will be Generated *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. Haphazard disposal of construction waste in or off the construction site will be prohibited, and 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. *Non-construction Wastes*: Non-construction wastes will be disposed off with the constructions 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. The waste management system will comply with applicable regulation of the government. Road Traffic 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. 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. Employ local people a Nga Pitat village to give a sign when local villagers walk across the road during construction. Prepare and implement an employee parking policy for the construction work sites to manage the impacts on car parking in the vicinity of work-sites and help avoid project parking in local streets. Navigation A comprehensive Vessel Traffic System and Management Information Systems (VTS MIS) will be required for this Terminal. Install signs and warning signs that can be clearly seen (200 m from the construction area) to show the boundary of offshore construction areas. Provide information on the boundaries of offshore construction areas to all fishing boat operators. Train all concerned crew on navigation safety in the offshore construction areas. Carry out routine check and maintenance of vessels to follow safety instructions. Prepare and maintain readiness for implementing an emergency plan related to marine accidents. Community Health, Safety and Security *Health Risks*: All recruited workers should receive health examinations for screening of major communicable disease before employment. Annual check-up should be provided. Provide health medical awareness training to workers on hygiene and sanitation, communicable and infectious diseases. *Security Risks*: The EPC contractor will be required to establish and implement a site security system and appropriate measures, including

Commitment Source	Commitment
	prevention of drug abuse. Local Communities *Local Economy*: Priority should be given to local employment, especially the villages close to the construction site. The recruitment process should be fair and transparent and wage rates are commensurate with experiences and qualification. The employment conditions will need to comply with the requirements in the national labour law, the social security law and standard wage rate, and other applicable laws and regulations. Make a good relationship with the locals and give the information of the project to them. Disclose relevant information before the construction of major components via billboard, and village headman. Conduct attitude surveys to collect information on local concerns, issues, and problems of the communities. *Livelihood*: Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase. *Infrastructure and Services*: Transportation pf 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 possibly by the Project. Construction with villagers to inform them about an increase of traffic and duration of transportation works. Establish First Aid services at the construction site. *Culture and Tradition*: All project personnel should be made aware of local culture, traditions and norms. Establish good relationship with the locals and actively support and participate in traditional and cultural events.
Section 6.4: Operation Phase Impact Identification, Assessment and Mitigation	The Project Proponent will comply the mitigation measures of the relevant environmental issues to be manage during operation as follow: Ambient Air Quality Use low sulfur diesel fuel. Check and maintenance vehicle regularly to minimize the exhaust emission. Speed reductions by vessels approaching a port can result in significant reductions in nitrogen oxide emissions. Control and formulate monitoring program on air quality throughout operation period. Noise Limit speed of vehicles and ship at 40 km/hr, at the project site, transport only in day time, install temporary noise barriers, and maintain road surface in good condition. Maintenance Dredging Follow the mitigation measures as same as construction phase. Shoreline Stability Recheck and reclaim sand (bleach nourishment) on the eroded beach around the shoreline of Project site every year, and prepare the setback line or beach erosion protection with hard structure. Wastewater *Ship Wastes*: The port operation office enforce the discharge of ship wastes in line with MARPOL, prepare a contingency plan and reporting system to controls oil and chemical spillage incidents. *Port Wastewaters*: A central wastewater collection and treatment system take care of domestic sewage and other port wastewaters. Try to reuse wastewater and prohibit ships and port to discharge all kinds of wastes and wastewaters directly into the Andaman Sea. Waste

Commitment Source	Commitment
	Used Lubricant: Set up and operate a system for collection of used lubricant and engine oils in all workshops and engine maintenance facilities. Contractors will be appointed to remove and dispose the collected lubricant and oils. *Solid Wastes from Wastewater Treatment Plants*: If it is activated sludge process and a fixed film aerobic process will generate organic sludge and this surplus sludge could be disposed of as garbage or could be used as fertilizer in the green area. *Hazardous Wastes*: The port operation office need to set up and operate a hazardous waste management system covering waste classification, separation, collection, storage, transfer and disposal that comply with regulations of the government. *Garbage*: If the port area cannot be served by the garbage collection services of the local government. It will need to set up and operate a simple garbage management system as the garbage volume will be small, less than two tons per day. Provide proper containers for all garbage sources storage, daily collection to a disposal site inside or outside the port area as appropriate. Land Traffic Prepare and implement an improvement program for improving safety of the local road network to cope with expected increase in traffic volume during port operations. Construction the bridge at Nga Pitat Village for local villagers and children walk across the project coastal road. Local administration should impose a regulation limiting truck traffic speed in the areas around the port at not exceeding 40 km/hr. Navigation The port will have a vessel traffic management system to ensure navigation safety and keep records of vessels calling at the port. The navigation areas will have adequate number of buoys and signs to clearly indicate the navigation channel and the port boundary. Community Development Supports The project proponent should consider a CSR program to provide community assistance, design and implement in consultation with the authorities concerned and community leaders.
Section 6.5: Decommission Phase Impact Identification, Assessment and Mitigation	The Project Proponent will comply the mitigation measures of the relevant environmental issues to be manage in decommission phase as follow: Environmental Disturbances Caused by Dust and Noise Fugitive dust will be generated most during the land reclamation. Frequent water spraying can reduce 75% of dust. Noise of mobile equipment is difficult to control at source, 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 Sakhanthit and Nga Pitat Village. Coastal Water and Marine Ecology Avoid demolition of offshore structure. Planting the mangrove around breakwater that can reduce impact on coastal water marine ecology in term of increase turbidity during demolition of offshore structure. The project developer/contractor must monitor the coastal water quality and marine ecology around offshore facilities at least 3 months prior to demolition activities and after demolition complete. Waste 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. Prepare appropriate number of containers with adequate volume and materials at strategic locations to support the segregation. Each waste category will be segregated into recycling, reuse and disposal sub-categories.

Commitment Source	Commitment
	Land Reclamation Developer should design with discuss the 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.
Chapter 8 Environmental Management Plans	
Section 8.6.1: Management and Monitoring Sub-Plans (pre-construction/construction phase)	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) dredging and disposal, (6) waste management (include site clearing waste, construction waste), (7) wastewater management, (8) hazardous waste management, (9) navigation management, (10) traffic management, (11) OHS management, (12) natural resource used management, (13) social environmental management, (14) cultural tradition management, (15) emergency management plan in case of flood, tsunami, and cyclone, and (16) emergency management plan in case of fire accident.
Section 8.6.2: Arrangement 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 Port Authority and other concerned authorities.
Section 8.6.8: Public Consultation and Disclosure (pre-construction/construction phases)	The CEMP proposes a tripartite committee as the main mechanism for public consultation and disclosure.
Section 8.6.9: 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 and the sub-contractor will implement follow to the management and monitoring sub-plans which may include: (1) mangrove rehabilitation management, (2) maintenance dredging and disposal, (3) navigation management, (4) shoreline erosion management, (5) OHS management, (6) social environmental management, (7) roll-over and static electric sparking prevention, management, (8) vessel traffic and safety management, (9) operation staff management, (10) emergency management plan in case of flood, tsunami, and cyclone, and (11) emergency management plan in case of fire accident.
Section 8.7.4: 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 Port Authority and other concerned authorities.
Section 8.7.7: 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.
Section 8.7.8: Grievance redress (operation phase)	The developer will prepare grievance redress mechanism to using during operation phase.
Section 8.8:	The project proponent will prepare and operate following accordance with the emergency plan for bad weather and calamities, ship collision, and fire accident to protect and minimize impact of such case.

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ဆိပ်ကမ်းငယ်စီမံကိန်းက လိုက်နာဆောင်ရွက်ရမည့် ဥပဒေဆိုင်ရာကတိကဝတ်များ

၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)

၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ(၂၀၁၄)

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးနည်းလုပ်နည်း(၂၀၁၅)

၄။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေးထုတ်လွှတ်မှုလမ်းညွှန်ချက်(၂၀၁၅)

၅။ မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)

၆။ တိုင်းရင်းသားလူမျိုးများ အကျိုးစီးပွားကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ(၂၀၁၅)

၇။ ပြည်သူ့ကျန်းမာရေးဥပဒေ(၁၉၇၂)

၈။ ကူးစက်ရောဂါများကာကွယ်နှိမ်နှင်းရေးဥပဒေ(၁၉၉၅)

၉။ ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှုထိန်းချုပ်ရေးဥပဒေ(၂၀၁၆)

၁၀။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ(၂၀၁၅)

၁၁။ မော်တော်ယာဉ်ဥပဒေ(၂၀၁၅)နှင့်မော်တော်ယဉ်နည်းဥပဒေများ(၁၉၈၇)

၁၂။ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ(၁၉၉၃)

၁၃။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ(၂၀၁၁)

၁၄။ အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ(၂၀၁၂)

၁၅။ အလုပ်အကိုင်နှင့်ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတတ်ရေးဥပဒေ(၂၀၁၃)

၁၆။ ၂၀၁၃ခုနှစ်၊အနည်းဆုံးအခကြေးငွေ ဥပဒေ

၁၇။ ၂၀၁၆ခုနှစ်၊အခကြေးငွေပေးချေရေးဥပဒေ

၁၈။ အလုပ်သမားလျော်ကြေးအက်ဥပဒေ(၁၉၅၁)

၁၉။ ခွင့်နှင့်အလုပ်ပိတ်ရက်များအက်ဥပဒေ(၁၉၅၁)

၂၀။ လူမှုဖူလုံရေးဥပဒေ(၂၀၁၂)

၂၁။ ရေနံအက်ဥပဒေ(၁၉၃၄)

၂၂။ ရေနံနည်းဥပဒေများ(၁၉၃၇)

၂၃။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး ဥပဒေ(၂၀၀၆)

၂၄။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး နည်းဥပဒေများ(၂၀၁၃)

၂၅။ ရေချိုငါးလုပ်ငန်း ဥပဒေ (၁၉၉၁)

၂၆။ မြန်မာ့ပင်လယ်ငါးလုပ်ငန်းဥပဒေ (၁၉၉၁)

၂၇။ ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈)

၂၈။ ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

၂၉။ ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

၃၀။ သစ်တောဥပဒေ (၁၉၉၂)

၃၁။ မြန်မာ့အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၄)

၃၂။ မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃)

၃၃။ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)

၃၄။ ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)

၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)

စီမံကိန်းပိုင်ရှင်သည်-

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

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

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

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

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

၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ(၂၀၁၄)

စီမံကိန်းပိုင်ရှင်သည်-

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

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

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

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးနည်းလုပ်နည်း (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) မိမိကိုယ်တိုင်ကြောင့်ဖြစ်စေ၊ မိမိကိုယ်စား ဆောင်ရွက်သည့်ကန်ထရိုက်တာ၊ လက်ခွဲ ဆောင်ရွက်ပေးသူ ဆပ်ကန်ထရိုက်တာ၊ အရာရှိ၊ အလုပ်သမား၊ ကိုယ်စားလှယ် သို့မဟုတ် အတိုင်ပင်ခံ၏ပြုလုပ်မှု သို့မဟုတ် ပျက်ကွက်မှုကြောင့်ပေါ်ပေါက်သည့် ဆိုးကျိုးသက်ရောက်မှုကို တာဝန်ယူပါမည်။ (အပိုဒ်၁၀၂(က)အရ)

(ခ) စီမံကိန်းကြောင့်ထိခိုက်ခံစားရသူကို လက်ရှိ သို့မဟုတ် စီမံကိန်းမဆောင်ရွက်မီကာလထက် မနိမ့်ကျသော လူမှုစီးပွားရေး တည်ငြိမ်ခိုင်မာမှုရရှိသည်အထိ ဆောင်ရွက်ပေးရန်နှင့် သက်မွေးဝမ်းကျောင်းလုပ်ငန်းများ ပြန်လည်တည်ထောင်ရေးနှင့် ပြန်လည်နေရာချထားရေး အစီစဉ်များကို စီမံကိန်းကြောင့်ထိခိုက်ခံစားရသူများ၊

သက်ဆိုင်ရာအစိုးရဌာန၊ အဖွဲ့အစည်းများ၊ အခြားသက်ဆိုင်သူများနှင့် တိုင်ပင်ဆွေးနွေး၍ လိုအပ်သလိုပံ့ပိုးပေးပါမည်။ (အပိုဒ်၁၀၂(ခ)အရ)

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

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

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

(စ) မိမိ၏တာဝန် သို့မဟုတ် ဆောင်ရွက်ချက်ပျက်ကွက်မှုကို အမြန်ဆုံး စာဖြင့်တင်ပြပါမည်။ ပျက်ကွက်မှုကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုဖြစ်နိုင်သည့်ကိစ္စ သို့မဟုတ် ဝန်ကြီး ဌာနက အမြန်သိရန်လိုအပ်သည့်ကိစ္စကို ၂၄နာရီအတွင်းလည်းကောင်း အခြားကိစ္စဖြစ်ပါက

စတင်သိရှိချိန်မှ ၇ ရက် အတွင်းလည်းကောင်း ဝန်ကြီးဌာနသို့ တင်ပြပါမည်။ (အပိုဒ်၁၀၇အရ)

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

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

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

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

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

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

၄။ မျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေးထုတ်လွှတ်မှု လမ်းညွှန်ချက်(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည် လမ်းညွှန်ချက်ပါ စံချိန်စံညွှန်းများနှင့်အညီ ထုတ်လွှတ်ခြင်း၊ စွန့်ပစ်ခြင်းပြုပါမည်။

၅။ မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)

စီမံကိန်းပိုင်ရှင်သည်-

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

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

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

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

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

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

(ဆ) နိုင်လုံသောအကြောင်းပြချက်ဖြင့် 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 (ဋ)အရ)

(ဈ) လာရောက်အလုပ်လုပ်ကိုင်နေသည့် နိုင်ငံခြားသား ကျွမ်းကျင်ပညာရှင်များနှင့် ကြီးကြပ်သူများ၊ မိသားစုဝင်များသည် တည်ဆဲဥပဒေများ၊ နည်းဥပဒေများ၊

အမိန့်နှင့် ညွှန်ကြားချက်များ၊ ယဉ်ကျေးမှုနှင့် ဓလေ့ထုံးစံများကို လေ့လာလိုက်နာရန် ကြပ်မတ်ပါမည်။ (ပုဒ်မ ၆၅ (ဌ)အရ)

(ည) စီမံကိန်းလိုအပ်ချက်အရ ခွင့်ပြုထားခြင်း မဟုတ်သော ဆောင်ရွက်ခြင်းကြောင့် သဘာဝပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးစေခြင်းနှင့် လူမှုစီးပွားအပေါ် ဆိုးရွားမှုများ ဖြစ်ပေါ်စေပါက အဆိုပါ ဆိုးရွားနစ်နာမှုအတွက် 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။ တိုင်းရင်းသားလူမျိုးများအကျိုးစီးပွားကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) စီမံကိန်းကို အကောင်အထည်ဖော်မည့် ဒေသရှိ ဌာနေတိုင်းရင်းသားလူမျိုးများအား စီမံကိန်း၏ အကြောင်းအရာများကို ပြည့်စုံတိကျစွာ ကြိုတင်ချပြအသိပေးပါမည်။ (ပုဒ်မ ၅ အရ)

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

၇။ 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)

၈။ 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)

၉။ 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)

၁၀။ မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ(၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

(က) သီးသန့်မီးသတ်တပ်ဖွဲ့ဖွဲ့စည်းပါမည်။ (ပုဒ်မ ၂၅ (က) အရ)

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

၁၁။ မော်တော်ယာဉ် ဥပဒေ(၂၀၁၅) နှင့် မော်တော်ယဉ်နည်းဥပဒေများ(၁၉၈၇)

စီမံကိန်းပိုင်ရှင်သည်-

လေထုညစ်ညမ်းစေခြင်း၊ အသံဆူညံစေခြင်းနှင့် အသက်အန္တရာယ် လုံခြုံစိတ်ချမှုတို့နှင့် သက်ဆိုင်သည့် ဤဥပဒေနှင့် နည်းဥပဒေများပါ ပြဋ္ဌာန်းချက်များကို လိုက်နာဆောင်ရွက်ပါမည်။

၁၂။ မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ(၁၉၉၃)

စီမံကိန်းပိုင်ရှင်သည်-

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

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

၁၃။ 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)

၁၄။ 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)

၁၅။ အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတတ်ရေး 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)

၁၆။ ၂၀၁၃ခုနှစ်၊ အနည်းဆုံးအခကြေးငွေဥပဒေ

စီမံကိန်းပိုင်ရှင်သည်-

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

(ခ) သတ်မှတ်ထားသော အနည်းဆုံးအခကြေးငွေ နှုန်းထားများကို အလုပ်သမား များကို 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 အနည်းဆုံး အခကြေးငွေမှာ ဖြတ်တောက်ခြင်းမပြုဘဲ သတ်မှတ်ချက်များနှင့် အလုပ်နားခွင့် ပြုပါမည်။ (ပုဒ်မ ၁၃ (ဆ) အရ)

၁၇။ ၂၀၁၆ခုနှစ်၊ အခကြေးငွေပေးချေရေးဥပဒေ

စီမံကိန်းပိုင်ရှင်သည်-

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

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

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

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

၁၈။ အလုပ်သမားလျော်ကြေး အက်ဥပဒေ(၁၉၅၁)

စီမံကိန်းပိုင်ရှင်သည် ရရှိသည့် ထိခိုက်နစ်နာမှု အမျိုးအစားအလိုက် ကိစ္စရပ်တစ်ခုချင်း အပေါ်တွင် ဤဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ လျော်ကြေးငွေကို ပေးလျော်ပါမည်။

၁၉။ ခွင့်နှင့် အလုပ်ပိတ်ရက်များ အက်ဥပဒေ(၁၉၅၁)

စီမံကိန်းပိုင်ရှင်သည် ဤဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ ခွင့်နှင့် အလုပ်ပိတ်ရက် များကို ခွင့်ပြုပါမည်။

၂၀။ 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)

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

၂၁။ ရေနံအက်ဥပဒေ(၁၉၃၄)

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

၂၂။ ရေနံနည်းဥပဒေများ(၁၉၃၇)

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

၂၃။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး ဥပဒေ(၂၀၀၆)

စီမံကိန်းပိုင်ရှင်သည်-

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

(ခ) ကမ်းပါးမှ သဘာဝပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးခြင်းဖြစ်စေမည့် စက်သုံးဆီ၊ ဓာတုပစ္စည်း၊ အဆိပ်သင့်ပစ္စည်းနှင့် အခြားပစ္စည်းများ စွန့်ပစ်ခြင်း၊ ပေါက်ကွဲစေတတ်သောပစ္စည်း များ စွန့်ပစ်ခြင်းမပြုပါ။ (ပုဒ်မ ၁၁(က)အရ)

(ဂ) ကမ်းပါးမှ ရေလမ်းပျက်စီးခြင်း သို့မဟုတ် ရေကြောင်းပြောင်းလဲခြင်း ဖြစ်ပေါ်စေမည့် အရာဝတ္ထုတစ်ခုခုကို စွန့်ပြစ်ခြင်းမပြုပါ။ (ပုဒ်မ ၁၉ အရ)

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

၂၄။ ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများထိန်းသိမ်းရေး နည်းဥပဒေများ(၂၀၁၃)

စီမံကိန်းပိုင်ရှင်သည် ဆိပ်ခံတံတား၊ ရေဆင်းတံတား၊ ဘောတံတားလုပ်ငန်းဆိုင်ရာ စည်းကမ်း ချက်များကို လိုက်နာဆောင်ရွက်ပါမည်။ (နည်းဥပဒေ ၇၇(ခ) 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 ဝတ္တုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

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

၂၉။ ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည်-

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

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

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

၃၀။ သစ်တောဥပဒေ (၁၉၉၂)

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

၃၁။ မြန်မာ့အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၄)

စီမံကိန်းပိုင်ရှင်သည် -

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

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

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

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

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

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

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

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

ခန့်ထားပါမည်။ (ပုဒ်မ ၇၅ အရ)

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

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

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

(ဈ) အသုံးပြုခွင့်ရရှိထားသည့် စီမံကိန်းမြေပေါ်တွင် လူနေအိမ်ခြေများ၊ အဆောက်အအုံများ၊ လယ်ယာဥယျာဉ်ခြံမြေများ၊ သီးပင်စားပင်များ၊ စိုက်ခင်းများ၊ ပြောင်းရွှေ့ရှင်းလင်းပေးရန် လိုအပ်ပါက ထိုသို့ပြောင်းရွှေ့နေရာချထားခြင်းနှင့် လျော်ကြေးပေးခြင်းတို့အတွက် ကုန်ကျစရိတ်များကို ချုပ်ဆိုထားသည့် သဘောတူညီချက်နှင့်အညီ ကျခံပါမည်။ (ပုဒ်မ ၈၀(က) အရ)

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

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

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

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

၃၂။ မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ (၂၀၁၃)

စီမံကိန်းပိုင်ရှင်သည် -

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

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

၃၃။ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)

စီမံကိန်းပိုင်ရှင်သည် -

(က) မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်က ခွင့်ပြုသည့် လုပ်ငန်းလိုင်စင်ရရှိပြီးမှ ဆိပ်ကမ်းကို တည်ဆောက်ပါမည်။ (ပုဒ်မ ၇၂ အရ)

(ခ) လုပ်ငန်းလိုင်စင်ပါ စည်းကမ်းချက်များ၊ မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင်အရ ထုတ်ပြန်သည့် နည်းဥပဒေများ၊ စည်းမျဉ်း၊ စည်းကမ်းများနှင့် အမိန့်တို့ပါ တားမြစ်ချက်များကို လိုက်နာ ပါမည်။ (ပုဒ်မ ၇၃ အရ)

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

၃၄။ ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)

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

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မှ Myandawei Industrial Estate Company Limited

အမည် Dr.Somchet Thinaphong

ရာထူး မန်နေးဂျင်း ဒါရိုက်တာ

The Applicable Laws and Legal Commitments for Small Port Project in Dawei 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 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 Public Health Law (1972)
8. Prevention and Control of Communicable Disease Law (1995)
9. The Control of Smoking and Consumption of Tobacco Product Law (2006)
10. Myanmar Port Authority Law (2015)
11. Myanmar Fire Force Law (2015)
12. The Motor Vehicle Law (2015) and Rules (1987)
13. The Myanma Insurance Law(1993)
14. Labour Organization Law (2011)
15. Settlement of Labour Disputes law (2012)

16. The Development of Employment and Skill Law(2013)
17. 2013, The Minimum Wages Law
18. 2016, Payment of Wages Law
19. Workmen's Compensation Act (1923)
20. The Leaves and Holiday Act (1951)
21. Social Security Law(2012)
22. Petroleum Act (1934)
23. The Petroleum Rules (1937)
24. Conservation of Water Resources and Rivers Law (2006)
25. Freshwater Fisheries Law (1991)
26. Myanmar Marine Fishery Law (1990)
27. The Protection and Preservation of Cultural Heritage Regions Law (1998)
28. The Protection and Preservation of Antique Objects Law (2015)
29. The Protection and Preservation of Ancient Monument Law (2015)
30. Forest Law (1992)
31. Special Economic Zone Law (2014)
32. The Engineer Council Law (2013)
33. 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. This law focuses as follows;

- The project proponent has to pay the compensation for damages if the project will causes injuries to environment ,under the sub-section (o) of section 7 of said law
- The project proponent has to purify, emit, dispose and keep the polluted materials in line with the stipulated standards, under section 14 of said law
- The project proponent has to install or use the apparatus which can control or help to reduce, manage, control or monitor the impacts on the environment, under section 15 of said law.
- The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition included in prior permission, stipulated by the ministry, or not, under section 24 of said law.
- The project proponent has to comply with the terms and conditions included in prior permission, under section25 of said law.
- The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification and procedure issued by said law, under section 29.

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

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

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

- The project proponent has to be liable for all adverse impacts caused by doing or omitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102.
- The project proponent has to support, after consultation with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102.
- The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103.
- The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104.
- The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105.
- The project proponent has to continuously monitor all adverse impacts in the pre-construction phrase, construction phrase, operation phrase, suspension phrase, closure phrase and post-closure phrase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under paragraph 106.

- The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under paragraph 107.
- The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under paragraph 108.
- The project proponent has to prepare the monitoring report in accord with the 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.

- 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 of 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. The 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 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.

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

8. 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.

- The project proponent has to build the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage & sewage, under clause (9) of sub-section (a) of section 3 of said law.

- The project proponent has to abide by any instruction or stipulation by Department of health and Ministry of Health, under section 4 of said law.
- The project proponent has to inform promptly to the nearest health department or hospital if the following are occurred: (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.

9. 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.

- 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.

10. Myanmar Port Authority Law (2015)

- The project proponent has to obtain the license issued by the port authority before start, under sub-section (b) of section 72.
- The project proponent has to abide by the conditions included in license, prohibitions included in the rules, regulation, by-law, order issued under Port Authority law, moreover has to be taken administrative action if violates any condition or any prohibition, under section 73 of said law.
- 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.

11. The Myanmar Fire Force Law (2015)

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

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

12. 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.

13. 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.

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

- ***Section 18*** - The project proponent promises to demand the re-appointment of worker who is dismissed by the employer without the conformity with the labour laws.
- ***Section 19*** - The project proponent promises to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker.
- ***Section 20*** - The project proponent promises 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 promises the labour organization to participate in solving the collective bargains of the employees in accord with the labour laws.
- ***Section 22*** - The project proponent promises 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 .

15. 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.

16. 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.

- 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.

17. 2013, 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.

- 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.

18. 2016, Payment of Wages Law

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.

19. 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.

20. The Leaves and Holiday Act (1951)

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

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

21. Social Security Law

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

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

22. Petroleum Act (1934)

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

- 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.

23. 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.

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

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

- 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.

25. 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, creek under section 40 of said law.

26. 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.

- 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

27. 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.

- 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.

28. The Protection and Preservation of Antique Objective Law (2015)

Purpose; To ensure the protection of ancient monument and information about it if it is in the project area. This law focuses as follow;

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

29. 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 focuses as follows;

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

30. 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 12 of said law.

31. 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.

32. 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.

33. 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. 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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By: Myandawei Industrial Estate Company Limited
Name: Dr.Somchet Thinaphong
Title: Managing Director

Environmental Mitigation Measures and Environmental Quality Monitoring Program

Environmental and Social Impact Assessment for Dawei SEZ Initial Phase Development of Small Port Project

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Certified the Environmental Mitigation Measures and Environmental Monitoring Program

Environmental and Social Impact Assessment for Dawei SEZ Initial Phase Development of Small Port Project

Certified Report by

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

Date ....30/4/2018....

Environmental Mitigation Measures and
Environmental Quality Monitoring Program

Environmental and Social Impact Assessment for
Dawei SEZ Initial Phase Development of Small Port 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	• Myandawei Industrial Estate 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).		• Myandawei Industrial Estate 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. 6,000 USD Lumpsump for Flora and Fauna species investigate before land clearance	• Myandawei Industrial Estate Company Limited

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 (closest sensitive receptors include Nga Pitat and Sakhanthit Villages) 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.	• Myandawei Industrial Estate 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. **Vessel** • Regularly maintain engines in good conditions. • Use low sulfur diesel fuel	**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	• Myandawei Industrial Estate 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 Villages (closest sensitive receptors include Nga Pitat and Sakhanthit Villages) 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.	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Dredging and Disposal	**Design Concept** The Contractor will prepare detailed design of dredging and disposal activities. The proposed design concept is based on the principle dredging and disposal activities of as briefly described below: **Vessel for Dredging Activities** • Disposal vessels should be equipped with accurate positioning systems, e.g. with AIS (Automatic Identification System), which shall be switched on during disposal operations. Disposal vessels and operations should be inspected regularly to ensure that the conditions of the disposal permit are being complied with, and that the crews are aware of their responsibilities under the permit. Ships' records and automatic monitoring and display devices (e.g. black-boxes), where these have been fitted, should be inspected to ensure that the disposal is taking place at the specified site. • The following typical methods are available to reduce plume generation when dredging with a HD (Hopper Dredger): - Optimize trailing velocity, suction mouth and pump discharge rates. This results in less spillage from the drag head. - Limit overflow and/hopper filling. This is sometimes imposed on dredging operations but slows the dredging process, and increases costs significantly. - Reduce intake water. This results in more in-situ material being taken into the dredge. This increases costs as the fuel requirement per m3 rises. The effect on the production rate is controlled by pumping at a higher rate. - Reduce air content in the overflow mixture. • The following typical methods are available to reduce plume generation when dredging with a CSD (Cutting Suction Dredger): - Optimize cutter speed, swing velocity and suction discharge. This reduces the spill rates at the cutter head, as more in situ material is taken up at the cutter head. This method will also optimize production rates and it should be the most cost effective method of dredging with a CSD. - Optimize cutter head design. This method requires a high level of detail of the soil characteristics to be removed. The method also optimizes production rates and it should be the most cost effective method of dredging with a CSD.	• Once a month collection of 10 sampling stations of coastal water and marine ecology at location around access channel especially during dredging activities • Coastal water samples will be compared with Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008 include: - DO = >4 mg/L - Suspended solid = < 50 mg/L - Nitrate-Nitrogen = <60 µg/L. • Once a month collection of 10 sampling stations (same as for coastal water). The Parameter includes Plankton, Benthos, fishery and marine protected species • Esitmate Cost: - 500 USD /station/time for coastal water quality measurement - 1,000 USD/station/time for marine ecology and protected species.	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Dredging and Disposal (Cont'd)	**Dredging** • Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments; • Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities. • The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time. • Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea. • In case of damage on sediment pipe, the dredging activities must be stopped. • Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area. • Check and maintenance all machine and equipment to prevent oil leakage into sea. • Check and maintenance HD and CSD to ensure that no sediment overflow into the sea. • Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area. • The monitoring results on coastal water quality must be sent to all concerned agencies. **Disposal** • Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology. • Use the dredged materials for on-land disposal within the Early Industrial to the maximum extent. **Marine Ecology** • Apply the same mitigation measures as recommended for coastal water quality. • Provide information on the construction schedule and construction area to local fishermen living near the port. • Coordinate with local authorities to protect coral and other marine resources.		• Myandawei Industrial Estate 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.	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate 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.		• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (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 Small Port 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 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. • 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	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Wastewater (Cont'd)	**Construction Wastewater** • Construction wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into the retention pond.		• Myandawei Industrial Estate Company Limited • Construction Contractor
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.	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (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 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. • Estimte cost: Include on cost for pre-construction and construction	• Myandawei Industrial Estate Company Limited • Construction Contractor
Navigation	**1) Vessel Traffic Management** A comprehensive Vessel Traffic System and Management Information System (VTS MIS) will be required for this port. This will include: computing hardware, communications (voice and data) equipment,surveillance technology,technical support infrastructure such as power, environmental, conditioning, security, and Human Machine Interfaces (HMI),the VTS MIS systems functionality, including command and control,capability, COP generation and management, integrated sensor control,disaster recovery, and record and replay, both for training purposes and legislated incident analysis and reporting requirements All elements of port and landside logistics, security, and traffic management will be provided for through:, detailing location and functionality of a central control room/tower, sensor implementation, inclusive of radar, AIS, CCTV, telephone, radios, AIS AtoN's, and MetOcean equipment, multi-sensor fusion VTS system to provide the Common Operating Picture,Port Management Information System for logistics/scheduling and implementation and management of charging mechanisms, associated IT infrastructure, and Integration as necessary with other tools such as Portable Pilotage Units, Laser Docking Systems, Mooring Management Systems, Quick Release Hooks, etc.	• Monitor number of vessel and boat two times per year at small port area. • Monitor navigation accident situation related to the project every day at / or nearby the Small Port area • Estimte cost: - 500 USD/station/time for monitoring number of vessel and boat at small port area - Cost for monitoring navigation accident situation related to the project include on cost for pre-construction and construction	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Navigation (Cont'd)	**2) Sea Traffic** • Install signs and warning signs that can be clearly seen (200 meter from the construction area) to show the boundary of offshore construction areas. • All vessels operating in nighttime must receive special permits. • All concerned safety rules have to follow the laws related to transportation section of Myanmar. • Provide information on the boundaries of offshore construction areas to all fishing boat operators. • Train all concerned crew on navigation safety in the offshore construction areas. • Carry out routine check and maintenance of vessels to follow safety instructions. • Prepare and maintain readiness for implementing an emergency plan related to marine accidents.		• Myandawei Industrial Estate Company Limited • Construction Contractor
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	• Myandawei Industrial Estate 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.		• Myandawei Industrial Estate 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.		• Myandawei Industrial Estate 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 Sperformance 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	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
OHS (Cont'd)	**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.	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Natural Resource Use	**Pre-Construction** • 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	• Report community consultation's activities and on consultation. • Training and promotion household account record. • Survey to collect information on local concerns, issues, and problems of the communities at least 1 time per month. • Estiamate cost: 200,000 USD lump sump throughout pre-construction/construction phase	• Myandawei Industrial Estate Company Limited • Construction Contractor
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.	• 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.	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment (Cont'd)	**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.	• 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	• Myandawei Industrial Estate Company Limited • Construction Contractor

TABLE 1: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Social Environment (Cont'd)	**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.		• Myandawei Industrial Estate Company Limited • Construction Contractor
Land Acquisition	• All Project Affected Persons (PAPs) perceive and understand about land acquisition process. • All PAPs transfer their own land to the Project developer prior to construction phase. • All PAPs are fairly compensated based on government price of land.	• Visit PAPs and question about land acquisition for project development. • Inspect all PAPs who transfer the land for project development, showing certificate, or transaction documents. • Estimate cost: Follow to cost that recommend by Committees.	• Myandawei Industrial Estate 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.	• Myandawei Industrial Estate 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. 200,000 USD lump sump for planting and maintenance in reforestation area during 1st-10th of operation phases. - 1,500 USD / year for support local villagers (from Nga Pitat, Sakhanthit and Nyua Binseik Villages) in rehabilitation activities (during 1st-10th years during operation phase, total cost 15,000 USD)	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Air Quality and Greenhouse Gas	• Use low sulfur diesel fuel • Check and maintenance vehicle regularly to minimize the exhaust emission. • Speed reductions by vessels approaching a port can result in significant reductions in nitrogen oxide emissions. • Control and formulate monitoring program on air quality throughout operation period.	• Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Nga Pitat and Sakhanthit 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 (SO_2) - Nitrogen Dioxide (NO_2) - Carbon Monoxide (CO) • Estimate cost: 800 USD/station/time	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Noise	**Small Port** • Implemented to control noise level at lower than 85 dB (A) at 1 m from the noise sources and lower than 70 dB (A) at the port fence line. **Project Access Road/Navigation** • Limit speed of vehicles at the Project site at 40 km/hr. and speed of ships. • Install temporary noise barriers, if necessary, to minimize noise impacts on sensitive areas • Transportation shall be carried out only during the day time. • Always maintain road surface in good condition.	• Undertake local, 2 time per year monitoring during 1st – 5th year of noise level in at Villages (closest sensitive receptors include Nga Pitat and Sakhanthit 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: - 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 vehicle noise level. • The Developer is to implement measures to receive and respond to complaints about noise made at any time during the operation phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this OEMP. 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 operation activities 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 project developer on the complaint, the activity, the corrective action and the response. • Estimate cost: 700 USD/station/time.	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Maintenance Dredging and Disposal	• The mitigation measures are similar to those proposed for dredging during the construction phase	• Twice a year collection of 10 sampling stations of coastal water and marine ecology at location around access channel especially during maintenance dredging activities • Coastal water samples will be compared with Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008 include: - DO = >4 mg/L - Suspended solid = < 50 mg/L - Nitrate-Nitrogen = <60 µg/L. • Twice a year collection of 10 sampling stations (same as for coastal water). The Parameter include Plankton, Benthos, fishery and marine protected species Esitmate Cost: - 500 USD /station/time for coastal water quality measurement - 1,000 USD/station/time for marine ecology and protected species.	• Myandawei Industrial Estate 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.	• Myandawei Industrial Estate 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.	• Myandawei Industrial Estate 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.		• Myandawei Industrial Estate Company Limited • Sub-contractor (Waste management company)

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Wastewater (from onshore and vessel)	**Design Concept** The project proponent will prepare detailed design of a wastewater management system for the Small Port 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: • **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 operation site should be surrounded by temporary fences to limit the amount of sediment that could be washed from the operation 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 operation 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 operation, 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. - 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.	• 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	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Wastewater (from onshore and vessel) (Cont'd)	• **Operation Wastewater** - Operation wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into the retention pond. • **Ship Wastes** - The port operation office will need to enforce appropriate controls on the discharge of ship wastes in line with MARPOL. - In addition, the port operation office will need to prepare a contingency plan and establish an organization for implementing the plan including reporting system to effectively handle oil and chemical spillage incidents from ships.	•	• Myandawei Industrial Estate Company Limited
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.	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate Company Limited
Navigation	• The port will have a vessel traffic management system to ensure navigation safety and keep records of vessels calling at the port. • The navigation area will have adequate number of buoys and signs to clearly indicate the navigation channel and the port boundary.	• Monitor number of vessel and boat two time per year at small port area. • Monitor navigation accident situation related to the project every day at Small Port. • Estimate cost: - 500 USD/station/time for monitoring number of vessel and boat at small port area throughout operation phase - Cost for monitoring navigation accident situation related to the project include on cost for operation.	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
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.	• Myandawei Industrial Estate Company Limited
Shoreline Erosion	• Recheck and reclaim sand (bleach nourishment) on the eroded beach on the shoreline of Project site every year. • Based on limited physical and environmental information available, as well as engineering judgment, Regular shoreline monitoring is recommended to gain the necessary information and prepare the setback line or beach erosion protection with hard structure such as groynes if high erosion on the shoreline.	• Twice a year monitor on beach profile and bathymetric survey at 1 km north and south of beach along the port development • Everyday checking shoreline erosion at 1 km north and south of beach along the port development	• Myandawei Industrial Estate Company Limited

TABLE 2: (CONT'D)

Environmental and Social Issue	Mitigation Measures	Monitoring Program	Responsibility
Shoreline Erosion (Cont'd)		• Estimate cost: - 750,000 USD lump sump (approx. 10,000 USD / year) for shoreline erosion control throughout operation phase - 10,000 USD / time for beach profile monitor yearly throughout operation phase	• Myandawei Industrial Estate Company Limited
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 Small Port 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.	• Myandawei Industrial Estate 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 Small Port 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	• Myandawei Industrial Estate 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: - 240,000 USD lump sump for group interview or village forum at 5 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.	• Myandawei Industrial Estate 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, education, health, religions, and occupation promotion in CSR Program		• Myandawei Industrial Estate Company Limited
Vessel Traffic and Safety	• Provide a training program/workshop.	• Monitor on traffic system (effectiveness and safety) within the small port and other vessel traffic system connected to the project area. • Estimate cost: include on operation cost	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate 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	• Myandawei Industrial Estate Company Limited

Our Ref: ENV/P03153/611009

27th April 2018

Dr. Somchet Thinaphong, Managing Director:

Myandawei Industrial Estate Company Limited ("MIE")

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 Dawei SEZ Initial Phase Development of Small Port Project, Dawei District, the Republic of the Union of Myanmar

With reference to the Letter No. 3(2)/16 (D) (3578/2017), from The Ministry of Natural Resources and Environmental Conservation, on matter about submitting to reply the confirmation for "Environmental Impact Assessment (ESIA) report of Small Port project by Myandawei Industrial Estate Co., Ltd at the initial stage of Dawei Special Economic Zone".

We are pleased to submit the Final Report of ESIA for Dawei SEZ Initial Phase Development of Small Port Project, Dawei District, The Republic of the Union of Myanmar (include ESIA and EMP for Small Port, and RAP for Coastal Road to Small Port) for your consideration.

Sincerely yours,

S. Boonyuen

Dr. Sirinimit Boonyuen

Senior Executive Vice President - International

PCT/ENV-I/P03153/FR/LE1817

COMMENT OF ECD FOR SMALL PORT (ESIA)

No.	Initial Comment for Report	Finding Points of Revised Report	Evaluation and Recommendation	Response Comments
1.	**Chapter (3)**			
(a)	According to company will draw the environmental conservation and social management plan according to ISO 14001. Therefore, It must be needed to submit the policy of environmental conservation and social management plan of the company.	Policy of environmental conservation of the project proponent already added and described in Section 3.1 of Chapter 3 and Appendix 3A of Revised EIA Draft Final Report	No Comment	-
(b)	According to Chapter (3) Section 3.2, there was mentioned that, Ministry of Environmental Conservation and Forestry announced guidelines for Environmental Impact Assessment in EIA Guidelines at 31st July 2014. To be changed this statement.	This statement was changed to be "MONREC issued the National Environmental Quality (Emission) Guidelines on 29 December 2015"	No Comment	-
(c)			Related Laws and Procedures of project should describe as attached.	Detail as Appendix 3A
2.	**Chapter (6)**			
(a)	Additional study on coral reef assessment to ensure none of impact from construction activities (e.g. dredging) to coral reef area.	Due to the study results indicate that the distance area of siltation during dredging is approximate 500 m. from approach channel, no coral reef and seagrass areas found in this area. The reason is the nearest coral reef area from small port is North Island with distance approx. 28 km. whereas the nearest seagrass area from small port is locate on Myiek with distance approx. 40 km. The detail described Topic B Marine Ecology, Page 6-45 of Chapter 6 Revised Draft Final ESIA Report.	No Comment	-

No.	Initial Comment for Report	Finding Points of Revised Report	Evaluation and Recommendation	Response Comments
(b)	Aquatic Ecosystem and Marine Ecosystem is not described in the report and original aquatic ecosystem and marine ecosystem need to present.	There is no information presented in the report.	Additional Information is required for aquatic ecosystem and marine ecosystem.	Due to the project and surrounding area have not any freshwater source, Therefore, the study aquatic ecosystem are not included in this ESIA report. The study on marine ecosystem are described in Section 5.3.1 of Chapter 5. The impact analysis and proposed mitigation measure on marine ecosystem are described in Section 6.3.3.4 of Chapter 6 of ESIA. The Management Plan on Marine Ecology are described in Appendix 8A and 8B.
3.	**Chapter (8)**			
(a)	Detail plan of PAPs (12 households) is needed to describe for compensation rate and relocation process.	Detail maps of relocation area for PAPs (12 households) was describe in page 6-21. However, Detail plan of compensation rate need to describe more.	Addition information about compensation need to describe.	The detail of compensation are described in RAP report
4.	**Chapter (9)**			
(a)	According to public consulting, need to show the agreement of all participants from project area and need to present the remark of 12 PAPs from Nga Pi Tat Village.	Public consulting attendance results of 12 PAPs household were describe at Appendix 9A.	No Comment	-
5.	**General Suggestion**			
(a)	Need to describe list of abbreviation	Already described	No Comment	-
(b)	Confirmation and agreement of the person who proposed the project for complement and exactness of EIA report, agreements stated in proposed project, fully implementation for environmental impact reduction process and plans need to state in the report.	Form of Confirmation and Letter of Undertaking for EIA&ESMMP (as presented in Appendix 8A) should be signed and put in the first part of EIA & ESMMP report in order to state that the Project Proponent will fully implement environmental impact reduction process and plans as stated in the report.	Need to sign at Form of Confirmation and Letter of Undertaking for EIA & ESMMP.	

No.	Initial Comment for Report	Finding Points of Revised Report	Evaluation and Recommendation	Response Comments
(c)	Executive Summary of report need to state with Myanmar Language.	Executive Summary of report in Myanmar Language is not presented in the first section of EIA report.	Executive Summary of report in Myanmar Language is need to present in the first section of EIA report.	The Executive Summary of report in Myanmar Language are included in ESIA Report
(d)	Need to present the detail reforestation plan for losing 390 Aces of mangrove at Chapter 7.3, page 4.	Detail plan of reforestation area is not describe in the report.	Need to describe the detail plan of reforestation.	The plan of reforestation are described in Section 7.4.3 of Chapter 7
(e)	Need to describe the Greening Plan to influences all of the area of DSEZ.			The plan of reforestation are described in Section 7.4.3 of Chapter 7
(f)	Need to describe Emergency Preparedness and Response Plan			The Emergency Plan for Small Port Project are described in Section 8.6 of Chapter 8 and Appendix 8A and 8B
(g)	Land Use Map should describe with current situation.			The Land Use Map are update during the field survey on January 2015 which described in ***Figure 5.4.7-1***
(h)	Project EIA report should present to communities and should collect the comments from communities and need to upload in Project Proponent's website			-The activities and comments during the public consultation are described in Chapter 9 and Appendix 9A to 9C - The website of the project are described in Page 9-17 of Chapter 9
(i)	Establishment of project activities should describe as EIA, IEE, EMP which were follow EIA Procedure.			
(j)	Public Consultation should make again at 2017.			

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.

FNS/BPC200/GE5401/100/GE001

No. Sor Jor.3 054100 issued on 15 May 2017

TRANSLATION

This copy is attached to the Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(1) To provide service in all types of architectural and engineering design work, including survey, experiment and research to obtain information for such designs.

(2) To provide service in education, research, analysis, data acquisition, evaluation and summary in any general business projects without limitation.

(3) To provide service or be hired to serve in the technical knowledge, survey, research, analytical, design, evaluation and summary and report on various aspects of architectural development projects and all branches and specialties of engineering (for example: civil, structural, transportation, hydraulic, oceanographic, hydrography, water resources development, industrial, chemical, electrical, survey, mechanical, mining, sanitation and environmental engineering). Also, to improve on those projects so as to give the best quality and most economical results and to prevent waste of resources. The scope of work covers resources in the water, underground, on land and in the air for the private sector, sanitation communities, municipalities, government agencies, international organizations and other countries.

(4) To consult, advise, control operation, provide technical assistance as well as conduct research, experiments, analysis and research into any activities for individuals and juristic persons both in the country and overseas and various international organizations.

(5) To provide management in environmental control through stages of initiating development project, country and town planning, construction, project development, operation, management of resources in the water, underground, on land, in the air, sound and garbage control.

(6) To establish branch offices in Thailand and overseas in all parts of the world in order to reach all or one of the company's objectives.

No. Sor Jor.3 054100 issued on 15 May 2017

TRANSLATION

~~This copy is attached to the~~
Certificate
Registrar
Official Seal Affixed

The company has 38 objectives as follows:

(7) To borrow money, overdraw from banks, financial institutions, government and other organizations. To pawn, mortgage, sell with right of redemption the company's properties as credit guarantee. To make loans to juristic persons or other persons (except acceptance of mortgage of movable and immovable properties.)

(8) To deal in mass transportation, transport of merchandise and all other items by vehicles on land, waterways and air, both within the country and overseas whether it will be by personal or other person's vehicles. This includes purchasing, selling, exchanging, renting, loaning and hire-purchasing land, sea and air vehicles.

(9) To procure concession, permit, patent and other forms of right that is deemed beneficial to the company or affiliated companies.

(10) To enter into limited partnership, to assume responsibility in a limited partnership or be a shareholder in other limited companies regardless of whether such partnerships or companies have the same objectives as ours.

(11) To buy, sell, exchange, rent or let for rent of land, buildings and to bur, sell, appropriate land for sale and build residential buildings and bungalows for rent (except for hire-purchase purpose)

(12) To do business as proprietor or owner of immovable and movable properties to be used as offices, plants and for other uses by the company.

(13) To buy or procure share of other juristic persons that have similar objectives to the company's or that may be beneficial to the company.

(14) To be broker, agent and commission agency in all types of trade and business (except insurance business, association membership recruitment and trade of securities)

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.

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:

(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.

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 Khuayjarempanishk)

 (Signature) (Signed) Registrar

Request of Documentation No.1003260051/10057 (Ms. Nanthawan Phong-ampornsophon)

Form Bor Or Jor. 4

Computer-Generated Copy

Additional Amendment Registration and/or Special Resolution
of
TEAM Consulting Engineering and Management Co., Ltd.
Registration No. 0105521011519

This text was amended to include in the registrar, total 4 items as follow;

4. To amend the number or list of directors as following;

Item 6. The number or list of directors who can sign binding to the Company consists of Mr. Prasert Patramai, Mr. Peerawat Premchun, Mr. Thanasarn Khuayjarernpanishk, Mr. Chawalit Chantararat, and Mr. Issarin Patramai. Two of these directors mutually sign with affixation of the corporate common seal.

(Signature) (Signed) Director
(Mr. Prasert Patramai Mr. Thanasarn Khuayjarernpanishk)

 (Signature) (Signed) Registrar
Request of Documentation No. 1003260051/10057 (Ms. Nanthawan Phong-ampornsophon)

(Official Emblem) No. 1-1003-60-4-038532 issued on 15 May 2017

(TRANSLATION)

NEW DIRECTORS

of

TEAM Consulting Engineering and Management Co., Ltd.

All Directors have signed and consented to the registrar to verify the accuracy and disclose following information for the official use.

1) Mr. Sanit Rangnoi age 69 years Nationality Thai

☑ Holder of Identification Card No. 3 1 0 0 2 0 0 1 6 0 5 4 4

☐ Other Card No. .... No. ....

101 Panya-Indra Road, Khan Na Yao District, Bangkok Telephone 02-509-9000

Signature ....

2) Gen. Wichien Sirisoontorn age 61 years Nationality Thai

☑ Holder of Identification Card No. 3 1 0 0 6 0 1 3 9 0 5 1 6

☐ Other Card No. .... No. ....

71/65 Seraneeraya Village, Nawongprachapattana Road, Si Kan Sub-district, Don Mueang District, Bangkok Telephone 02-509-9000

Signature ....

3) Mr. Issarin Patramai age 43 years Nationality Thai

☑ Holder of Identification Card No. 3 1 0 0 6 0 0 9 3 0 9 8 3

☐ Other Card No. .... No. ....

11 Ramkhamheang 118, Ramkhamheang Road, Sapansoong Sub-district, Sapansoong District, Bangkok Telephone 02-509-9000

Signature ....

4) .... age ..... years Nationality ....

☐ Holder of Identification Card No. ☐☐☐☐☐☐☐☐☐☐☐☐☐

☐ Other Card No. .... No. ....

Village No. .... Road .... Sub-district, ... District,
Province .... Telephone ....

Signature ....

(Signature)............(Signed)............ Director
(Mr. Prasert Patramai .... Mr. Thanasarn Khuayjarernpanishk)

 (Signature)............(Signed)............ Registrar
Request of Documentation No.1003260051/10057 (Ms. Nanthawan Phong-amornsophon)

(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*

ISO 9001

UKAS MANAGEMENT SYSTEMS 0043

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

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, Darby Manor, Darby Road, Bournemouth, BH1 3QB, UK. Company Registration no. [illegible]

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. นายวิระ สุธิโสภณ	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 กรุงเทพมหานคร

(นางสาวนันทวรรณ ทองสมพีรศภณ)

คำเตือน : ผู้ใช้ควรตรวจสอบข้อควรทราบท้ายหนังสือรับรองฉบับนี้ทุกครั้ง

DBD
กรมพัฒนาธุรกิจการค้า กระทรวงพาณิชย์
Department of Business Development
Ministry of Commerce
Creative Services
สายด่วน 1570 www.dbd.go.th
บริการขอเอกสารผ่าน www.dbd.go.th -->ชำระเงินทางธนาคาร --> บริการจัดส่ง โทร. 02 528 7600 ต่อ 3630, 3636 หรือ 02 547 5994

จัดพิมพ์ เมื่อเวลา 14:53 น.

ที่ สจ.3 054100

สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร
กรมพัฒนาธุรกิจการค้า กระทรวงพาณิชย์

หนังสือรับรอง

ข้อควรทราบ ประกอบหนังสือรับรอง ฉบับที่ สจ.3 054100

1. บริษัทนี้เดิมชื่อ บริษัท ทีมคอนซัลติ้ง เอนจิเนียร์ จำกัด ได้จดทะเบียนเปลี่ยนชื่อเป็น บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด เมื่อวันที่ 18 เมษายน 2543/

2. นิติบุคคลนี้ได้ส่งงบการเงินปี 2558

3. หนังสือนี้รับรองเฉพาะข้อความที่ห้าง/บริษัทได้นำมาจดทะเบียนไว้เพื่อผลทางกฎหมายเท่านั้น ข้อเท็จจริงเป็นสิ่งที่ควรหาไว้พิจารณาฐานะ

4. นายทะเบียนอาจเพิกถอนการจดทะเบียน ถ้าปรากฏว่าข้อความอันเป็นสาระสำคัญที่จดทะเบียนไม่ถูกต้อง หรือเป็นเท็จ/.

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

สำเนาเอกสารนี้แนบท้ายหนังสือรับรอง

วัตถุที่ประสงค์ของ ห้างหุ้นส่วน/บริษัท นี้ มี 38 ข้อ ดังนี้

(1) รับบริการออกแบบงานสถาปัตยกรรม และงานสาขาวิศวกรรมทุกแขนง รวมถึงการสำรวจ ทดลอง ค้นคว้า และวิจัย เพื่อให้ได้มาซึ่งข้อมูลเพื่อการออกแบบนั้นๆ

(2) รับบริการทางด้านการศึกษา ค้นคว้า วิเคราะห์ หาข้อมูล ประเมินผล สรุปผล ในโครงการธุรกิจต่างๆ ทั่วไป โดยไม่จำกัดขอบเขต

(3) เพื่อรับจัดหรือรับจ้างหรือรับบริการด้านเทคนิค วิชาการ งานสำรวจ ศึกษา ค้นคว้า วิเคราะห์ วิจัย ออกแบบ ประเมินผล สรุปผล และทำรายงานในโครงการพัฒนาต่างๆ ทางด้านสถาปัตยกรรมและวิชาชีพ วิศวกรรมทุกแขนงและทุกสาขา (โยธา โครงสร้าง ขนส่ง ชลศาสตร์ สมุทรศาสตร์ อุทกศาสตร์ การพัฒนาแหล่งน้ำ อุตสาหกรรม เคมี ไฟฟ้า 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

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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 รวมทั้งการรับเช่าและนำเช่าสังหาริมทรัพย์ด้วย

(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 รวมทั้งอะไหล่และอุปกรณ์ของสินค้าดังกล่าวข้างต้น

(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

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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 ร่องแม่น้ำ 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 เครื่องมืออิเล็กทรอนิกส์ 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... (นางสาวบันทวรรณ หงศ์อัมพรโศภณ)

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

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการในทะเบียนซึ่งได้จดทะเบียนไว้แล้ว ณ สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร

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

2. ให้แก้ไขเพิ่มเติมข้อบังคับของบริษัทข้อ. 4 เป็นดังนี้

ข้อ 4. การโอนหุ้น

4.1 การโอนหุ้นจะมีผลโดยการจดทะเบียนแก้ไขลงในทะเบียนผู้ถือหุ้น

4.2 ถ้าผู้ถือหุ้นคนหนึ่งคนใดตาย หรือล้มละลาย ผู้รับมรดกหรือผู้จัดการมรดกหรือผู้มีสิทธิจะได้หุ้นนั้นจะต้องนำ ต้องนำหลักฐานอันชอบด้วยกฎหมายมาแสดงต่อบริษัท และเมื่อคณะกรรมการเห็นว่าเป็นการถูกต้องและไม่ขัดต่อข้อบังคับบริษัทแล้ว จะรับจดทะเบียนบุคคลนั้นเป็นผู้ถือหุ้นของบริษัทต่อไป

4.3 นอกจากบทบัญญัติแห่งข้อบังคับหมวดนี้ คณะกรรมการอาจกำหนดระเบียบใดๆ ตามความเหมาะสมในเรื่องการจัดการเกี่ยวกับหุ้น

4.4 บริษัทจะถือหรือรับจำนำหุ้นของบริษัทตัวเองไม่ได้"

3. ให้แก้ไขเพิ่มเติมจำนวนกรรมการของบริษัท เป็นดังนี้

กรรมการออกจากตำแหน่ง จำนวน 5 คน คือ

(1) นายสุขสวัสดิ์ ศรีสุภรวาณิชย์

(2) นายอำนาจ พรหมสูตร

(3) นายกิตติพล บุลนิม

(4) นายประสงค์ หวังรัตนปราณี

(5) นางสิรินิมิตร บุญยืน

กรรมการเข้าใหม่ จำนวน 3 คน (ดังปรากฏรายละเอียดในแบบ ก.) คือ

(1) นายสานิต ร่างน้อย

(2) พลเอกวิเชียร ศิริสุนทร

(3) นายอิศรินทร์ ภัทรมัย

(ลงลายมือชื่อ)..กรรมการผู้ขอจดทะเบียน

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

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

เอกสารประกอบคำขอที่ 100 32 600 51 10 0 57 (นางสาวบันทวรรณ หงศ์อัมพรโศภณ......)

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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 (นางวรรณ... พงศ์อัมพรโศภณ)

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

ข้อความซึ่งได้แก้ไขเพิ่มเติมรายการในทะเบียนไว้ สำนักงานทะเบียนหุ้นส่วนบริษัทกรุงเทพมหานคร

4. ให้แก้ไขเพิ่มเติมจำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัท เป็นดังนี้

.............ข้อ 6. จำนวนหรือชื่อกรรมการลงชื่อผูกพันบริษัทได้ คือนายประเสริฐ ภัทรมัย นายพีรวัชน์ 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 (.......นางสาววันทวรรณ พงศ์อัมพรโศภณ)

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

แบบ ก.

กรรมการเข้าใหม่

สำเนาถูกต้อง

ของ

บริษัท ทีม คอนซัลติ้ง เอนจิเนียริ่ง แอนด์ แมเนจเมนท์ จำกัด

ข้าพเจ้ากรรมการทุกคนซึ่งได้ลงลายมือชื่อไว้นี้ ยินยอมให้นายทะเบียนตรวจสอบความถูกต้องและเปิดเผยข้อมูลตามที่ได้ระบุไว้ในรายการจดทะเบียนนี้ เพื่อใช้ประโยชน์ของทางราชการ

(นางสาวนันทวรรณ พงศ์อัมพรโสภณ)
นายทะเบียน
สำนักงานทะเบียนหุ้นส่วนบริษัท กรุงเทพมหานคร

(1) นายศามิต ร่างน้อย อายุ ... ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1002-00160-54-4

☐ ถือบัตรอื่น ๆ (ระบุ) ... เลขที่ ...

อยู่บ้านเลขที่ 101 หมู่ที่/หมู่บ้าน ... ถนน ปัญญาอินทรา

ตำบล/แขวง คันนายาว อำเภอ/เขต คันนายาว จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ...

(2) พลเอก วิเชียร ศิริสุนทร อายุ 61 ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1006-01390-51-6

☐ ถือบัตรอื่น ๆ (ระบุ) ... เลขที่ ...

อยู่บ้านเลขที่ 71/65 หมู่ที่/หมู่บ้าน เศรษฐีราชา ถนน นาวงประชาพัฒนา

ตำบล/แขวง สีกัน อำเภอ/เขต ดอนเมือง จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ...

(3) นายอิศรินทร์ ภัทรมัย อายุ 43 ปี สัญชาติ ไทย

☑ ถือบัตรประจำตัวประชาชนเลขที่ 3-1006-00930-98-3

☐ ถือบัตรอื่น ๆ (ระบุ) ... เลขที่ ...

อยู่บ้านเลขที่ 11 หมู่ที่/หมู่บ้าน ซอยรามคำแหง 118 แยก 33-6-1 ถนน รามคำแหง

ตำบล/แขวง สะพานสูง อำเภอ/เขต สะพานสูง จังหวัด กรุงเทพมหานคร

หมายเลขโทรศัพท์ 02-509-9000

(ลงลายมือชื่อ) ...

(4) ... อายุ ... ปี สัญชาติ ...

☐ ถือบัตรประจำตัวประชาชนเลขที่ ☐-☐☐☐☐-☐☐☐☐☐-☐☐-☐

☐ ถือบัตรอื่น ๆ (ระบุ) ... เลขที่ ...

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

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

หมายเลขโทรศัพท์ ...

(ลงลายมือชื่อ) ...

(ลงลายมือชื่อ) ... กรรมการผู้ขอจดทะเบียน

(นายประเสริฐ ภัทรมัย นายธนสาร ก้วยเจริญพานิชย์)

หน้า 1 ของจำนวน 1 หน้า

(ลงลายมือชื่อ) นางสาวนันทวรรณ พงศ์อัมพรโสภณ นายทะเบียน

เอกสารประกอบคำขอที่ 100326005110057

(...)

ถ้ากรรมการเป็นชาวต่างประเทศ ให้ระบุชื่อและที่อยู่เป็นภาษาอังกฤษกำกับไว้ด้วย

JED/TEAM/แบบ-ก_เก้า3.pdl

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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

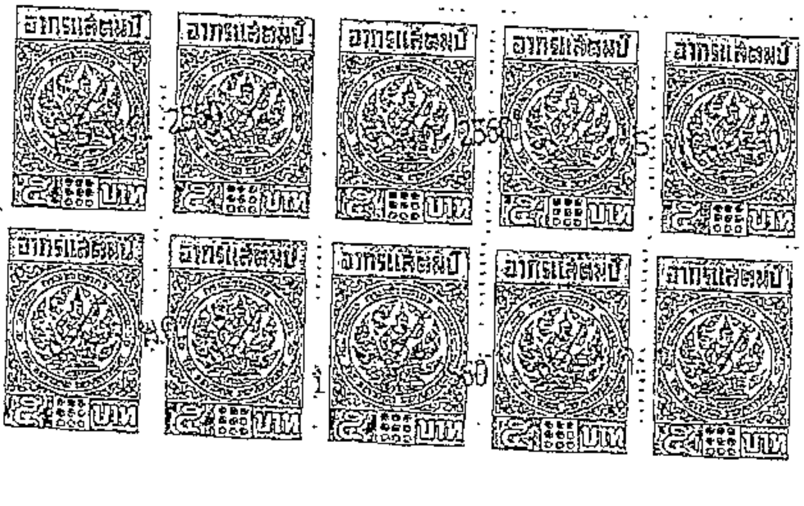
4.3 นอกจากบทบัญญัติแห่งข้อบังคับหมวดนี้ คณะกรรมการอาจกำหนดระเบียบใดๆ ตามความเหมาะสมในเรื่องการจัดการเกี่ยวกับหุ้น

4.4 บริษัทจะถือหรือรับจำนำหุ้นของบริษัทตัวเองไม่ได้

ขอรับรองว่าเป็นข้อความถูกต้องตรงกับมติที่ประชุมดังกล่าวข้างต้น

ลงชื่อ ______________ กรรมการ
(นายประเสริฐ ภัทรมัย)

ลงชื่อ ______________ กรรมการ
(นายธนสาร ก้วยเจริญพานิชก์)



ที่ กค 0910/4044

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

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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

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ABBREVIATION

ABBREVIATION

ASME	American Society of Mechanical Engineers
ASMS	Ambient Air Quality Monitoring Stations
BAT	Best Available Techniques
CA	Concession Agreement
CCEMP	Contractor- CEMP
CEMP	Construction Phase Environmental Management Plan
CIA	Cumulative Impact Assessment
CPMO	Contractor Project Management Office
CSD	Cutting Suction Dredger
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
HD	Hopper Dredger
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
MONREC	Ministry of Natural Resources and Environmental Conservation
MSL	Mean Sea Level
MW	Megawatt
NCEA	National Commission on Environmental Affairs
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
NO_2	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
SO_2	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

ဆိပ်ကမ်းငယ်စီမံကိန်းကို မြန်ထားဝယ် စက်မှုဇုန် ကုမ္ပဏီလီမိတက် (MIE)မှ တာဝန်ယူ အကောင်အထည်ဖော် ဆောင်ရွက်တည်ဆောက်မည်ဖြစ်ပါသည်။ ထိုစီမံကိန်းတည်ဆောက် အကောင်အထည်ဖော် လုပ်ပိုင်ခွင့်ကို ၂၀၁၅ခုနှစ် ဩဂုတ်လ ၅ရက်နေ့တွင် ထားဝယ် အထူးစီပွားရေးဇုန် စီမံခန့်ခွဲမှု ကော်မတီထံမှ လုပ်ကိုင်ခွင့်ရရှိခဲ့ပါသည်။ သက်ဆိုင်ရာမှ လုပ်ငန်းအကောင်အထည်ဖော်ရန် ခွင့်ပြုသည်နှင့် တစ်ပြိုင်နက် စီမံကိန်းဖွံ့ဖြိုးရေး၊ စီမံကိန်းလိုအပ်ချက်များနှင့် ထားဝယ် အထူးစီးပွားရေးဇုန်အတွင်းရှိ သတ်မှတ်ထားသောနေရာနှင့် အခြေခံအဆောက်အဦးများအတွက် သင့်တော်သော အစီအစဉ်များ စတင်ပြုလုပ်နေပြီဖြစ်ပါသည်။

စီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားအကြံပေးသူများသည် MIE အပါအဝင် ထိုင်းနိုင်ငံ အခြေဆိုက် TEAM Consulting Engineering and Management (TEAM) ကုမ္ပဏီလီမိတက်နှင့် မြန်မာနိုင်ငံရှိ Total Business Solution (TBS) ကုမ္ပဏီလီမိတက်တို့ ပူးပေါင်းကာ ဆောင်ရွက်ကြပါသည်။

၁.၂ မူဝါဒများ၊ ဥပဒေဆိုင်ရာနှင့် ဖွဲ့စည်းဆောင်ရွက်ပုံဆိုင်ရာ လေ့လာသုံးသပ်ချက်

၁.၂.၁ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုလမ်းစဉ်များ ပူးပေါင်းဆောင်ရွက်ခြင်း

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၁.၂.၂ မြန်မာနိုင်ငံ၏ မူဝါဒများ နှင့် ဥပဒေ မူဘောင်များ အပေါ် လေ့လာသုံးသပ်ချက်

ဤစီမံကိန်း၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် သက်ဆိုင်သော မြန်မာနိုင်ငံဆိုင်ရာ အမျိုးသားမူဝါဒနှင့် ဥပဒေဖွဲ့စည်းမှုများကို (၄)ပိုင်း ခွဲခြားနိုင်ပါသည်။ ၎င်းမူဝါဒနှင့် ဥပဒေဖွဲ့စည်းမှုများ၏ အကျဉ်းချုပ်ကို အောက်တွင်ဖော်ပြထားပါသည်။

(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 အညီဖြစ်သော စာတမ်းနစ်ခုသည် တိုင်းပြည်၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း ဥပဒေဖွဲ့စည်း မှုအပေါ် သဘောပေါက်စေသည်။

(၂) သဘာဝ ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်နှင့် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း လိုအပ်ချက်များ

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ထိန်းသိမ်းခြင်းဥပဒေတွင်ပါဝင်သော ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွား ထိခိုက်သက်ရောက်မှုလျော့ချရေးနည်းလမ်းများ၏ 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 လူမှုစီမံခန့်ခွဲခြင်းဆိုင်ရာ လိုအပ်ချက်များ

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 ပတ်သတ်ဆက်နွယ်သော အပြည်ပြည်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ အစဉ်အလာနှင့် သဘောတူညီချက်များကို မြန်မာနိုင်ငံမှ သဘောတူညီ လက်မှတ်ရေးထိုးပြီးစီခဲ့ပါသည်။ ၎င်းတို့ကို အပြီးသတ် အစီရင်ခံစာတွင် ကြည့်ရှုနိုင်ပါသည်။

၁.၂.၄ မြန်မာနိုင်ငံတော်အစိုးရအဖွဲ့၏ မူဘောင်များ

ဤစီမံကိန်းအတွက်ဆောင်ရွက်သည့် EIA လုပ်ငန်းစဉ်အား ECD ဗဟိုမှ တိုင်း ဒေသကြီးအဆင့်၊ ခရိုင်အဆင့်နှင့်မြို့နယ်အဆင့်ရှိ သက်ဆိုင်ရာအုပ်ချုပ်ရေး အာဏာပိုင် များနှင့်ပူးပေါင်းပြီး 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 ကမ္ဘာ ကျန်းမာရေးအဖွဲ့အစည်း (WHO)၊ ယူအက်စ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး အေဂျင်စီ (EPA)၊ ကမ္ဘာဘဏ်နှင့် အပြည်ပြည်ဆိုင်ရာ ငွေကြေးကော်ပိုရေးရှင်း (IFC)တို့မှလမ်းညွှန်မှုစံနှုန်းများဖြင့် ရည်ညွှန်းထားခြင်းဖြစ်သည်။ IFCသည် ကမ္ဘာဘဏ်အုပ်စု၏ အဖွဲ့အစည်းတစ်ခုဖြစ်ပြီး ကမ္ဘာဘဏ်နှင့် IFC၏ မူဝါဒ၊ လမ်းညွှန်ချက်များနှင့် စံချိန်စံညွှန်းများမှာ ကိုးကားခြင်းနှင့် ဖြည့်စွက်ခြင်းများအတွက် အသုံးပြုနိုင်ပါသည်။ ၄င်းတို့သည် Asia Development Bank ကဲ့သို့ ဖွံ့ဖြိုးတိုးတက်ရေး အဖွဲ့အစည်းဖြစ်သည်။ ပတ်ဝန်းကျင်ညစ်ညမ်းမှုများနှင့် ပတ်သတ်၍ ကမ္ဘာဘဏ်နှင့် IFC ၏ လမ်းညွှန်ချက်များ၊ စံညွှန်းတို့အပြင် EPA နှင့် WHO ၏ လမ်းညွှန်ချက်များ၊ စံညွှန်းများကိုပါ ထည့်သွင်း စဉ်းစားသင့်သည်။

၁.၂.၆ စီမံကိန်းပတ်ဝန်းကျင်နှင့် လူမှုစံညွှန်းများ

စီမံကိန်းတည်ဆောက်ခြင်းနှင့် လုပ်ငန်းလည်ပတ်စဉ်ကာလများ၏ စီမံကိန်း ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုများသည် မြန်မာနိုင်ငံ သို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ၏ သင့်တော်သော ပတ်ဝန်းကျင်နှင့် လူမှုလမ်းညွှန်ချက်များ၊ စံညွှန်းများကို အသုံးပြုပါသည်။ မြန်မာနိုင်ငံ၏ လမ်းညွှန်ချက်များနှင့် စံညွှန်းများ မရှိသည့်အချိန်တွင် အပြည်ပြည်ဆိုင်ရာ လမ်းညွှန်ချက်များနှင့် စံညွှန်းများကို အသုံးပြုပါသည်။ ထို့အပြင် စီမံကိန်း ခွင့်ပြုချက်မူကြမ်းကာလအတွင်းမှ သဘောတူညီချက်ထားရှိသည့်အတိုင်း စီမံကိန်းမှ ထုတ်လွှတ်မှုများကို ထိန်းချုပ်မည်ဖြစ်ပါသည်။

အပြည်ပြည်ဆိုင်ရာ ပတ်ဝန်းကျင် အရည်အသွေးစံနှုန်းများအား မြန်မာနိုင်ငံဆိုင်ရာ ပတ်ဝန်းကျင် အရည်အသွေးစံနှုန်းများအဖြစ် အသုံးပြုနေသည်ကို အစီရင်ခံစာ၏ ဇယား ၃.၆-၁ တွင်ဖော်ပြထားပါသည်။ ဇယား ၃.၆-၂ နှင့် ၃.၆-၃ တွင် မြန်မာနိုင်ငံ၏ ပတ်ဝန်းကျင် အရည်အသွေးစံနှုန်းများ (ဝန်းကျင်လေထုအရည်အသွေးနှင့် ဆူညံမှု)များကို ဖော်ပြထားပါသည်။ အစီရင်ခံစာ၏ အခန်း (၃) ဇယား ၃.၆-၄ တွင် မြန်မာနိုင်ငံ၏ ဆိပ်ကမ်း၊ ဆိပ်ခံများ၏ အမျိုးသားစွန့်ထုတ်မှုစံနှုန်းကို ဖော်ပြထားပါသည်။

၁.၃ စီမံကိန်းဖော်ပြချက်နှင့် အခြားသောရွေးချယ်နည်းလမ်းများ

၁.၃.၁ စီမံကိန်းနောက်ခံ အကြောင်းအရာ

စီမံကိန်းတွင် လမ်းပန်းဆက်သွယ်ရေးကဏ္ဍ ရုပ်ပိုင်းဆိုင်ရာ ဖွံ့ဖြိုးတိုးတက်ရေးလုပ်ဆောင်မှုများ ပါဝင်သည်။

ဆိပ်ကမ်းငယ်တည်ဆောက်မှုသည် မကြာသေးခင်မှ တည်ဆောက်ပြီးစီးသော ဆိပ်ကမ်းငယ်နှင့် ချိတ်ဆက်သွယ်ထားသောကြောင့် ထားဝယ်အထူးစီးပွားရေးဇုန် ဖွံ့ဖြိုးတိုးတက်မှု၏ အလိုအပ်ဆုံးသော ပင်လယ်ရေကြောင်းသွားလာရေးကဏ္ဍ ဖွံ့ဖြိုးတိုးတက်လာပါမည်။

၁.၃.၂ စီမံကိန်းတည်နေရာနှင့် စီမံကိန်းယေဘုယျအမြင်

စီမံကိန်းကို အဓိကအစိတ်အပိုင်း (၃) ပိုင်း ခွဲခြားထားပါသည်။ ၎င်းတို့မှာ (၁) ကုန်းတွင်းအပိုင်း (၂) ကမ်းလွန်အပိုင်းနှင့် (၃) စီမံကိန်းကမ်းရိုးတန်းလမ်း ဟူ၍ဖြစ်ပါသည်။ ကုန်းတွင်းပိုင်း တည်ဆောက်မှုများကို ထားဝယ်အထူးစီးပွားရေးဇုန်အပြင်ဘက်ရှိ ဧက (၁၀၀)ရှိသော မြေကွက်လပ်ပေါ်တွင် တည်ဆောက်မည်ဖြစ်သည်။ ကမ်းလွန်အပိုင်းတည်ဆောက်မှုတွင် ရေကာတံတိုင်းတစ်ခု၊ ချဉ်းကပ်တူးမြောင်းနှင့် သင်္ဘောများအတွက် ဆိပ်ခံတံတားတစ်ခုပါဝင်ပြီး ကမ်းရိုးတန်းရေပိုင်နက် (ပန်ဒအင် မြစ်ဝ)တွင် တည်ဆောက်မည်ဖြစ်သည်။ ဆိပ်ကမ်းငယ်သည် မောင်းမကန်ကမ်းခြေ၏ မြောက်ဘက်မှ ၄.၄ကီလိုမီတာ ဝန်းကျင်ကွာဝေးသည်။ စီမံကိန်း၏ ကမ်းရိုးတန်းလမ်းတွင် ဆိပ်ကမ်းမှ ကုန်ပစ္စည်းများ သယ်ဆောင်သော ကုန်တင်ကားကြီးများ၏ သွားလာမှုဒဏ်ခံနိုင်သော ကတ္တရာခင်း နှစ်လမ်းသွားကို တည်ဆောက်မည်ဖြစ်သည်။ လမ်းအရှည်သည် ခန့်မှန်းခြေ (၈.၃) ကီလိုမီတာရှည်လျားသည်။

၁.၃.၃ စီမံကိန်းဖွံ့ဖြိုးတိုးတက်မှုနှင့် အကောင်အထည်ဖော်မှုအစီအစဉ်

စီမံကိန်းတည်ဆောက်မှုပြီးစီးမှုသည် ၁၅လကြာမြင့်မည်။ စီမံကိန်းခွင့်ပြုချက်သည် ၂၀၁၅ခုနှစ် ဩဂုတ်လအစပိုင်းတွင် ရရှိခဲ့ပြီး ၂၀၁၇ခုနှစ်တွင် စီမံကိန်းတည်ဆောက်မှု ပြီးစီးပြီးလုပ်ငန်းစတင်နိုင်မည် ဖြစ်ပါသည်။

၁.၃.၄ စီမံကိန်းတည်ဆောက်မှုများ

(က) ဆိပ်ကမ်းငယ်

ဆိပ်ကမ်းငယ် စီမံကိန်း တည်ဆောက်မှုအတွက် လိုအပ်ချက်များ၏ အဓိက သတင်းအချက်အလက်များကို ဇယား ၁.၃-၁တွင် ဖော်ပြထားပါသည်။

(ခ) စီမံကိန်းကမ်းရိုးတန်းလမ်း

စီမံကိန်းကမ်းရိုးတန်းလမ်းသည် ၈.၃ ကီလိုမီတာရှည်လျားပြီး ၇မီတာကျယ်ကာ ROW ၁၈မီတာရှိသည်။ ဤလမ်းကို ကွန်ကရစ် ကတ္တရာစေးဖြင့် ထပ်ပိုးဖောက်လုပ်မည်ဖြစ်သည်။ လမ်းပေါ်မှ မိုးရေများ ပင်လယ်အတွင်းသို့ စီးဆင်းစေရန် ရေဆင်းပိုက်လိုင်းများကို လမ်းမသေးအောက်ခြေတွင် တပ်ဆင်ထားပြီး အနာဂတ်တွင် ယာဉ်သွားလာမှုများပြားခြင်းကြောင့် လေးလမ်းသွားတည်ဆောက်လျှင် ၎င်းရေဆင်း ပိုက်များကို အဆင့်မြှင့်တင်ရန်လိုအပ်ပါသည်။ တံတားဆောက်လုပ်မှုကို 3+000 ကီလိုမီတာတွင် ၃၀မီတာရှည်လျားသော ချောင်းငယ်ကိုဖြတ်၍ တည်ဆောက်မည်ဖြစ်သည်။

ဇယား ၁.၃.-၁

စီမံကိန်းအဓိက တည်ဆောက်မှု အကျဉ်းချုပ်

တည်ဆောက်မှု	အဓိက သတင်းအချက်အလက်	ရည်ရွယ်ချက် (သို့မဟုတ်) လုပ်ဆောင်ချက်
တူးမြောင်းအနေအထား		လုံလောက်သော ရေအနက်ရှိသောကြောင့် သင်္ဘောအမျိုးအစားစုံ ဖြတ်သန်းနိုင်ခြင်း
- စွမ်းဆောင်ရည်	ဦးတည်ရာ တစ်ခုအတွက် တစ်နာရီတွင် သင်္ဘောတစ်စင်း	
- အရွယ်အစား	အရှည် ၃ ကီလိုမီတာ၊ အကျယ် ၁၅၀ မီတာနှင့် အနက် ၈မီတာ	
- Turning cycle	အချင်း ၃၆၀ မီတာ၊ အနက် ၈ မီတာ	
- ရေကာတံတိုင်း	ရေကာတံတိုင်းတစ်ခုသည် ၁.၆ မီတာ	သင်္ဘောကြီးချည်ရာတွင် လှိုင်းဖြစ်ပေါ်မှုနည်းစေရန်
- ရေတားဘောင်	ကာကွယ်ရေးလျှောစောက်အရှည်သည် ၄၀၀ မီတာ	သင်္ဘောများ၊ ဆွဲသင်္ဘောများသွားလာမှုကြောင့် ရေလှိုင်းများဖြစ်ပေါ်ပြီး ကမ်းတိုက်စားခြင်းကို ကာကွယ်ရန်
- Stock yard	Stock yard ၂ခုရှိသည်။ တစ်ခုလျှင် ဧက ၂၀	ကွန်တိန်နာပစ္စည်းများနှင့် ကိရိယာများထားသိုရန်

အရင်းအမြစ်။ ။ ၂၀၁၆ခုနှစ် ITD

၁.၃.၅ ဒီဇိုင်းကုဒ်၊ စံနှုန်းနှင့် လမ်းညွှန်ချက်များ

စီမံကိန်းတည်ဆောက်မှု ဒီဇိုင်းသည် ဖွဲ့စည်းပုံ ဒီဇိုင်းအတွက် ယူရိုကုဒ် (BSEN)၊ ရေကြောင်းဖွဲ့စည်းပုံ (BS6349) နှင့် တူးမြောင်းဒီဇိုင်းအတွက် PIANC စသည့် ဒီဇိုင်းကုဒ်များ၊ စံနှုန်းများနှင့် လမ်းညွှန်ချက်များကို လိုက်နာပါသည်။

၁.၃.၆ စီမံကိန်းအကြိုတည်ဆောက်မှုကာလ

စီမံကိန်းအကြိုတည်ဆောက်မှုကာလတွင် စီမံကိန်းပြင်ဆင်မှုနှင့် ပတ်သတ်သော စီမံကိန်းလုပ်ဆောင်မှုများသည် ပတ်ဝန်းကျင်နှင့် ပတ်သတ်ဆက်နွယ်နေပါသည်။ အဓိကအားဖြင့် မြေရယူခြင်း၊ မြေပြင်ရှင်းလင်းခြင်း၊ မြေဖို့ခြင်းနှင့် သိပ်သည်းခြင်းတို့ဖြစ်ပါသည်။ ထို့အပြင် စီမံကိန်းကမ်းရိုးတန်းလမ်းတည်ဆောက်မှုတွင် ငပိတက်ရွာမှ အိမ်ခြေ ၁၂အိမ်ကို မြေ၊ အိမ်နှင့် ဥစ္စာပစ္စည်းများအတွက် အပြည့်အဝပေးလျော်ပြီး ပြန်လည်နေရာချထားရေးလုပ်ဆောင်မှု အစီအစဉ်များ အတွက်ပါ ပြင်ဆင်ထားခဲ့ပါသည်။ စီမံကိန်းအကြိုတည်ဆောက်မှုကာလသည် ၄-၅လအတွင်း ပြီးစီးမည် ဖြစ်ပါသည်။

၁.၃.၇ တည်ဆောက်မှုကာလ

(က) ဆိပ်ကမ်းဝယ်၏ ကုန်းတွင်းပိုင်းဖွဲ့စည်းပုံ

သိုလှောင်မှု မြေနေရာတည်ဆောက်မှုတွင် အောက်ဖော်ပြပါလုပ်ဆောင်မှုများပါဝင်သည်။ (၁) မြေကြီးထဲသို့ တိုင်များစိုက်သွင်းခြင်းပါဝင်သည့် အုတ်မြစ်ချခြင်း (၂) အားဖြည့်ကွန်ကရစ်ကြမ်းခင်း တည်ဆောက်ခြင်း (၃) ရေဆင်းမြောင်းများတည်ဆောက်ခြင်းနှင့် လျှပ်စစ်မီးအထောက်အပံ့များ တို့ဖြစ်ပါသည်။

(ခ) စီမံကိန်းကမ်းရိုးတန်းလမ်းတည်ဆောက်မှု

စီမံကိန်း ကမ်းရိုးတန်းလမ်းတည်ဆောက်မှုတွင် ဆောက်လုပ်ရေးလုပ်ငန်းများဖြစ်သော လမ်းဖောက်လုပ်ရေးတစ်လျှောက် ရှင်းလင်းခြင်း၊ လမ်းမြေမျက်နှာပြင်အနေအထားညှိခြင်း၊ မြေသိပ်သည်းခြင်း၊ လမ်းအောက်ခြေခင်းခြင်း၊ လမ်းခင်းခြင်း၊ ရေဆင်းမြောင်းစနစ်များတည်ဆောက်ခြင်းနှင့် လမ်းတစ်လျှောက်ရှိချောင်းများအားဖြတ်၍ ဆောက်လုပ်ခြင်း တို့ဖြစ်ပါသည်။

(ဂ) ကမ်းလွန်တည်ဆောက်မှု

(ဂ-၁) သောင်တူးခြင်း

ဆိပ်ကမ်းဝယ်တည်ဆောက်ခြင်းတွင် ချဉ်းကပ်တူးမြောင်းဖောက်လုပ်ခြင်း၊ သင်္ဘောများလှည့်ရာ နေရာနှင့် သင်္ဘောကုန်တင်ကုန်ချခြင်းများ လုပ်ဆောင်ရန်အတွက် ပင်လယ်ကြမ်းပြင်မှ သောင်တူးခြင်းကို လုပ်ဆောင်ရမည်။ သောင်တူးရမည့် ပမာဏသည် ပျမ်းမျှ ၅,၂၀၀,၀၀၀ m^3ဖြစ်သည်။ တူးဖော်ရရှိသော သောင်များကို ဆိပ်ကမ်း၏ ကုန်းတွင်းပိုင်းနှင့် ကမ်းလွန်နေရာတွင် စုပုံမည် မဟုတ်ပါ။ ၅,၂၀၀,၀၀၀ m^3 သော သောင်များကို stock yard ပြန်လည်ပြုပြင်ခြင်းနှင့် DSEZ စီမံကိန်း၏ မြေဖို့ရန်လိုအပ်သော နေရာများတွင် အသုံးပြုမည်ဖြစ်ပါသည်။

(ဂ-၂) ရေကာတံတိုင်းဆောက်လုပ်ခြင်း

ကျောက်ရေကာတံတိုင်း ဆောက်လုပ်ခြင်းတွင် ရေကာတံတိုင်း၏ အရှည်မှာ ၁.၆ ကီလိုမီတာရှည်လျားသည်။ ရေကာတံတိုင်းကို တောင်ပို့ပုံစံတည်ဆောက်မည်ဟု စီစဉ်ထားသည်။ ၎င်းကို တောင်ပို့ပုံစံကျောက်တုံးများဖြင့်တည်ဆောက်ပြီး အပေါ်ဆုံးလွှာတွင် လေးလံသော ကျောက်တုံးကြီးများ ဖြင့်ကာကွယ်တည်ဆောက်မည်ဖြစ်ပါသည်။ တည်ဆောက်ရေးလုပ်ငန်းတွင် မြေပေါ်နှင့် ရေပေါ် အသုံးပြုရသော စက်ကြီးများလိုအပ်ပါသည်။ မြေပြင်ပေါ်တွင် အသုံးပြုရသော ကိရိယာများမှာ ဝန်ချီစက်ကြီးများ၊ ဟိုက်ဒရောလစ်မြေတူးစက်များ၊ ဘူဒိုဇာများ၊ မြေသယ်ယာဉ်များ ဖြစ်ပါသည်။ ရေပေါ်တွင် အသုံးပြုရသော ကိရိယာများမှာ ရေပေါ်ကရိန်းနှင့် မြေသယ်သင်္ဘောများဖြစ်ပါသည်။ ဆွဲသင်္ဘောများကို ရေပေါ်တွင် အသုံးပြုရမည့် ကိရိယာများရွှေ့ပြောင်းရာတွင် အသုံးပြုသည်။

(ဂ-၃) အခြားသောကမ်းလွန်ဖွဲ့စည်းပုံ

ဆိပ်ခံတံတားနှင့် သင်္ဘောကြီးချည်နေရာ တည်ဆောက်ခြင်းတွင် အောက်ဖော်ပြပါ အစီအစဉ်များပါဝင်သည်။ (၁) မြေကြီးအတွင်းသို့ တိုင်များရိုက်သွင်းခြင်း၊ (၂) အောက်ခံကြမ်းခင်းအုတ်မြစ် တည်ဆောက်ခြင်းနှင့် (၃) အားဖြည့်ကွန်ကရစ်ကုန်းပတ်နှင့် ပလက်ဖောင်းတည်ဆောက်ခြင်း တို့ဖြစ်ပါသည်။

(ဃ) ဆောက်လုပ်ရေးပစ္စည်းများ

အခြေခံဆောက်လုပ်ရေးပစ္စည်းများမှာ သဲဖြစ်ပြီး အကယ်၍ လုပ်ငန်းနှင့် သင့်တော်ပါက DSEZ အနီးရှိကျောက်မိုင်းနှင့် သောင်တူးဖော်ခြင်းမှရရှိသော သဲများကို အသုံးပြုနိုင်ပါသည်။ ဘိလပ်မြေ၊ စတီးနှင့် အခြားသောပစ္စည်းများကို ဈေးနှုန်းပိုသက်သာသော ထိုင်း သို့မဟုတ် မြန်မာနိုင်ငံမှ တင်သွင်းအသုံးပြုမည် ဖြစ်ပါသည်။ ရေကာတံတိုင်းတည်ဆောက်မှုအတွက်လိုအပ်သော ကျောက်တုံးကြီးများကို ပြည်တွင်း ကျောက်မိုင်းမှ ရယူမည်ဖြစ်ပါသည်။

(င) သွင်းအားစုများ

တည်ဆောက်ရေးကာလအတွက် ၂၇၃ဦးသော ဝန်းထမ်းများ လိုအပ်မည်ဟု မျှော်လင့်ထားပါသည်။

(စ) ဆောက်လုပ်ရေး အစီအစဉ်

ဆိပ်ကမ်းငယ်နှင့် စီမံကိန်းကမ်းရိုးတန်းလမ်းသည် ၁၅လအတွင်းပြီးစီးမည် ဖြစ်ပါသည်။

၁.၃.၈ စီမံကိန်းလည်ပတ်မှုကာလ

ဆိပ်ကမ်းလည်ပတ်မှု - ဆိပ်ကမ်းငယ်သည် ကနဦးကာလတွင် အခြေခံအားဖြင့် ယေဘူယျကုန်စည်သင်္ဘောများ ဆိပ်ကပ်ရန်ဖြစ်ပြီး အနာဂတ်၏ ကုန်စည်လိုအပ်မှုကြောင့် ကွန်တိန်နာသင်္ဘောများပါ ဆိပ်ကပ်ရန် စီစဉ်ထားပါသည်။ ဆိပ်ကမ်းငယ်တွင် သင်္ဘောများကြိုးချည်ခြင်းမှာ ပျမ်းမျှအားဖြင့် တစ်နာရီတွင် သင်္ဘောတစ်စီးနှုန်းဖြစ်ပါသည်။

သောင်တူးခြင်း ထိန်းသိမ်းမှု - ချဉ်းကပ်တူးမြောင်းအတွက် သောင်တူးခြင်းထိန်းသိမ်းမှုကို အနည်ကျနှုန်းနှင့် မှတ်သုန်ပေါ်မူတည်၍ ၂နှစ် ၁ကြိမ် ပြုလုပ်ပေးရပါမည်။ သောင်တူးခြင်း ထိန်းသိမ်းမှုကြိမ်နှုန်းနှင့် အကျယ်အဝန်းကို ဒီဇိုင်းအင်ဂျင်နီယာမှ ဆုံးဖြတ်ပေးပါလိမ့်မည်။

ကမ်းခြေတိုက်စားမှု ပြန်လည်ပြုပြင်ခြင်း - ရေကာတံတိုင်းများသည် တစ်ဘက်တွင် ကမ်းခြေတိုက်စားမှု ဖြစ်ပေါ်ပြီး အခြားတစ်ဘက်တွင် စုပုံခြင်းဖြင့် ကမ်းခြေတိုးချဲ့လာခြင်းများ ဖြစ်ပေါ်လာနိုင်ပါသည်။ ကမ်းခြေတွင် စုပုံလာသော သဲများကို ဆုတ်ယုတ်သွားသော ကမ်းခြေနေရာတွင် ပြန်လည်ဖြည့်သွင်းမည် ဖြစ်ပါသည်။

ဆိပ်ကမ်းစွန့်ပြစ်အမှိုက်စီမံခန့်ခွဲမှု - သင်္ဘောများမှ စွန့်ထုတ်လိုက်သော အမှိုက်များကို သိမ်းဆည်ပြီး ပြုပြင်ထိန်းသိမ်းခြင်းများပြုလုပ်ပြီးမှ ရွေးချယ်ထားသော စွန့်ပြစ်နေရာတွင် စွန့်ပြစ်ရပါမည်။

စီမံကိန်း ကမ်းရိုးတန်းလမ်း - စီမံကိန်းကမ်းရိုးတန်းလမ်း၏ အခြေအနေကို ပုံမှန်စစ်ဆေးခြင်း၊ ပြင်ဆင်ခြင်း၊ ပြုပြင်ခြင်းများ ပြုလုပ်ခြင်းဖြင့် ယာဉ်သွားလာမှု အခြေအနေကောင်းမွန်ပြီး လမ်းသွားလာမှု လုံခြုံမည်ဖြစ်ပါသည်။ ကမ်းရိုးတန်းလမ်း၏ နှစ်စဉ်ထိန်းသိမ်းမှုကာလကို ပျမ်းမျှ တစ်နှစ်လျှင် တစ်ကြိမ် ပြုလုပ်ရပါမည်။

၁.၃.၉ စီမံကိန်းအခြားသောရွေးချယ်နည်းလမ်းများဖော်ပြချက်

ဆိပ်ကမ်းငယ်စီမံကိန်းအတွက် ရွေးချယ်နည်းလမ်း ၂မျိုးရှိပါသည်။

ရွေးချယ်နည်းလမ်း (၁) - အဆိုပြုထားသော ဆိပ်ကမ်းငယ်သည် ပန်ဒအင်မြစ်ဝတွင် တည်ရှိပြီး ရွေးချယ်နည်းလမ်း (၂) နှင့် ၁ကီလိုမီတာကွာဝေးသည်။

၁.၃.၁၀ စီမံကိန်းရွေးချယ်နည်းလမ်းများ ရွေးချယ်ခြင်းနှင့် နှိုင်းယှဉ်ခြင်း

အောက်ပါတို့အပေါ်မူတည်၍ ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများကို ဆိပ်ကမ်းငယ်၏ ရွေးချယ်နည်းလမ်းများအဖြစ် နှိုင်းယှဉ်ကြသည်။ ၄င်းတို့မှာ -

(၁) အဏ္ဏဝါဂေဟဗေဒ
(၂)ရေကြောင်းသွားလာမှု
(၃) ကမ်းရိုးတန်းရေအရည်အသွေး

အောက်ဖော်ပြပါ ဇယား၏ အမှတ်ပေးမှုများအရ ရွေးချယ်နည်းလမ်း (၁)သည် အသင့်တော်ဆုံး ရွေးချယ်နည်းလမ်းဖြစ်ပါသည်။

ခေါင်းစဉ်	ရွေးချယ်နည်းလမ်း (၁)	ရမှတ်	ရွေးချယ်နည်းလမ်း (၂)	ရမှတ်
အဏ္ဏဝါဂေဟ စနစ်	သောင်တူးဖော်ခြင်း လုပ်ဆောင်မှုကြောင့် အဏ္ဏဝါဂေဟဗေဒကို အနှောက်အယှက်ပေးနိုင်ပါသည်။	၁	သောင်တူးဖော်ခြင်းနှင့် ရေအောက်တွင်ပေါက်ကွဲမှု လုပ်ဆောင်ခြင်းများကြောင့် အဏ္ဏဝါဂေဟကို အနှောက်အယှက်နှင့် ထိခိုက်မှုများ ဖြစ်ပေါ်စေနိုင်ပါသည်။	၀
ရေကြောင်းသွား လာမှု	ငါးဖမ်းသင်္ဘောများကို သောင်တူးခြင်း လုပ်ဆောင်ချိန်နှင့် ရေကာတံတိုင်း တည်ဆောက်ချိန်များတွင် ရေကြောင်းသွားလာမှုကို ပိတ်ဆို့ထားပါမည်။	၁	ငါးဖမ်းသင်္ဘောများကို သောင်တူးခြင်း လုပ်ဆောင်ချိန်နှင့် ရေကာတံတိုင်း တည်ဆောက်ချိန်နှင့် ရေအောက်တွင် ပေါက်ကွဲမှု လုပ်ဆောင်ချိန်တွင် ရေကြောင်းသွားလာမှုကို ပိတ်ဆို့ထားပါမည်။	၀
ကမ်းရိုးတန်းရေ အရည်အသွေး	ကျောက်တုံးများ ဖောက်ခွဲချိန်နှင့် သောင်တူးခြင်းလုပ်ဆောင်ချိန် များတွင် ညစ်ညမ်းစေပါသည်။	၁	သောင်တူးခြင်းလုပ်ဆောင်ချိန်များတွင် ညစ်ညမ်းစေပါသည်။	၀
စုစုပေါင်း ရမှတ်	၃		၀	
အဆင့်	၁		၂	

မှတ်ချက်။ ။ ၀ = ဆိုးရွား ၊ ၁ = အလယ်အလတ် ၊ ၂ = ကောင်းမွန်

၁.၄ ပတ်ဝန်းကျင်အခြေအနေဖော်ပြချက်

၁.၄.၁ လေ့လာမှု အကန့်အသတ်များ

(က) လေ့လာမှု ဧရိယာနှင့် ပတ်ဝန်းကျင်အကန့်အသတ်များ

လေ့လာမှုဧရိယာသည် စီမံကိန်းတည်နေရာ၏ ၅ ကီလိုမီတာ ပတ်လည်တွင် တည်ရှိပြီး စုစုပေါင်း ဧရိယာ ၇၈.၆ km^2 (ပျမ်းမျှ ၂၀,၀၀၀ ဧက) ရှိပါသည်။

EIA လုပ်ထုံးလုပ်နည်းများအရ စီမံကိန်း ကန့်သတ်ချက်များမှာ ရုပ်ပိုင်းဆိုင်ရာ၊ သက်ရှိဇီဝများ၊ ယဉ်ကျေးမှု၊ လူမှုစီပွားအပိုင်းနှင့် စက္ခုအာရုံ အစိတ်အပိုင်းများ ပါဝင်သည်။

စီမံကိန်းလေ့လာမှု ဧရိယာ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ သတင်းအချက်အလက်များကို ထောက်ခံရာတွင် တစ်ဆင့်ခံ အရင်းအမြစ်နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေးတို့မှ ကန့်သတ်ထားသော ကွင်းဆင်းစစ်တမ်းကောက်ခံခြင်းများမှ ရရှိပါသည်။

(ခ) ဒေသဆိုင်ရာ အုပ်ချုပ်ရေး

စီမံကိန်းလေ့လာ ဧရိယာတွင် လောင်းလုံမြို့နယ်၏ အုပ်ချုပ်ခွင့် အာဏာပိုင် လက်အောက်မှ ရွာ ၆ရွာ ပါဝင်သည်။ ၎င်းတို့မှာ (၁) ငဝိတက် (၂) ညောင်ပင်ဆိပ် (၃) ပန်ဒအင် (၄) စခန်းသစ် (၅) ဇီးနစ်ပင်နှင့် (၆) မောင်းမကန်ရွာတို့ဖြစ်ပါသည်။

၁.၄.၂ ရုပ်ပိုင်းဆိုင်ရာ အစိတ်အပိုင်းများ

ဆိပ်ကမ်းငယ်သည် ပန်ဒအင်မြစ်ဝ (ပျမ်းမျှ မီတာ ၄၀၀နှင့် အနက် ၄မီတာ) တွင် တည်ရှိသည်။ ကမ်းလွန်လေ့လာမှု ဧရိယာသည် ပျမ်းမျှအားဖြင့် ပြန့်ပြူးပြီး ရေမျက်နှာပြင်အထက် ၁ မီတာမှ ၄ မီတာ အတွင်းတည်ရှိသည်။ ၎င်း၏ အရှေ့ပိုင်းတွင် ဒီရေတောများ၊ သဲခုံများ၊ ပန်ဒအင်မြစ်နှင့် တောင်တန်းများရှိသည်။

လေ့လာမှုဧရိယာတွင် သန့်ရှင်းသော ပတ်ဝန်းကျင်ဖြစ်ပေါ်ရန် ကွင်းဆင်းစစ်တမ်း ကောက်ယူခြင်းအားဖြင့် အောက်ဖော်ပြပါတို့ကို ရည်ညွှန်းထားပါသည်။

- စိုစွတ်သောရာသီနှင့် ခြောက်သွေ့ရာသီများတွင် တိုင်းတာသော ဝန်းကျင်လေထုအရည်အသွေး ရလဒ်သည် ကမ္ဘာဘဏ်၏ လေထုအရည်အသွေးစံနှုန်းနှင့် ကိုက်ညီသည်။
- စိုစွတ်သောရာသီနှင့် ခြောက်သွေ့ရာသီများတွင် တိုင်းတာသော ဝန်းကျင်ဆူညံမှုအဆင့်သည် ကမ္ဘာဘဏ်၏ ဆူညံမှုနှင့် တုန်ခါခြင်းစံနှုန်းများနှင့် ကိုက်ညီသည်။
- စိုစွတ်ရာသီနှင့် ခြောက်သွေ့ရာသီများတွင် (၄)နေရာတွင် ကောက်ယူထားသော ပင်လယ်ရေသည် အောက်ဆီဂျင်ပျော်ဝင်နှုန်းမြင့်မားပြီး သတ္တုဓါတ်နှင့် အော်ဂဲနစ် အညစ်အကြေးများ ပါဝင်မှု အလွန်နည်းပါးကြောင်း တွေ့ရှိရသည့်အတွက် ရေအရည်အသွေးကောင်းသည်ဟု သတ်မှတ် ပါသည်။

၁.၄.၃ ဇီဝဆိုင်ရာလေ့လာမှုအပိုင်းများ

(၇၅)မျိုးသော အပင်မျိုးစိတ်များကို စီမံကိန်းဧရိယာတွင် တွေ့ရှိရပြီး ၎င်းတို့ထဲမှ (၃) မျိုးသည် IUCN Red Lists (2013) စာရင်းအရ မျိုးသုဉ်းပျောက်ကွယ်နိုင်သည့် မျိုးစိတ်များဖြစ်သည်။ စီမံကိန်းဧရိယာတွင် (၃၉) မျိုးသော သတ္တဝါမျိုးစိတ်များကို တွေ့ရှိရပြီး အများစုမှာ မျိုးသုဉ်းပျောက်ကွယ်နိုင်သည့် မျိုးစိတ်မဟုတ်ကြပါ။

ရေနေဂေဟစနစ်တွင် phytoplankton ကဲ့သို့သော မိုက်ခရိုအောဂဲနစ် ရေနေအပင်ငယ်လေးများ၊ zooplankton ကဲ့သို့သော ရေနေအကောင်ငယ်လေးများနှင့် benthas ကဲ့သို့သော ရေအောက်ကြမ်းပြင်နှင့် ရေထုအတွင်းနေထိုင်သော အော်ဂဲနစ်အကောင်ငယ်စသည့် ရေနေသတ္တဝါငယ်များနှင့် အပင်မွှား လေးများသည် အမျိုးအမည်ကွဲပြားစွာနှင့် သိပ်သည်းစွာ ရှိနေကြောင်း တွေ့ရှိရသည့်အတွက် ရေနေဂေဟစနစ် ကောင်းသည်ဟု သတ်မှတ်ပါသည်။ ငါးဖမ်းလုပ်ငန်းများ အသေးစားလုပ်ငန်းအဖြစ်သာ လုပ်ကိုင်နေပြီး ပြင်းထန်မှုမရှိသေးပါ။ ပင်လယ်ရေတွင် ငါးမျိုးစိတ်များ၊ ဂဏန်း၊ ပုစွန်စသည့် ရေနေသတ္တဝါများ များစွာရှိပါသည်။

၁.၄.၄ လူမှုစီးပွားဆိုင်ရာ လေ့လာမှုအပိုင်းများ

(က) လူမှုစီးပွားအခြေအနေ

ကျေးရွာလူထု၏ လူမှုစီးပွားအခြေအနေများ၏ အဓိကတွေ့ရှိချက်များ၏ အကျဉ်းချုပ်များကို အောက်တွင်ဖော်ပြထားပါသည်။

- စီမံကိန်းလေ့လာမှုဧရိယာတွင် လူဦးရေ စုစုပေါင်း (၁၀,၅၉၇) ဦး၊ အိမ်ထောင်စု (၁,၅၂၃) စုရှိပြီး အိမ်ထောင်စု တစ်စုလျှင် ပျမ်းမျှ လူဦးရေ (၇) ဦးရှိသည်။ အမျိုးသမီး အမျိုးသားဦးရေမှာ ၁.၀၆၅ : ၁ (၂၀၁၅ခုနှစ် ဇန်နဝါရီလတွင် ကျေးရွာလူကြီးများနှင့် တွေ့ဆုံမေးမြန်းခြင်း၏ ရလဒ်) ဖြစ်ပါသည်။
- ကျေးရွာ၏ အမျိုးသမီးနှင့် အမျိုးသားအချိုးသည် တူညီလုနီးပါးရှိပြီး တစ်ဦးနှင့် တစ်ဦး ထောက်ပံ့ကာ နေထိုင်ကြပါသည်။
- လေ့လာသည့်ကျေးရွာ ၅ရွာလုံးတွင် ကြီးမားပြင်းထန်သော ကျန်းမာရေးပြဿနာများ မတွေ့ရှိပါ။ ဆေးရုံဝန်ဆောင်မှုသည် မောင်းမကန်တွင်သာ တည်ရှိပြီး ရွာများမှ ၁ကီလိုမီတာမှ ၁၀ကီလိုမီတာ ကွာဝေးကြသည်။
- ကျေးရွာ (၅)ရွာမှ ရွာသူရွာသားများအတွက် ငါးဖမ်းခြင်းနှင့် ရေနေသတ္တဝါများဖမ်းခြင်းသည် အဓိက အသက်မွေးဝမ်းကြောင်းမှုဖြစ်ပါသည်။
- ကျေးရွာ (၅)ရွာမှ ပျမ်းမျှ အိမ်ထောင်စုအလိုက် ဝင်ငွေမှာ တစ်နှစ်လျှင် ဒေါ်လာ ၂,၆၅၀ (သို့မဟုတ်) ဒေါ်လာ ၁,၂၀၀ - ၄,၄၀၀ အတွင်းတည်ရှိပါသည်။ ရရှိသော ဝင်ငွေထက် အသုံးစရိတ်များ အနည်းငယ်မျှသာ လျော့နည်းသည်။ တစ်နှစ်အတွက် ပျမ်းမျှအသုံးစရိတ်မှ ဒေါ်လာ ၂၅၅၀ (သို့မဟုတ်) ဒေါ်လာ ၁၀၈၀ - ၄၄၀၀ အတွင်းရှိကြပါသည်။ (၂၀၁၅ခုနှစ် ဇန်နဝါရီလတွင် ကျေးရွာလူကြီးများနှင့် တွေ့ဆုံမေးမြန်းခြင်းရလဒ်)
- ကျေးရွာများတွင် အလုပ်လက်မဲ့နှုန်းမှာ အလွန်နည်းပါးပြီး အဓိကလုပ်ငန်းမှာ မိသားစု စီးပွားရေးလုပ်ငန်းဖြစ်သည့် ငါးဖမ်းခြင်းနှင့် ဥယျာဉ်ခြံလုပ်ငန်းဖြစ်သည်။
- ကျေးရွာသူ ကျေးရွာသား အများစုသည် အခြေခံမူလတန်းအဆင့်ပညာ သင်ကြားခဲ့ရပါသည်။

- ထိခိုက်နစ်နာလွယ်ကူသူစာရင်းတွင် ထည့်သွင်းစဉ်းစားခံရမည့်ဦးရေမှာ နည်းပါးလှပါသည်။ လူမှုတည်ဆောက်ဖွဲ့စည်းပုံအရ ထိခိုက်နစ်နာလွယ်ကူသူများကို ၎င်းတို့၏ မိသားစုဝင်များ၊ ဆွေမျိုးသားချင်းနှင့် အိမ်နီးချင်းများမှ ဝိုင်းဝန်းစောင့်ရှောက်ကြပါသည်။

(ခ) မြေအသုံးချမှု

မြေအသုံးချမှု ၂ မျိုးရှိပါသည်။ ၎င်းတို့မှာ (၁) သစ်တောမြေအသုံးပြုခြင်းနှင့် (၂) အခြားသောမြေအသုံးချမှုတို့ ဖြစ်ပါသည်။

(ဂ) အခြေခံအဆောက်အအုံများ

စီမံကိန်းလေ့လာနေရာ၏ အခြေခံအဆောက်အအုံများနှင့် အထောက်အပံ့များမှာ အောက်ပါ အတိုင်းဖြစ်ပါသည်။

လမ်း - လေ့လာမှုဧရိယာတွင် လမ်း ၂ လမ်းရှိသည်။ ၎င်းတို့မှာ - ITD စခန်းမှ လက်ရှိဆိပ်ကမ်းငယ်သို့ ဆက်သွယ်ထားသောလမ်းနှင့် ITD စခန်းမှ မောင်းမကန်ရွာသို့ ဆက်သွယ်ထားသောလမ်းတို့ဖြစ်ပါသည်။

ရေကြောင်းသွားလာမှု - ၂၀၁၅ခုနှစ် ဇန်နဝါရီလ ၂၃-၂၄ရက်များတွင် လက်ရှိဆိပ်ကမ်းငယ်မှ သင်္ဘောအမျိုးအစားနှင့် အရေအတွက်များကို မှတ်သားထားခဲ့ပြီး ၎င်းရလဒ်များအရ ရေကြောင်းသုံးကြောင်းမှ သွားလာနေသော သင်္ဘောများသည် ယခုအချိန်တွင် အရေအတွက် အနည်းငယ်သာရှိပြီး ထိုလမ်းကြောင်းတွင် အရေအတွက်များများ သွားလာနိုင်ပါသည်။

လျှပ်စစ်ဓါတ်အား - လက်ရှိတွင် အစိုးရလျှပ်စစ်ဓါတ်အားဖြန့်ဝေပေးပို့ခြင်း မရှိပါ။ အချို့အိမ်များတွင် အသေးစားကိုယ်ပိုင်မီးစက်များသာ ရှိပါသည်။

ရေပေးဝေခြင်း - လက်ရှိတွင် ကျေးရွာများနှင့် စီမံကိန်းနေရာများသို့ ရေဖြန့်ဝေခြင်းများ မရှိပါ။ အဓိကရေအရင်းအမြစ်မှာ မြေအောက်ရေတွင်းများဖြစ်ပါသည်။

စွန့်ပြစ်စနစ် - ယခုလက်ရှိတွင် လေ့လာမှုဧရိယာတွင် စွန့်ပြစ်ပစ္စည်းများနှင့် မိလ္လာစနစ်တို့အတွက် စနစ်တကျ သတ်မှတ်ထားခြင်းမရှိပါ။ အိမ်သုံးရေဆိုးများကို မသင့်တော်သော ပုံးများနှင့် စုဆောင်းပြီး ကွင်းပြင်တွင်စွန့်ပြစ်ခြင်း သို့မဟုတ် ကျေးရွာအတွင်းတွင် မီးရှို့ခြင်းများပြုလုပ်နေကြပါသည်။

၁.၄.၅ ယဉ်ကျေးမှုဆိုင်ရာ အစိတ်အပိုင်းများ

- လူအများစုမှာ ထားဝယ်ဒေသရှိ ဗမာလူမျိုးများဖြစ်ကြပြီး ထေရဝါဒဗုဒ္ဓ ဘာသာ ကိုးကွယ် ယုံကြည်ကြသူများဖြစ်ကြသည်။ ဒေသန္တရထားဝယ်စကားကို ပြောကြသည်။
- ကျေးရွာဝိုင်းတွင် ဘုန်းကြီးကျောင်းများ စေတီပုထိုးများ နှင့် သင်္ချိုင်းရှိသည်။ အရေးကြီးတန်ဖိုး ထားသော သမိုင်းဝင်နေရာသည် နဘုလည် ဒေသတဝိုက်တွင်တည်ရှိသည်။
- အသက်မွေးမှုအတွက် ပင်လယ် ကမ်းရိုးတန်းနေ ရွာသားများ အဓိကမှီခိုအားထားရသည့် ပင်လယ်နှင့် ဒီရေရောက်တောမှ သဘာဝအရင်းအမြစ်များသာဖြစ်သည်။ ငပိတက်ရွာသား များသည်ဒီရေရောက်တောမှ ထွက်ကုန်များကိုအသုံးပြု၍ပြင်ကြီးချောင်းသည် ၎င်းတို့၏ ငါးဖမ်းလှေ များအတွက် လေပြင်းမုန်တိုင်း အကာအရံသဖွယ်ဖြစ်သည်။ မုဒုရွာသားများသည် ကုန်းတွင်းပိုင်း သယံဇာတများကို မှီခိုနေသည်။

- ရပ်ကျေးလူထုများသည် ၎င်းတို့၏ဖွဲ့စည်းထားသော ကျေးရွာ အုပ်ချုပ် မှုအဖွဲ့အစည်းများ၊ 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။ မျက်စိပသာဒဖြစ်လှသောရှုခင်းမရှိလှပါ။ နဘုလည် နှင့် မောင်းမကန် ကမ်းခြေတို့မှာ သာယာလှပသည့် ကမ်းခြေအဖြစ် ခရီးသွားများအားဆွဲဆောင်လျက်ရှိသော အလားအလာ ကောင်းမွန်သည့် နေရာများဖြစ်သည်။ သို့သော် ၎င်းနေရာ များမှာ စီမံကိန်းနေရာနှင့် (၇)ကီလိုမီတာနှင့် (၁၁) ကီလိုမီတာ ဝေးကွာကြပါသည်။

၁.၅ သဘာဝပတ်ဝန်းကျင်အဓိကထိခိုက်သက်ရောက်မှုများနှင့် လျော့ချသက်သာစေရန် အစီအစဉ်များ

၁.၅.၁ သဘာဝပတ်ဝန်းကျင် ထိခိုက်သက်ရောက်မှုများနှင့် လျော့ချသက်သာစေရန် အစီအစဉ်များ အကျဉ်းချုပ်

ကာလ ၄ခု (စီမံကိန်း အကြိုတည်ဆောက်မှု၊ တည်ဆောက်ဆဲ၊ စီမံကိန်းလည်ပတ်မှုနှင့် ပိတ်သိမ်းခြင်းကာလ)၏ သဘာဝပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှုများနှင့် လျော့ချသက်သာစေရန် အစီအစဉ်များအကျဉ်းချုပ်ကို ဇယား ၁.၅-၁ မှ ဇယား ၁.၅-၄ တွင်ဖော်ပြထားပါသည်။

ဇယား ၁.၅-၁

စီမံကိန်းတည်ဆောက်မှုပြင်ဆင်ဆဲကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်သက်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဂေဟာစနစ်ထိခိုက်သက်ရောက်မှုကဏ္ဍ	ဆိပ်ကမ်းငယ်စီမံကိန်းသည် ပျက်စီးနေသော ဒီရေတော ၆၄.၈ဧက၊ သဘာဝဒီရေတော ၁၆.၂ဧကနှင့် ကမ်းခြေသစ်တောနှင့် စိမ့်မြေ ၁၀.၃ဧကကို ရှင်းလင်းရပါမည်။ စီမံကိန်းကမ်းရိုးတန်းလမ်း တည်ဆောက်မှုသည် ကမ်းခြေသစ်တော ၁၃.၈၄ဧကကို ရှင်းလင်းမည်ဖြစ်ပါသည်။	အလယ်အလတ်	• စီမံကိန်းမြေပြင်ရှင်းလင်းမှု မပြုလုပ်ခင် စီမံကိန်းဧရိယာအတွင်းရှိ အပင်၊ သတ္တဝါမျိုးစိတ်များကို စစ်တမ်းကောက်ယူခြင်းများ ပြုလုပ်ရပါမည်။ အကယ်၍ မျိုးသုဉ်းနိုင်သော မျိုးစိတ်များတွေ့ရှိခဲ့လျှင် ၄င်းတို့ကို ကာကွယ်ရေး စိမ့်မြေနှင့် ဒီရေတောဧရိယာအတွင်းသို့ပြောင်းရွှေ့ပေးရပါမည်။ • အာဏာပိုင်အဖွဲ့အစည်းများဖြစ်သော MONREC၊ သစ်တောဦးစီးဌာနနှင့် ဒေသခံရွာသူရွာသားများနှင့် တွေ့ဆုံဆွေးနွေးကာ DSEZ ပြင်ပတွင် ဒီရေတော ဧရိယာများ အကောင်အထည်ဖော်ရန်ဆောင်ရွက်ရပါမည်။ ၄င်း၏ အဓိက ရည်ရွယ်ချက်မှာ ဆုံးရှုံးသွားသော ဒီရေတောဧရိယာများကို ပြန်လည် အစားထိုးပေးလျော်ခြင်း ဖြစ်သည်။ • စီမံကိန်းဧရိယာပတ်လည်တွင် စိမ်းလန်းသော ကြားခံဇုန်ကို အကောင်အထည်ဖော်ရန်ဖြစ်သည်။ • သစ်ပင်ခုတ်ခြင်းကို ရှောင်ရှားပြီး စီမံကိန်း၏ သက်ဆိုင်ရာ မန်နေဂျာ၏ ခွင့်ပြုချက်မရလျှင် ခုတ်ခွင့်မရှိပါ။
ဇီဝလောင်စာ အညစ်အကြေးများ စွန့်ပြစ်ခြင်းကဏ္ဍ	ဆိပ်ကမ်းငယ်တည်ဆောက်မှုအတွက် မြေပြင်ရှင်းလင်းခြင်းပြုလုပ်ရာတွင် သစ်ပင်များခုတ်ထွင်ရှင်းလင်းမှုကြောင့် ၆,၈၃၉.၉၀ တန်သော ဇီဝလောင်စာ အညစ်အကြေးများနှင့် စီမံကိန်း ကမ်းရိုးတန်းလမ်း ဖောက်လုပ်မှုကြောင့် ၁၃.၈၄တန်သော ဇီဝလောင်စာ အညစ်အကြေးများ ထွက်ပေါ်လာပါမည်။	အလယ်အလတ်	ဇီဝလောင်စာများတွင် သစ်ပင် ပင်စည်များ၊ အမြစ်များ၊ အကိုင်းအခက်များနှင့် အရွက်များပါဝင်သည်။ ၄င်းတို့ကို ဆောက်လုပ်ရေး၊ မီးသွေးပြုလုပ်ခြင်း၊ ထင်းမီးအဖြစ် အသုံးပြုသင့်ပါသည်။ အသုံးပြု၍မရပဲ ကျန်ရှိသောအပိုင်းများကို အရွယ်အစားသေးငယ်အောင်ဖြတ်၍ စီမံကိန်း၏ အမှိုက်စွန့်ပြစ်ရာ နေရာတွင် စွန့်ပြစ်ရန်ဖြစ်ပါသည်။ ၄င်းကို မီးရှို့ခြင်းများ ပြုလုပ်ရန်ခွင့်မပြုပါ။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ကျေးရွာသူကျေးရွာသားများ၏ အသက်မွေးဝမ်းကြောင်းကဏ္ဍ	ဆိပ်ကမ်းငယ်စီမံကိန်းကြောင့် ပေါတက်ကျေးရွာသူ ကျေးရွာသားများသည် ဒီရေတောဧရိယာအချို့ဆုံးရှုံးခဲ့ရသည်။ ထိုဧရိယာသည် ကျေးရွာ၏ ထင်းရရှိရာ အရင်းအမြစ်ဖြစ်သည်။ စီမံကိန်းကမ်းရိုးတန်းလမ်း တည်ဆောက်မှုကြောင့် စီမံကိန်းနေရာတွင် တည်ရှိနေသော အိမ်ထောင်စု ၁၂စုကို ပေါတက်ရွာအတွင်း ပြန်လည်နေရာချထားပေးရပါမည်။	မြင့်မား	**(၁) ဆိပ်ကမ်းငယ်** စီမံကိန်းအကောင်အထည်ဖော်သူများသည် အသက်မွေးဝမ်းကြောင်း ပြန်လည်တည်ထောင်မှု အစီအစဉ် (LRP)ကို ထိခိုက်သူများနှင့် ဆွေးနွေးကာ အကောင်အထည်ဖော်ဆောင်ရွက်ရမည်။ LRPတွင် လေ့ကျင့်ရေးများပါဝင်ပြီး ထိခိုက်သူများ၏ လက်ရှိစီးပွားရေး ဝင်ငွေများထက် တိုးတက်စေရန် သို့မဟုတ် အခြားစီးပွားရေးများ လုပ်ဆောင်နိုင်ရန် အစပိုင်းထောက်ပံ့မှုများ ပြုလုပ်ပေးမည်ဖြစ်သည်။ **(၂) စီမံကိန်းကမ်းရိုးတန်းလမ်း** စီမံကိန်းအကောင်အထည်ဖော်သူများသည် ပြန်လည်နေရာချထားရေးအတွက် ထိခိုက်သွားသော အိမ်ထောင်စု ၁၂ စု၊ ကျေးရွာလူကြီးများ၊ ပေါတက်ရွာ၏ ကော်မတီဝင်များ၊ MONREC အပါအဝင် အာဏာပိုင်အဖွဲ့အစည်းများနှင့် ဆွေးနွေး သင့်ပါသည်။ ထိုအစီအစဉ်သည် အထက်ဖော်ပြပါ အဖွဲ့အစည်းများ အားလုံး သဘောတူညီရန်လိုအပ်သည်။ ညှိနှိုင်းရေး သဘောတူညီမှု ရရှိခဲ့လျှင် ထိုအိမ်ထောင်စု ၁၂စုအား နေရာအသစ်သို့ ပြောင်းရွှေ့ရန် ဆောင်ရွက်ရပါမည်။
ပတ်ဝန်းကျင် နောက်ယှက်မှုများဖြစ်သော ဖုန်မှုန့်၊ ဆူညံမှုနှင့်ဓါတ်ငွေ့ထုတ်လွှတ်မှုများကဏ္ဍ	မြေပြင်ရှင်းလင်းခြင်း၊ မြေဖို့ခြင်းနှင့် ကိရိယာပစ္စည်းများ ရွှေ့ပြောင်းခြင်းကြောင့် ဖုန်မှုန့်၊ ဆူညံမှု ထုတ်လွှတ်ခြင်းများ တိုးပွားလာပါသည်။	အလယ်အလတ်	မြေပြင်သိပ်သည်းခြင်းပြုလုပ်ရာတွင် ပျံ့လွင့်ဖုန်မှုန့်များ အဓိက ထွက်ပေါ်လာပါသည်။ မကြာခဏ ရေဖြန်းပေးခြင်းဖြင့် ဖုန်မှုန့်များကို ဖိနှိပ်ကဲ့သို့ဖြစ်ပေါ်ပြီး ဖုန်မှုန့်များထွက်ပေါ်မှု၏ ၇၅%ကို လျော့ချပေးနိုင်ပါသည်။ ရွှေ့လျား စက်ကိရိယာများ၏ ဆူညံမှုထွက်ပေါ်ခြင်းကို ထိန်းချုပ်ရန် ခက်ခဲပါသည်။ ဆူညံမှု ဖြစ်ပေါ်ရာနေရာတွင် အလုပ်လုပ်ကိုင် နေသော ဝန်ထမ်းများအား နားစို့များ ထောက်ပံ့ပေးရပါမည်။ ထို့အပြင် မြေပြင်ရှင်းလင်းခြင်း လုပ်ဆောင်ချိန်တွင် ယာယီ အသံကာတံတိုင်းများ တပ်ဆင်ခြင်းအားဖြင့် ဆိပ်ကမ်းငယ်အတွက် မြေဖို့ခြင်းနှင့် စီမံကိန်းကမ်းရိုးတန်းလမ်း ဖောက်လုပ်ခြင်းကြောင့် စခန်းသစ်ရွာနှင့် ပေါတက်ရွာသို့ ဆူညံမှုထိခိုက်ခြင်းများ လျော့ချနိုင်ပါသည်။

ဇယား ၁.၅-၂

စီမံကိန်းတည်ဆောက်ဆဲကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်သက်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဓါတ်ငွေ့ထုတ်လွှတ်မှုကြောင့် ထိခိုက်သက်ရောက်မှုများကဏ္ဍ	စက်ပစ္စည်းအကြီးစားများနှင့် ယာဉ်များမှ အိတ်ဇောဓါတ်ငွေ့ ထုတ်လွှတ်မှုများပြားလာနိုင်ပါသည်။	အနိမ့်	• ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံး ကုန်တင်ယာဉ်များ လုပ်ငန်းခွင်သို့ဝင်ရောက်ရန် တန်းစီကြရာတွင် စက်နှိုးထားခြင်းကိုတားမြစ်ခြင်း • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးစက်ပစ္စည်းများ၏ပဂတိအရည်အသွေးအတိုင်းထိန်းသိမ်းစောင့်ရှောက်ခြင်း • စက်ပစ္စည်းသုံးစွဲသူ ဝန်ထမ်းများအား ထိုစက်ပစ္စည်းများ၏ သင့်တော်သော အသုံးပြုပုံကို လေ့ကျင့်ပေးခြင်း • စီမံကိန်းရှိပစ္စည်းများကို သင်တော်သော အရွယ်အစား သုံးရန် • နောက်ဆုံးပေါ်ဓါတ်ငွေ့ထုတ်လွှတ်မှု အနဲဆုံးနည်းပညာ ဖြင့် ထုတ်လုပ်ထားသော သင့်တော်သည့် အင်ဂျင် အသုံးပြုရန် (ပြန်လည်အားသွင်းအင်ဂျင်နှင့် လျှပ်စစ် ရထား) • စီမံကိန်းသုံးကိရိယာများကို လမ်းမပေါ်တွင် မောင်းနှင် ရသည့် အင်ဂျင်တပ်ထားသည့် ကုန်တင်ကားဖြင့် သယ်ဆောင်ရန် (လမ်းမပေါ်တွင် မောင်းနှင့်၍ မရသည့် အင်ဂျင်စက်ထုတ်လွှင့်မှုနည်းသည်) • ဆောက်လုပ်ရေးဝန်ထမ်းများအတွက် ကားကြီးများ၊ ပို့ဆောင်ရေးယာဉ်များ၊ စက်ဘီးပါကင်များကို ထားရှိ ဆောက်လုပ်ပေးရန် • ဆောက်လုပ်ရေးလုပ်ငန်းသုံး ယာဉ်များ၊ စက်ရုံ ကိရိယာများကို ဒီဇယ်မော်တာများအသုံးပြုပြီး ၄င်းတို့တွင် ဓါတ်ငွေ့ထုတ်လွှတ်မှုတိုင်းတာထိန်းချုပ်မှုကို တပ်ဆင် ထားပြီး ထုတ်လုပ်သူ၏ လမ်းညွှန်မှုအတိုင်း ပုံမှန် ထိန်းသိမ်းသွားရန်တို့ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
အသံဆူညံမှုကဏ္ဍ	ဆိပ်ကမ်းငယ်နှင့် စီမံကိန်းကမ်းရိုးတန်းလမ်း တည်ဆောက်မှုကြောင့် ဆောက်လုပ်ရေးလုပ်ငန်းသုံး စက်ကိရိယာအကြီးစားများနှင့် ယာဉ်များကြောင့် (စခန်းသစ်နှင့် ငပိတက်ရွာများ) ဆူညံမှုများ မြင့်တက်လာပါသည်။	အလယ်အလတ်	• စီမံကိန်း၏ ဆူညံမှုကိုဖြစ်ပေါ်စေသော အဓိက ဆောက်လုပ်ရေးလုပ်ငန်းများကို နေ့အချိန်တွင်သာ ပြုလုပ်ရန်နှင့် ညအချိန်တွင် လုပ်ဆောင်ရန် လိုအပ် လာပါက လုပ်ငန်းခွင် အင်ဂျင်နီယာ၏ ခွင့်ပြုချက် လိုအပ်ပြီး ဆူညံမှုကို ထိန်းချုပ်ပေးနိုင်သော ကိရိယာများ (သို့မဟုတ်) တိုင်းတာခြင်းများ ပြုလုပ်ပေးရန် လိုအပ်ပါသည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်များကို တစ်နာရီ ၄၀ကီလိုမီတာထက်မပိုစေရန် • ဆောက်လုပ်ရေးလုပ်ငန်းသုံး စက်ပစ္စည်းများ၏ ဆူညံမှု ဖြစ်ပေါ်နှုန်းကို ရှင်းလင်းစွာဖော်ပြရန် • ရွှေ့ပြောင်းမရသောအသုံးအဆောင်ပစ္စည်းများ၏ ပတ်ဝန်းကျင် တွင် အသံတားဆီးနိုင်သည့် ယာယီတံတိုင်းများ တပ်ဆင်ရန် • EPC ကန်ထရိုက်တာမှ ဆူညံမှုထုတ်လွှတ်ချိန်တွင် ဆူညံမှု ထုတ်လွှတ်မှု အတိုင်းအတာများကို ပုံမှန်တိုင်းတာရန် • CEMP တွင် တိုင်တန်းမှုများအတွက် နစ်နာကြေးများပေးလျော်ခြင်းနှင့် ကောင်းမွန်မှန်ကန်သော လုပ်ဆောင်မှု အစီအစဉ်များဖြင့် ဆူညံမှုအတွက်တိုင်ကြားမှုများ မရှိစေရန် ဆောင်ရွက်ရပါမည်။
ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါရေနေ သတ္တဝါဂေဟဗေဒ	• သောင်တူးဖော်ခြင်းအချိန်တွင် ရေနောက်ကျိမှုများ တိုးပွား လာပါသည်။ • ချဉ်းကပ်တူးမြောင်း ဆောက်လုပ်ရန် သောင်တူးဖော်ခြင်းကြောင့် ရေညစ်ညမ်းမှု ဖြစ်ပေါ်ခြင်းမှာ ပျမ်းမျှ မီတာ ၅၀၀ရှိပြီး ၄င်းသည် သန္တာကျောက်တန်းများနှင့် ပင်လယ်ရေမှော်များကို ထိခိုက်ခြင်း မရှိပါ။ • ဆိပ်ကမ်းငယ်နှင့် အနီးဆုံး ပင်လယ်ရေမှော်များသည် ပျမ်းမျှ ၂၈ ကီလိုမီတာ ကွာဝေးသော မြောက်ဘက်ကျွန်းတွင် လည်းကောင်း အနီးဆုံး ပင်လယ်ရေမှော်များသည် ပျမ်းမျှကီလိုမီတာ ၄၀	အလယ်အလတ်	**(က) သောင်တူးဖော်ခြင်းလုပ်ဆောင်မှုများ** • သောင်တူးဖော်ခြင်းမှ စုပုံလာသော အနယ်အနှစ်များကြောင့် ရေနေသတ္တဝါများ နေထိုင်မှုကို ထိခိုက်မှုနည်းစေရန် နည်းလမ်းများသုံး၍ လုပ်ဆောင်ရမည်။ • ကန်ထရိုက်တာသည် သောင်တူးဖော်ခြင်းနှင့် စုပုံရာ ဧရိယာများ၏ အခြေခံကမ်းရိုးတန်းရေ အရည်အသွေးကို သောင်တူးဖော်ခြင်းလုပ်ငန်းများ မစတင်မီ အနဲဆုံး ၃လ ကြိုတင်၍ နေ့စဉ်စောင့်ကြည့်ဖွလေ့လာခြင်း လုပ်ငန်းများ လုပ်ဆောင်ရမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
	ကျဲဝေးသော မြိတ်တွင် တည်ရှိကြပါသည်။ • သောင်တူးဖော်ခြင်း လုပ်ဆောင်မှုကြောင့် ထိခိုက်သော မျိုးစိတ်မှာ မရှိသလောက်ဖြစ်ပြီး စီမံကိန်းပတ်ဝန်းကျင်တွင်လည်း ထိခိုက်စေသော မျိုးစိတ်များ မရှိပါ။		• စုစုပေါင်း ပျံ့နှံ့အမှုန်များပါဝင်နှုန်းသည် ၅၀ mg/l ထက်ကျော်ခဲ့လျှင် သောင်တူးဖော်ခြင်း လုပ်ငန်းကို ရပ်တန့်လိုက်ရမည် ဖြစ်ပါသည်။ • အနည်အနှစ်များ သယ်ယူပို့ဆောင်သော ပိုက်လိုင်းကို ကောင်းမွန်ခြင်းရှိ/ မရှိ နေ့စဉ်စစ်ဆေးပြီး ထိန်းသိမ်းရမည်။ ထို့အပြင် အနည်အနှစ်များ ပင်လယ်ထဲသို့ ဖိတ်ကျမှုကြောင့် ပိုက်လိုင်းထိခိုက်မှု မရှိစေရန် ကာကွယ်ရပါမည်။ • အကယ်၍ အနည်အနှစ်ပိုက်လိုင်း ပျက်စီးခဲ့သည်ရှိသော် သောင်တူးဖော်ခြင်းလုပ်ငန်းကို ရပ်တန့်လိုက်ရမည် ဖြစ်ပါသည်။ • စီမံကိန်းဧရိယာအတွင်းရှိ လှိုင်းစီးနှုန်း၊ ဒီရေအတက်အကျနှုန်းနှင့် လေကြောင်းတိုက်ခတ်မှုတို့၏ ရေရှည်ပတ်ဝန်းကျင်ဆိုင်ရာ သတင်းအချက်အလက်များကို ကြိုတင်ပြင်ဆင်ထားရပါမည်။ • စက်များနှင့် ကိရိယာပစ္စည်းများမှ စက်သုံးဆီများ ပင်လယ်အတွင်းသို့ ဖိတ်ကျမှု မရှိစေရန် စစ်ဆေးခြင်းနှင့် ထိန်းသိမ်းခြင်းများ ပြုလုပ်ရပါမည်။ • အနယ်အနှစ်များ ပင်လယ်တွင်းသို့ လျှံကျမှု မရှိစေရန် HD (Hopper Dredger) နှင့် CSD (Cutting Suction Dredger) တို့ကို စစ်ဆေးထိန်းသိမ်းရမည် ဖြစ်ပါသည်။ • စီမံကိန်းအင်ဂျင်နီယာသည် သောင်တူးဖော်ခြင်းမှ ထွက်လာသော အနည်အနှစ်များကို သတ်မှတ်ထားသော စွန့်ပစ်စုပုံနေရာမဟုတ်ပဲ စွန့်ပစ်စုပုံခြင်း မပြုလုပ်ရန် ကန်ထရိုက်တာအား တင်းကြပ်စွာ တားမြစ်ထိန်းချုပ်ရမည်။ • သောင်တူးဖော်ခြင်းလုပ်ငန်းပြုလုပ်ချိန်တွင် ကမ်းရိုးတန်းရေ အရည်အသွေးစောင့်ကြည့်လေ့လာမှုများပြုလုပ်ပြီး ရရှိလာသော ရလဒ်များကို သက်ဆိုင်ရာ အဖွဲ့အစည်းများသို့ ပို့ဆောင်ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			(ခ) စွန့်ပြစ်စုပုံခြင်း • ကမ်းရိုးတန်းရေ အရည်အသွေးနှင့် ပင်လယ်ဂေဟစနစ် ထိခိုက်မှုမရှိစေရန် ကမ်းလွန်တွင် စွန့်ပြစ်စုပုံခြင်း လုပ်ဆောင်မှုများကို ရှောင်ရှားရပါမည်။ • ကနဦး စက်မှုဇုန်အတွက် အကျယ်အဝန်းများ ဖြစ်ပေါ်ရန် ကုန်းတွင်းပိုင်းစွန့်ပြစ်စုပုံနေရာတွင် သောင်တူးဖော်ခြင်းမှ ရရှိသော အနည်အနှစ်များကို စုပုံ အသုံးပြုရပါမည်။ **(ဂ) အဏ္ဏဝါဂေဟဗေဒ** • ကမ်းရိုးတန်းရေ အရည်အသွေး ထိခိုက်မှု လျော့ချသော နည်းလမ်းများကဲ့သို့ လုပ်ဆောင်ရန် အကြံပေးပါသည်။ • သောင်တူးဖော်ခြင်း လုပ်ငန်းပြုလုပ်ချိန်တွင် ကမ်းရိုးတန်းရေ အရည်အသွေးစောင့်ကြည့်လေ့လာမှုများ ပြုလုပ်ပြီးရရှိလာသော ရလဒ်များကို သက်ဆိုင်ရာ အဖွဲ့အစည်းများသို့ပို့ဆောင်ရပါမည်။ • ဆိပ်ကမ်းအနီးတွင် နေထိုင်လုပ်ကိုင်နေသော ဒေသတွင်း ငါးဖမ်းသမားများအား ဆောက်လုပ်ရေး လုပ်ဆောင်မှု အချိန်ဇယားနှင့် သောင်တူးဖော်ခြင်းလုပ်ငန်းဧရိယာတို့၏ သတင်းအချက်အလက်များကို ဖြန့်ဝေပေးရပါမည်။ • ဒေသတွင်း အာဏာပိုင်အဖွဲ့အစည်းများနှင့် ပူးပေါင်းကာ သန္တာကျောက်တန်းများနှင့် အဏ္ဏဝါအရင်းအမြစ်များကို ကာကွယ်စောင့်ရှောက်ရပါမည်။
ရေဆိုးကဏ္ဍ	ဆောက်လုပ်ရေးကာလတွင် အောက်ဖော်ပြပါ ရေဆိုးများထွက်ရှိပြီး ၄င်းတို့အား ထိန်းချုပ်ရန် လိုအပ်ပါသည်။ • ဆောက်လုပ်ရေး အမြင့်ဆုံးအချိန်တွင် ဝန်ထမ်း ၂၇၃ ယောက်၏ လူနေမိလ္လာ စွန့်ထုတ်မှု (ပျမ်းမျှ ၄၁ m³/day) • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်မှ ကုန်တင်ကားဘီးများ ဆေးကြောမှုကြောင့် ထွက်ပေါ်လာသော ရေဆိုးများ (ပျမ်းမျှ ၄၂ m³/day) • မြေမျက်နှာပြင် မျောပါခြင်း (ဆိပ်ကမ်းငယ်မှ ၈၄,၂၁၈ m³နှင့်	အလယ်အလတ်	**မြေမျက်နှာပြင်မျောပါခြင်း** • မြေပြင်ရှင်းလင်းခြင်း၊ မြေဖို့ခြင်းနှင့် သိပ်သည်းခြင်းစသည့် လုပ်ငန်းခွင် ပြင်ဆင်မှုလုပ်ဆောင်ခြင်းများကို နွေရာသီတွင် ပြုလုပ်ခြင်းအားဖြင့် မြေမျက်နှာပြင်မျောပါခြင်းကို ပင်လယ်တွင်း သို့မဟုတ် အနီးအနားရှိ ချောင်း/မြောင်းတို့အတွင်း သို့ နောက်ကျိမှု မြင့်မားစွာ စီးဆင်းခြင်းပြဿနာကို ရှောင်ရှားနိုင်ပါသည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
	စီမံကိန်း ကမ်းရိုးတန်းလမ်းမှ ၃၉,၀၆၀ m^3)		• ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အား ယာယီခြံစည်းရိုး ကာထားခြင်းအားဖြင့် မိုးရာသီတွင် ဆောက်လုပ်ရေး ဧရိယာမှ အနည်အနှစ်များ ပင်လယ်တွင်းသို့စီးဆင်းခြင်းကို လျော့ချပေးရန်ဖြစ်သည်။ • မြေမျက်နှာပြင်ဖျောပါခြင်းအားဖြင့် ညစ်ညမ်းစေခြင်းကို ကာကွယ်ရန် ညစ်ညမ်းမှု ဖြစ်ပေါ်လာနိုင်သော အရင်းအမြစ်များကို အမိုးအကာဖြင့် ကာကွယ်ထားရပါမည်။ • ယာယီရေဆင်းမြောင်းများ ဆောက်လုပ်ပေးခြင်းဖြင့် ဆိပ်ကမ်းငယ်နှင့် စီမံကိန်းကမ်းရိုးတန်းလမ်းတို့၏ ဆောက်လုပ်ရေးလုပ်ငန်းများမှ ထွက်ပေါ်လာနိုင်သော ပင်လယ်အတွင်းသို့ စီးဆင်းမည့် မြေမျက်နှာပြင် ဖျောပါခြင်းများကို စုဆောင်းရန်ဖြစ်သည်။ • စုဆောင်းထားသော မိုးရေများသည် ပင်လယ်ထဲသို့မဟုတ် အနီးအနားရှိချောင်း/မြောင်းထဲသို့ မစွန့်ပြစ်မီ အနည်ထိုင်ကန်တွင် အနည်အနှစ်များ ဖယ်ရှားခြင်း ပြုလုပ်ပေးရပါမည်။ ဆောက်လုပ်ရေးလုပ်ငန်းများ ပြီးစီးသွားလျှင် အနည်ထိုင်ကန်သည် စီမံကိန်းလည်ပတ်ဆဲကာလတွင် ရေဆိုးစီမံခန့်ခွဲမှု နေရာအဖြစ်အသုံးပြုသွားမည် ဖြစ်ပါသည်။ **လူနေအိမ်သုံး ရေဆိုး** • မိလ္လာအညစ်အကြေးများကို grey water or salvage နှင့် ခွဲခြားထားရပါမည်။ • မီးဖိုချောင်နှင့် ကန်တင်းများမှ ထွက်လာသော ရေဆိုးများကို ဆီနှင့် အဆီဖယ်သောကန်ကို ဖြတ်ပြီးမှသာ အနယ်ထိုင်ကန်သို့ ပို့ဆောင်ရမည်ဖြစ်ပါသည်။ • သန့်စင်ခန်း အညစ်အကြေးများသည် မိလ္လာကန်အတွင်းသို့ ဟိုက်ဒရောလစ် ဓါတ်ပြုကြာချိန် ၅ ရက်တစ်ကြိမ်စွန့်ပြစ်ရပါမည်။ သန့်စင်ခြင်းစက်ရုံတွင် သန့်စင်နိုင်ပါသည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			• Grey water ကို အနယ်ထိုင်ကန် အတွင်းသို့ စွန့်ပြစ်ရပါမည်။ • အနယ်ထိုင်ကန်သည် ဟိုက်ဒရောလစ် ဓါတ်ပြုကြာချိန် ၇ရက်ရှိသော အောက်ဆီဂျင်ပေးကန် ဖြစ်ပါသည်။ **ဆေးကြောရေဆိုးများ** • ကွန်ကရစ်နှင့် ကားဘီးဆေးကြောရေများကို ကွန်ကရစ် အနယ်ထိုင်ကန် အတွင်းသို့ စွန့်ပြစ်ရပါမည်။ စွန့်ထုတ်ရည်များကို pHညှိပြီး လိုအပ်လျှင် ပြန်လည်အသုံးပြုပါမည်။ ကျန်ရှိသော စွန့်ထုတ်ရည်များကို အနယ်ထိုင်ကန်အတွင်းသို့ စွန့်ပြစ်ရပါမည်။ • အနယ်ထိုင်ကန် အတွင်းရှိ ရေများကို ဆောက်လုပ်ရေး လုပ်ငန်းခွင်တွင် ဖုန်မှုန့်များ ဖိသိပ်ရန် ရေဖြန်းခြင်း၊ သစ်ပင်များအားရေဖြန်းခြင်း၊ ကွန်ကရစ်ဆေးကြောခြင်းနှင့် ကားဘီးများဆေးကြောရာတွင် ပြန်လည်အသုံးပြုပါသည်။
ဆောက်လုပ်ရေး အညစ်အကြေးကဏ္ဍ	စီမံကိန်း၏ ဆောက်လုပ်ရေးကာလတွင် အောက်ဖော်ပြပါ အညစ်အကြေးများ ထုတ်လွှတ်မည်ဖြစ်သည်။ • မြေပြင်ရှင်းလင်းခြင်းမှ သစ်ပင်ပန်းပင်များ • မြေပြင်တူးဖော်ရေးလုပ်ငန်းများမှတူးဖော်မှုအပျက်အစီးများ (ကျောက်ခဲ၊ မြေကြီး) • ဆောက်လုပ်ရေးလုပ်ငန်းသုံးအမှိုက်များ (ဘိလပ်မြေ၊ သစ်သား၊ သတ္တုအပိုင်းအစများ) • အန္တရာယ်ရှိသော အညစ်အကြေး (လောင်စာတိုင်ကီများ၊ အသုံးပြုပြီးဆီစစ်ဇကာများ၊ ဘက်ထရီအဟောင်းများ၊ အသုံးပြုပြီးသားစက်ဆီများ၊ ဆီများ) ဆောက်လုပ်ရေးဝန်ထမ်းများမှစွန့်ပြစ်သော လူသုံးကုန်စွန့်ပြစ်ပစ္စည်းများ (စားသောက်ကုန်စွန့်ပြစ်ပစ္စည်းများ၊ စာရွက်စာတမ်းများနှင့် ထုတ်ပိုးကုန်စွန့်ပြစ်ပစ္စည်းများ)	မြင့်မား	**ယေဘုယျလိုအပ်ချက်များ** • အကျိုးရှိသော တည်ဆောက်ရေး အညစ်အကြေး စီမံခန့်ခွဲမှုစနစ်ကို အကောင်အထည်ဖော်ရန် လိုအပ်သည်။ ဆောက်လုပ်ရေး အညစ်အကြေးများကို အမျိုးအစားခွဲခြင်းနှင့် စွန့်ပြစ်ရန် အမျိုးအစားခွဲခြင်းတို့ကို ပြုလုပ်ရပါမည်။ စွန့်ပြစ်ရေးနည်းလမ်း များသည် အမှိုက်အမျိုးအစားပေါ်မူတည်၍ ကွဲပြားသည်။ ၎င်းတို့မှာ - ဆောက်လုပ်ရေးတွင် တိုက်ရိုက် ပြန်လည်အသုံးပြုခြင်း၊ ရောင်းချခြင်းနှင့် ကိရိယာပစ္စည်းများအား ပြန်လည်အသုံးချခြင်း၊ မြေဖို့ခြင်း၊ အောက်ခံပစ္စည်းများအဖြစ် အသုံးပြုခြင်း၊ အန္တရာယ်ရှိသော ပစ္စည်းများအတွက် သီးသန့်ပြုပြင်ခြင်း နည်းလမ်းများဖြစ်ပါသည်။ • အန္တရာယ်ရှိသော ဆောက်လုပ်ရေး အညစ်ကြေးများ စွန့်ပြစ်ခြင်းကို လုပ်ငန်းခွင် သို့မဟုတ် လုပ်ငန်းခွင်ပြင်ပတွင် စွန့်ပြစ်ခြင်းများကို တားဆီးရပါမည်။ • အညစ်အကြေးများကို မီးရှို့ခြင်း မပြုလုပ်ရပါ။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			ဆောက်လုပ်ရေးနှင့် မြေပြင်ရှင်းလင်းခြင်း အညစ်အကြေးများ • လုပ်ငန်းခွင်ပြင်ဆင်ခြင်း အညစ်အကြေးများ စွန့်ပစ်ရာတွင် သက်ဆိုင်ရာ အာဏာပိုင်များ ခွင့်ပြုထားသော ကန်ထရိုက်တာမှ စွန့်ပစ်ရန်နေရာအဖြစ် ရွေးချယ်ထားသော နေရာတွင်သာ စွန့်ပစ်ရပါမည်။ • ဆောက်လုပ်ရေး အညစ်အကြေးများကို လက်ရှိလူသုံးစွန့်ပစ်အမှိုက်များ သိမ်းဆည်းခြင်းနှင့် စွန့်ပစ်ခြင်း လုပ်ဆောင်မှုများကဲ့သို့ပင် ဆောင်ရွက်ရပါမည်။ အကယ်၍ ထိုသို့လုပ်ဆောင်ခြင်းများမရှိခဲ့လျှင် ဆောက်လုပ်ရေး အညစ်အကြေးများကို စီမံကိန်းလုပ်ငန်းခွင်အတွင်း စွန့်ပစ်ခြင်း သို့မဟုတ် ပြန်လည်အသုံးပြုခြင်းတို့ကို ပြုလုပ်ရပါမည်။ ၎င်းတို့ကို စိုက်ပျိုးမြေဧရိယာအဖြစ် သတ်မှတ်ထားသော နေရာ၏ အောက်တွင် မြှုပ်ပစ်ရပါမည်။ **ဆောက်လုပ်ရေးလုပ်ငန်းခွင် မဟုတ်သော အညစ်အကြေးများ** • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အမှိုက်မဟုတ်သော အမှိုက်များကို ဆောက်လုပ်ရေး လုပ်ငန်းခွင်အမှိုက်များနှင့် ရောနှော၍ မပြစ်သင့်ပါ။ • အဖုံးအကာပါသော အမှိုက်ပုံ/အမှိုက်ကန်များကို အရေအတွက် လုံလုံလောက်လောက်ထားရှိရန်နှင့် နေ့စဉ်သိမ်းဆည်းပေးရပါမည်။ **အန္တရာယ်ရှိသော အညစ်အကြေးများ** • အန္တရာယ်ရှိသော အညစ်အကြေးများကို အန္တရာယ်ရှိသော အညစ်အကြေးကို ကိုင်တွယ်ခွင့် လိုင်စင်ရှိသော ကန်ထရိုက်တာမှသာ ကိုင်တွယ်ခွင့်ရှိပါသည်။ ဤကဲ့သို့ ဝန်ဆောင်မှုမရှိခဲ့လျှင် ကန်ထရိုက်တာမှ မီးရှို့ခြင်း၊ လုံခြုံစွာသိမ်းဆည်းခြင်း သို့မဟုတ် စွန့်ပစ်ရန် သင့်တော်သော အခြားနည်းလမ်းများကို ရှာဖွေကာ စွန့်ပစ်ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			• အန္တရာယ်ရှိသော အညစ်အကြေးများ စီမံခန့်ခွဲမှုစနစ်တွင် အမိုက်အမျိုးအစားခွဲခြင်း၊ ခွဲခြားခြင်း၊ သိမ်းဆည်းခြင်း၊ သို့လှောင်ခြင်း၊ လွှဲပြောင်းပို့ဆောင်ခြင်းနှင့် စွန့်ပြစ်ခြင်းဟူ၍ ကဏ္ဍများခွဲကာ လုပ်ဆောင်ရပါမည်။ အညစ်အကြေးစွန့်ပြစ်ခြင်း စီမံခန့်ခွဲမှုစနစ်တွင် အစိုးရမှ ချမှတ်ထားသော စည်းမျဉ်း စည်းကမ်းများကို လိုက်နာဆောင်ရွက်ရပါမည်။
ကုန်းလမ်းသွားလာရေး ကဏ္ဍ	သွားလာသောယာဉ်များတိုးပွားလာခြင်း (ဆိပ်ကမ်းတွင် တစ်နေ့လျှင် ပျမ်းမျှ ၂၅စီးနှင့် စီမံကိန်းကမ်းရိုးတန်းလမ်းတွင် တစ်နေ့လျှင် ၁၈စီး) ကြောင့် လမ်းပျက်စီးမှု အခြေအနေများပြားလာပြီး ဒေသတွင်းကျေးရွာ လူထုအား မတော်တဆထိခိုက်မှုများ ဖြစ်ပေါ်နိုင်ပါသည်။	အလယ်အလတ်	• ကုန်လမ်းပို့ဆောင်ရေး စီမံမှုလမ်းစဉ် အကောင်အထည်ဖော် ဆောင်ရေးနှင့် ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေး ထုတ်ဖော်ခြင်းများကို နိုင်ငံအဝန်း၊ ဒေသအဝန်းနှင့် သက်ဆိုင်ရာမြို့နယ် အဆင့်အလိုက် ဆောင်ရွက်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်သုံးယာဉ်များစီမံခန့်ခွဲမှုကို ၎င်းတို့၏ အစီအစဉ်ခွဲကဏ္ဍတွင်ထည့်သွင်းရေးဆွဲရန် • စက်ရုံသုံးပစ္စည်းကြီးများကိုသယ်ဆောင်သောကုန်တင်ယာဉ်ကြီး များသယ်ဆောင်ရာလမ်းတွင် ယာဉ်ထိန်းရဲ အကူအညီဖြင့် လမ်းကြောင်းရှင်းကာ သယ်ယူရန် • ဆောက်လုပ်ရေးလုပ်ငန်းများစတင်ရာတွင် ရပ်ရွာလူထုကို ရှင်းလင်းသော လမ်းညွှန်မှုဆိုင်းဘုတ်များဖြင့် လမ်းပြောင်းလဲ သွားလာမှုကို ပြသခြင်းနှင့် အခြားသောယာဉ်အန္တရာယ် ကင်းရှင်းသော စီမံမှုများဆောင်ရွက်ရန် • ယာဉ်သွားလာမှုများပြားခြင်းကြောင့် ဒေသတွင်းလမ်းများတွင် စီမံကိန်းလုပ်ငန်းများဖြစ်ပေါ်လာခြင်းကို ရှောင်ရှားရန် သို့မဟုတ် လျော့ချရန် စီမံခန့်ခွဲတိုင်းတာမှုများ ပြုလုပ်ရပါမည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ကြောင့် ယာဉ်သွားလာမှုများပြားခြင်းကို ဒေသခံလူထုများအား သတိပေးမှုများ ထုတ်ပြန်ခြင်းနှင့် ယာဉ်သွားလာခြင်း ပြောင်းလဲသွားမှုကို ရှင်းလင်းသော ဆိုင်းဘုတ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			တပ်ဆင်ခြင်းအားဖြင့် အန္တရာယ်ကင်းသော ယာဉ်သွားလာမှု ဖြစ်စေရန် • ဆောက်လုပ်ရေးလုပ်ငန်းဆောင်ရွက်နေချိန်တွင် ဝပိတက်ရွာမှ ဒေသခံလူထုများ လမ်းဖြတ်လျှောက်ခြင်း/ကူးခြင်းအတွက် အမှတ်အသားများ ထားပေးရန် • လုပ်ငန်းခွင် အလုပ်သမားများအတွက် ယာဉ်ရပ်နားခြင်း ဥပဒေပြင်ဆင်အကောင်အထည်ဖော်ခြင်းဖြင့် ဆောက်လုပ်ရေးလုပ်ငန်းခွင်အတွင်း ယာဉ်ရပ်နားခြင်းကို စီမံခန့်ခွဲနိုင်ပြီး ဒေသတွင်းလမ်းများတွင် ယာဉ်ရပ်နားခြင်းကို ရှောင်ရှားနိုင်ရန် တို့ဖြစ်ပါသည်။
ရေကြောင်းသွားလာခြင်း ကဏ္ဍ	တည်ဆောက်ရေးကာလတွင် သောင်တူးခြင်းနှင့် ကမ်းလွန်အဆောက်အဦးများ ဆောက်လုပ်ခြင်းကြောင့် ဒေသခံရေကြောင်းသွားလာခြင်းကို ထိခိုက်စေပြီး မတော်တဆ ထိခိုက်မှုများ ဖြစ်ပေါ်နိုင်ပါသည်။ ဆောက်လုပ်ရေးကာလတွင် တစ်နေ့လျှင် ပျမ်းမျှ သင်္ဘော ၉စင်း ဖြတ်သန်းသွားလာပါသည်။	အလယ်အလတ်	• ပြီးပြည့်စုံသော သင်္ဘောသွားလာရေးစနစ်နှင့် သတင်းအချက်အလက် စီမံခန့်ခွဲရေးစနစ် (VTSMIS)များ လိုအပ်ပါသည်။ • ကမ်းလွန်ဆောက်လုပ်ရေးဧရိယာပတ်လည်တွင် အမှတ်အသားများနှင့် သတိပေးအမှတ်အသားများ (ဆောက်လုပ်ရေးဧရိယာမှ မီတာ ၂၀၀) ကို ရှင်းလင်းစွာ မြင်တွေ့ရန် တပ်ဆင်ထားရပါမည်။ • ညအချိန်တွင် သင်္ဘောများနှင့် လုပ်ငန်းဆောင်ရွက်လျှင် အထူးခွင့်ပြုချက် လိုအပ်ပါသည်။ • အလုံးစုံ လုံခြုံမှုများရရှိရေးအတွက် မြန်မာနိုင်ငံ၏ သယ်ယူပို့ဆောင်ရေး ဥပဒေများကို လိုက်နာရန် လိုအပ်ပါသည်။ • ကမ်းလွန်ဆောက်လုပ်ရေး ဧရိယာပတ်လည်အား ငါးဖမ်းသင်္ဘောမောင်းနှင်သူများအား သတင်းအချက်အလက်များ ပေးပို့ရန် လိုအပ်ပါသည်။ • ကမ်းလွန်ဆောက်လုပ်ရေးဧရိယာတွင် တာဝန်ထမ်းဆောင်နေသော ဝန်ထမ်းများအားလုံး ရေကြောင်းသွားလာမှု လုံခြုံရေးအတွက် လေ့ကျင့်မှုများ လုပ်ဆောင်ပေးရပါမည်။ • လုံခြုံရေး ညွှန်ကြားချက်များအရ သင်္ဘောများကို စစ်ဆေးခြင်း ထိန်းသိမ်းခြင်းများ ပြုလုပ်ပေးရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			• ရေကြောင်းထိခိုက်မှုများအတွက် အရေးပေါ်အခြေအနေ လုပ်ဆောင်မှုများ ပြင်ဆင်ရပါမည်။
ပတ်ဝန်းကျင်လူထု ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းစေရန်နှင့် လုံခြုံရေးကဏ္ဍ	**ကျန်းမာရေးအန္တရာယ် ॥** ॥ သင့်တော်သောစီမံခန့်ခွဲမှု မရှိခဲ့လျှင် ဆောက်လုပ်ရေးဝန်ထမ်းများမှ ကျေးရွာလူထုထံသို့ ကျန်းမာရေး အန္တရာယ်များ ကူးစက်နိုင်ပါသည်။ ကူးစက်နိုင်သော အနာရောဂါများမှာ ဥပမာ - လိင်မှတဆင့် ကူးစက်တတ်သော ရောဂါများ၊ တီဘီရောဂါနှင့် အသည်းရောင်အသားဝါဘီ စသော ရောဂါများ ကူးစက်နိုင်ပါသည်။ **လုံခြုံမှု အန္တရာယ် ॥** ॥ ဆောက်လုပ်ရေး ဝန်ထမ်းများမှ ကျေးရွာလူထုသို့ လုံခြုံမှု အန္တရာယ်များဖြစ်သော ပြစ်မှုကျူးလွန်ခြင်းနှင့် မူးရစ်ဆေးဝါး သုံးစွဲခြင်းများ ဖြစ်ပါသည်။	အလယ်အလတ်	**ကျန်းမာရေးအန္တရာယ်** • စီမံကိန်းဝန်ထမ်းအားလုံးသည် ကူးစက်နိုင်သောရောဂါ စစ်ဆေးခြင်းကဲ့သို့ ကျန်းမာရေး စစ်ဆေးမှုများ ပြုလုပ်ပြီးမှသာ ဝန်ထမ်းအဖြစ်ခန့်ထားရပါမည်။ ထို့အပြင် နှစ်စဉ်ကျန်းမာရေး စစ်ဆေးမှုများပြုလုပ်ပေးရပါမည်။ • ကူးစက်နိုင်သောရောဂါ လက္ခဏာများတွေ့ရှိခဲ့သော် နီးစပ်ရာ မြို့နယ်ဆေးရုံများထံသို့ သွားရောက် သတင်းပို့ပြီး သင့်တော်သော ကုသမှုများခံယူရပါမည်။ • ဝန်ထမ်းများအား တစ်ကိုယ်ရည်သန့်ရှင်းရေးနှင့် ကူးစက်ရောဂါများအကြောင်း ကျန်းမာရေးစောင့်ရှောက်မှု သင်တန်းများ ပေးရပါမည်။ **လုံခြုံမှုအန္တရာယ်** • EPC ကန်ထရိုက်တာသည် စီမံကိန်းလုံခြုံမှုစနစ်ကို အကောင်အထည်ဖော်ပြီး မူးယစ်ဆေးတားဆီးရေးကဲ့သို့ သင့်တော်သော စောင့်ကြည့်မှုများကို လုပ်ဆောင်ရပါမည်။
ကျေးရွာလူထုကဏ္ဍ	**(၁) ကျေးရွာစီးပွားရေး ॥** ॥ စီမံကိန်းတည်ဆောက်မှုကြောင့် ကျေးရွာဝန်ဆောင်မှုများဖြစ်သော အစားအသောက်နှင့် ကုန်ခြောက်များမှ တစ်လလျှင် ဒေါ်လာ ၂၀,၈၄၀ ဝင်ငွေရရှိနိုင်ပါသည်။ ထို့ကြောင့် ကျေးရွာစီးပွားရေးသည် တရှိန်ထိုး တိုးတက်လာလိမ့်မည်။ **(၂) အသက်မွေးမှု ॥** ॥ အသက်မွေးမှု၏ အဓိက ထိခိုက်မှုမှာ စီမံကိန်းကမ်းရိုးတန်းလမ်းဖောက်လုပ်ရန် လမ်း၏ ညာဘက်ခြမ်းကို ရွှေ့ပြောင်းပေးထားသော အိမ်ထောင်စု ၁၂စုနှင့် ဆောက်လုပ်ရေး ကာလတွင် စီမံကိန်းပတ်လည်ရှိ ဒေသခံကျေးရွာလူထုနှင့် ထိခိုက်မှုဖြစ်ခြင်း ဥပမာ - စီမံကိန်းသယ်ယူပို့ဆောင်ခြင်း၊ ရေကြောင်းသွားလာမှုတားဆီးခြင်းနှင့်	အလယ်အလတ်	• ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူးကျေးရွာများမှ ကျေးရွာသူကျေးရွာသားများကို ပထမဦးစားပေးအနေဖြင့် စီမံကိန်းဆောက်လုပ်ရေးတွင်ဝင်ရောက်အလုပ်လုပ်ခွင့်ပေးရန် • ရပိုင်ခွင့်ဝင်ငွေများသည် အတွေ့အကြုံနှင့် အရည်အချင်းပေါ်မူတည်နေကြောင်းကို သိသာထင်ရှားစွာဖော်ပြရန် • စီမံကိန်းလုပ်ငန်းခွင်ရှိဝန်ထမ်းများကိုမြန်မာနိုင်ငံ၏အလုပ်သမားဥပဒေ၊ လူမှုပတ်ဝန်းကျင်လုံခြုံမှုဥပဒေ၊ ဝန်ထမ်းတစ်ဦး၏ ရပိုင်ခွင့်နှုန်းထားနှင့် အခြားသက်ဆိုင်သောနည်းဥပဒေများဖြင့် ကာကွယ်ပေးသွားရန်

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
	ဆိပ်ကမ်းငယ်စီမံကိန်းပြောင်းရွှေ့ခြင်းကြောင့် အချို့နေရာများတွင် သစ်တော အရင်းအမြစ်များဆုံးရှုံးခြင်း **(၃) အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများ ။ ။** ကျေးရွာလူထု၏ လမ်းများနှင့် ဆေးဝါးဝန်ဆောင်မှုအပါအဝင် ကန့်သတ်ထားသော ဒေသတွင်း အဆောက်အဦးများ၊ ဝန်ဆောင်မှုများနှင့် စီမံကိန်းဆောက်လုပ်မှုပြီးစီးခြင်းဖြစ်ပါသည်။ **(၄) ယဉ်ကျေးမှုနှင့် အစဉ်အလာများ ။ ။** ဆောက်လုပ်ရေးဝန်ထမ်းများတွင် နိုင်ငံသားမဟုတ်သော ဝန်ထမ်းများပါရှိခဲ့လျှင် ဒေသခံများနှင့် ကွဲပြားသော ယဉ်ကျေးမှု၊ အစဉ်အလာနှင့် တန်ဖိုးများ ဖြစ်ပေါ်ခံစားရပါမည်။		• စီမံကိန်းတွင် ရပ်ရွာလူထုနှင့် ပတ်သတ်၍ ထိခိုက်မှုများ၊ လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် လုပ်ငန်းဆောင်တာများကို ပြောပြခြင်းအားဖြင့် ရပ်ရွာလူထုနှင့် ကောင်းမွန်သော ဆက်ဆံမှုကိုတည်ဆောက်ရန် • ဆောက်လုပ်ရေးလုပ်ငန်း၏ အဓိကလုပ်ငန်းဆောင်တာများ မစခင်နှင့် ဆောက်လုပ်ဆဲကာလများတွင် သက်ဆိုင်သော သတင်းအချက်အလက်များကို ရပ်ရွာလူထုအားပေးရန် • ဒေသခံများသိလိုသည်များ၊ ပြဿနာများ၏ သတင်းအချက်အလက်များသိရှိစေရန် စစ်တမ်းကောက်ခံခြင်းများ ပြုလုပ်ရပါမည်။ (ရွာ ၅ရွာတွင် စစ်တမ်း ၂၀၀) **(၂) အသက်မွေးဝမ်းကြောင်းမှု** • စီမံကိန်း တည်ဆောက်မှုပြင်ဆင်ဆဲကာလတွင် အသက်မွေးဝမ်းကြောင်းနှင့် ပတ်သတ်၍ ခိုင်မာသောအလုပ်အကိုင်နှင့် ပတ်သတ်သည့် ဖဟုသုတများရအောင် ကြိုးပမ်းရန် **(၃) အခြေခံအဆောက်အဦးများနှင့် ဝန်ဆောင်မှုများ** • ဆောက်လုပ်ရေး ကိရိယာပစ္စည်းများသယ်ဆောင်ရာတွင် ယာဉ်ကြောကြပ်ချိန်ကိုရှောင်၍ သယ်ဆောင်ရပါမည်။ • ယာဉ်ကြီးများ အများပိုင်လမ်းတွင် သွားလာမှုနှုန်းကို ကန့်သတ်ခြင်းအားဖြင့် အဓိကလမ်းတွင် ထိခိုက်မှုဖြစ်ခြင်းများ လျော့နည်းစေပါသည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်တွင် ရေထောက်ပံ့ပေးမှု၊ အမှိုက်စွန့်ပြစ်မှု၊ မိလ္လာရေ ပြုပြင်သန့်စင်ပေးခြင်းနှင့် ကျန်းမာရေး ဝန်ဆောင်မှုများ ပံ့ပိုးပေးရပါမည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ယာဉ်များကြောင့် လမ်းများ ပျက်စီးခဲ့သော် စီမံကိန်းမှ အမြန်ဆုံးပြုပြင်ပေးရပါမည် • လုံခြုံရေးနည်းဥပဒေ၊ စည်းမျဉ်းများနှင့် အလေ့အကျင့်များ အကောင်အထည်ဖော်ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			• စီမံကိန်းလုပ်ငန်းခွင် ကနဦးအကူအညီပေးခြင်း ဝန်ဆောင်မှု အကောင်အထည်ဖော်ရန်တို့ဖြစ်ပါသည်။ (၄) ယဉ်ကျေးမှုနှင့် အစဉ်အလာများ • စီမံကိန်းဝန်ထမ်းများသည် ဒေသခံယဉ်ကျေးမှု၊ အစဉ်အလာ များနှင့် စံနှုန်းများကို လိုက်နာရပါမည်။ • စီမံကိန်းအကောင်အထည်ဖော်သူများသည် ဒေသခံများနှင့် ကောင်းမွန်သော ဆက်ဆံရေးရှိပြီး ၎င်းတို့၏ ရိုးရာယဉ်ကျေးမှု ပွဲလမ်းများတွင် တက်ကြွစွာ ထောက်ပံ့ပေးခြင်း၊ ပူးပေါင်း ပါဝင်ခြင်းများ ပြုလုပ်ရပါမည်။

ဇယား ၁.၅-၃

စီမံကိန်းလည်ပတ်မှုကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်သက်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဝန်းကျင်လေထုအရည်အသွေး နှင့် ဖန်လုံအိမ်ဓါတ်ငွေ့ကဏ္ဍ	**ဝန်းကျင်လေထုအရည်အသွေး** • လုပ်ငန်းလည်ပတ်စဉ် လေထုအရည်အသွေးအဓိက ထိခိုက်မှုသည် စီမံကိန်းကမ်းရိုးတန်းလမ်းတွင် ယာဉ်သွားလာမှု များပြားခြင်းကြောင့် ဖြစ်သည်။ **ဖန်လုံအိမ်ဓါတ်ငွေ့** • စီမံကိန်းလည်ပတ်မှုတွင် ဖန်လုံအိမ်ဓါတ်ငွေ့ထွက်ပေါ်ခြင်း အဓိကအရင်းအမြစ်မှာ သင်္ဘောများ (ပျမ်းမျှ တစ်နာရီတွင် ကုန်တင်သင်္ဘော ၁စင်း) ကြောင့်ဖြစ်ပါသည်။ • မြေအသုံးချမှုပြောင်းလဲခြင်းကို ဖယ်ထုတ်ပြီး ဖန်လုံအိမ် ဓါတ်ငွေ့ထုတ်လွှတ်ခြင်းနှင့် မြန်မာ့သစ်တော (၉၈.၉၃ Mt CO2 eq) နှင့် နှိုင်းယှဉ်ရာတွင် တွက်ချက်မှုရလဒ်သည် အရမ်းနည်းနေသည် (၀.၂၉ Mt CO2 eq) သို့မဟုတ် ၀.၂၉% ကိုတွေ့ရှိရပါသည်။	အလယ်အလတ်	• ဆာလဖာပါဝင်မှုနည်းသော ဒီဇယ်စက်သုံးဆီအသုံးပြုရပါမည်။ • အိတ်ဇောဓါတ်ငွေ့ထုတ်လွှတ်မှု လျော့နည်းစေရန် ယာဉ်များကို စစ်ဆေးခြင်းနှင့် ပြုပြင်ထိန်းသိမ်းခြင်း ပြုလုပ်ရပါမည်။ • ဆိပ်ကမ်းသို့ ချဉ်းကပ်လာသော သင်္ဘောများ၏ အရှိန်နှုန်းကို လျော့ချခြင်းအားဖြင့် နိုက်ထရိုဂျင်အောက်ဆိုဒ် ထုတ်လွှတ်မှု ကို လျော့ချပေးနိုင်ပါသည်။ • စီမံကိန်းလည်ပတ်မှုကာလတွင် လေထုအရည်အသွေးကို ထိန်းချုပ်ရန်နှင့် စောင့်ကြည့်လေ့လာခြင်းများ ပြုလုပ် ရပါမည်။
အသံဆူညံမှုကဏ္ဍ	ဆိပ်ကမ်းငယ်လုပ်ငန်းလည်ပတ်မှုတွင် စီမံကိန်းဆိပ်ကမ်းတွင် ယာဉ်အသုံးပြုမှုများကြောင့် ထိခိုက်မှုများ ဖြစ်နိုင်ပါသည်။ ငပိတက်ရွာသည် (စီမံကိန်းလုပ်ငန်းခွင်နှင့် နီးသည်) အဓိကထိခိုက်လွယ်သော နေရာဖြစ်ပြီး အဆင့်မြင့်သော ဆူညံမှုကို ခံစားရပါသည်။	အလယ်အလတ်	• စီမံကိန်းလုပ်ငန်းခွင်ယာဉ်များကို တစ်နာရီ ၄၀ ကီလိုမီတာ ထက် မပိုရန်နှင့် သင်္ဘောများ၏ အရှိန်ကို ကန့်သတ်ရန် လိုအပ်ပါသည်။ • အကယ်၍ လိုအပ်ပါက ယာယီအသံအကာအကွယ်များကို တပ်ဆင်ပြီး ထိခိုက်လွယ်သောနေရာများတွင် ဆူညံမှု ထိခိုက်ခြင်းများ လျော့နည်းအောင် ဆောင်ရွက်ရပါမည်။ • ပို့ဆောင်ဆက်သွယ်ရေးကို နေ့အချိန်တွင်သာ ဆောင်ရွက် သင့်ပါသည်။ • လမ်းမျက်နှာပြင်များ ကောင်းမွန်စေရန် အမြဲထိန်းသိမ်း ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
သောင်တူးခြင်းထိန်းသိမ်းမှုကဏ္ဍ	သောင်တူးခြင်းထိန်းသိမ်းမှုပြုလုပ်ချိန်တွင် ပင်လယ်ရေများ၏ နောက်ကျိမှုများမြင့်တက်လာပြီးကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်ကို ထိခိုက်စေပါသည်။	အလယ်အလတ်	စီမံကိန်းလည်ပတ်စဉ်ကာလ၏ သောင်တူးဖော်ခြင်းအတွက် လျော့နည်းသက်သာစေသော နည်းများမှာ ဆောက်လုပ်ရေးကာလ၏ နည်းလမ်းများနှင့် တူညီနေပါသည်။
ကမ်းခြေတည်ငြိမ်ခြင်းကဏ္ဍ	ရေဝေရေလဲဇရိယာတွင် အနည်အနှစ်စုပုံခြင်းနှင့် ကမ်းခြေကြောင့် မြစ်ဝတွင် သဲများစုပုံခြင်းများ ဖြစ်ပေါ်နိုင်ပါသည်။ ဤစီမံကိန်းတွင် ရေကာတံတိုင်းမှ ၁.၆ ကီလိုမီတာအထိ ထိခိုက်နိုင်ပါသည်။	အလယ်အလတ်	• စီမံကိန်းနေရာ၏ ကမ်းခြေတစ်လျှောက်တွင် နှစ်စဉ်ကမ်းခြေနေရာမှာ ဆုတ်ယုတ်လာခြင်းကို အမြဲစစ်ဆေးရပါမည်။ • ရုပ်ပိုင်းဆိုင်ရာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ သတင်းအချက်အလက်များရရှိမှုနှင့် အင်ဂျင်နီယာပိုင်းဆိုင်ရာ ဝေဖန်သုံးသပ်မှုမှာ အကန့်အသတ်ရှိသောကြောင့် ကမ်းခြေတစ်လျှောက် လေ့လာမှုများ ပြုလုပ်ခြင်းဖြင့် လိုအပ်သော သတင်းအချက်အလက်ရရှိပါသည်။ ဆုတ်ယုတ်မှုလိုင်း သို့မဟုတ် အမာခံဖွဲ့စည်းမှုများနှင့် ကမ်းခြေတိုက်စားမှု ကာကွယ်ခြင်း ဥပမာ - ကမ်းခြေတိုက်စားမှုများ မြင့်တက်လာလျှင် ရေကာတံတိုင်းငယ်လေးများ ပြုလုပ်ရပါမည်။
ရေဆိုးကဏ္ဍ	ဆိပ်ကမ်းငယ်၏ ရေဆိုးထုတ်လုပ်မှုမှာ အောက်ဖော်ပြပါ အရင်းအမြစ်များမှ ဖြစ်သည်။ • သင်္ဘောအညစ်အကြေးများ • ဆိပ်ကမ်းရေဆိုးကဏ္ဍတွင် ဆိပ်ကမ်းဝန်ထမ်းများ၏ လူသုံးမိလ္လာနှင့် ဆိပ်ကမ်းဆေးကြောမှုများမှ ရေဆိုးထွက်ပေါ်မှု • မိုးရေတို့ဖြစ်ပါသည်	အလယ်အလတ်	**သင်္ဘောအညစ်အကြေးများ** • ဆိပ်ကမ်းလုပ်ငန်းဆောင်ရွက်မှုရုံးသည် သင်္ဘောမှစွန့်ပြစ်သော အညစ်အကြေးများကို MARPOL နှင့် အညီသင့်တော်သော ထိန်းချုပ်မှုများ ပြုလုပ်ရပါမည်။ • ထို့အပြင် ဆိပ်ကမ်းလုပ်ငန်းဆောင်ရွက်မှုရုံးသည် အရေးပေါ်အခြေအနေ အစီအစဉ်ကို ပြင်ဆင်ထားပြီး ၎င်းအစီအစဉ်ကို အကောင်အထည်ဖော်ရန် အဖွဲ့ဖွဲ့စည်းကာ သင်္ဘောမှ ဆီများနှင့် ဓါတုပစ္စည်းများ ဖိတ်ကျခြင်းကို ကိုင်တွယ်ခြင်း ပြုလုပ်ရပါမည်။ **ဆိပ်ကမ်းအညစ်အကြေးများ** • သင်္ဘောအညစ်အကြေးများကို ကိုင်တွယ်ပြုပြင် ထိန်းသိမ်းခြင်းအပြင် ဆိပ်ကမ်းမှ ထွက်ရှိလာသော မိလ္လာအညစ်အကြေးနှင့် အခြားရေဆိုးများအတွက် central ရေဆိုး

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			ပြန်လည်အသုံးချခြင်းကို ကြိုးစားပြုလုပ်ခြင်းဖြင့် ရေအသုံးပြုမှုကို လျော့ချပေးနိုင်မည် ဖြစ်ပါသည်။ • ဆိပ်ကမ်းလုပ်ငန်းဆောင်ရွက်မှုရုံးသည် သင်္ဘောနှင့် ဆိပ်ကမ်းမှ ထွက်ရှိသော မည်သည့်အညစ်အကြေးကိုမဆို ကပ္ပလီပင်လယ်အတွင်းသို့ မစွန့်ပြစ်ရန် တားမြစ်ထားပါသည်။
အညစ်အကြေးကဏ္ဍ	စီမံကိန်းလည်ပတ်မှုကာလတွင် အောက်ဖော်ပြပါ အညစ်အကြေးများ စွန့်ထုတ်မှုဖြစ်ပေါ်ပြီး ၎င်းတို့အား ထိန်းသိမ်းရန် လိုအပ်သည်။ • အသုံးပြုပြီးသား စက်ဆီချောဆီများ • ရေဆိုးပြုပြင်ထိန်းသိမ်းရေးစက်ရုံမှ စွန့်ထုတ်လိုက်သော စွန့်ပြစ်ပစ္စည်းများနှင့် အခြားအမှိုက်များ • ဆိပ်ကမ်းအလုပ်သမားနှင့် ဝန်ထမ်းများမှ ထုတ်လုပ်သော တစ်နေ့လျှင် ကီလို ၂၀ ရှိသော အမှိုက်များတို့ဖြစ်ပါသည်။	အလယ်အလတ်	**(၁) အသုံးပြုပြီးသား စက်ဆီချောဆီများ** ဝက်ရှော့နှင့် အင်ဂျင်ထိန်းသိမ်းရေး အဆောက်အဦးများမှ အသုံးပြုပြီးသား စက်ဆီချောဆီနှင့် အင်ဂျင်ဝိုင်များကို လိုက်လံစုဆောင်းသော စနစ်ကို အကောင်အထည်ဖော်ဆောင်ရွက်ရပါမည်။ **(၂) ရေဆိုးပြုပြင်ထိန်းသိမ်းရေးစက်ရုံမှ အညစ်အကြေးများ** ရေဆိုးသန့်စင်မှုကို activated sludge process နှင့် fixed film aerobic processများကဲ့သို့ မြန်နှုန်းမြင့် ဇီဝဖြစ်စဉ်ဖြင့် ပြုပြင်ခဲ့သော် ရေဆိုးသန့်စင်စက်ရုံမျ ရေစိုစွတ်မှု ၂၀-၃၀% ပါဝင်သော အောဂဲနစ်အညစ်အကြေးများကို ထုတ်လုပ်မည် ဖြစ်ပါသည်။ **(၃) အန္တရာယ်ရှိသော အမှိုက်** ဆိပ်ကမ်းလည်ပတ်မှုရုံးမှ အမှိုက်အမျိုးအစားခွဲခြင်း၊ ခွဲခြားခြင်း၊ သိုလှောင်ခြင်း၊ ပြောင်းရွှေ့ခြင်းနှင့် စွန့်ပြစ်ခြင်း စနစ်များပါဝင်သော အန္တရာယ်ရှိသောအမှိုက်များ စီမံခန့်ခွဲမှုစနစ်သည် အစိုးရမှ ချမှတ်ထားသော နည်းစနစ်များကို လိုက်နာရန်လိုအပ်ပါသည်။ အန္တရာယ်ရှိသော အညစ်အကြေးများ ခြေရာခံနိုင်ရန်အတွက် စာရင်းပေးသွင်းခြင်း များ လိုအပ်ပါက ပြုလုပ်ရပါမည်။ အညစ်အကြေးစွန့်ပြစ်ပေးသော ဝန်ဆောင်မှုလုပ်ငန်းပြုလုပ်သူများမှ အန္တရာယ်ရှိသော အမှိုက်ကို ထိန်းသိမ်းခြင်း၊ စွန့်ပြစ်ခြင်းများ ပြုလုပ်ရပါမည်။ အကယ်၍

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			အညစ်အကြေးစွန့်ပြစ်ပေးသော ဝန်ဆောင်မှုလုပ်ငန်းပြုလုပ်မှု မရှိခဲ့လျှင် အခြားပြင်ပမှ ဝန်ဆောင်မှုကို အသုံးပြုရန် ဆိပ်ကမ်း လည်ပတ်မှုရုံးမှ ထည့်သွင်းစဉ်းစားရပါမည်။ (၄) အမှိုက် ဆိပ်ကမ်းဧရိယာ၏ အမှိုက်စုဆောင်းကောက်ခံခြင်း ဝန်ဆောင်မှု ကို ဒေသခံအစိုးရမှ မပြုလုပ်ပေးနိုင်လျှင် ဆိပ်ကမ်းလုပ်ငန်း လည်ပတ်မှုရုံးမှ ထိုပြဿနာအား ဖြေရှင်းရန် လိုအပ်သည်။ အမှိုက်စွန့်ပြစ်နှုန်းသည် တစ်နေ့လျှင် ၂တန်ထက်နည်းပါက ရိုးရှင်းသော အမှိုက်စီမံခန့်ခွဲမှုစနစ်အတိုင်း လုပ်ဆောင်ရပါမည်။ အမှိုက်စုဆောင်းခြင်း မပြုလုပ်မီ သင့်တော်သော အမှိုက်ကန် များကို အမှိုက်စုဆောင်းရာနေရာနှင့် သိုလှောင်ရာနေရာများတွင် ထားရှိပေးရပါမည်။ အမှိုက်စုဆောင်းခြင်းကို ကုန်တင်ကားငယ် ဖြင့် လိုက်လံစုဆောင်းပြီး ဆိပ်ကမ်းဧရိယာအတွင်း (သို့မဟုတ်) အပြင်ဘက်ရှိ အမှိုက်စွန့်ပြစ်ရာနေရာတွင် သွားရောက်စွန့်ပြစ် ရမည် ဖြစ်ပါသည်။
မြေပြင်ယာဉ်သွားလာမှုကဏ္ဍ	စီမံကိန်းကမ်းရိုးတန်းလမ်းမှ DSEZ ဖုန်သို့ ဖောက်လုပ်သော တည်ဆောက်မှုတွင် အသုံးပြုထားသော ဆောက်လုပ်ရေးလုပ်ငန်းသုံ ကိရိယာပစ္စည်းများနှင့် အလုပ်သမားများမှ မြေပြင်သွားလာခြင်း ထိခိုက်မှုကို ဖြစ်ပေါ်နိုင်ပါသည်။ ဥပမာ - LNG ပိုက်လိုင်း၊ ကနဦးကာလ ဓါတ်အားပေးစက်ရုံနှင့် ITDစခန်းနေရာတို့ဖြစ်ပါသည်။	အလယ်အလတ်	• ဆိပ်ကမ်းလည်ပတ်မှုကာလတွင် များပြားလာသော ယာဉ် သွားလာမှုများကြောင့် ဒေသခံလမ်းများတွင် ဘေးအန္တရာယ် ကင်းရှင်းစေရန် အဆင့်မြင့် အစီအစဉ်များကို ပြင်ဆင် အကောင်အထည်ဖော်ရန် • ငပိတက်ရွာရှိ ဒေသခံကျေးရွာသူ ကျေးရွာသားများနှင့် ကလေးငယ်များ စီမံကိန်းကမ်းရိုးတန်းလမ်းအား ဖြတ်သန်း ရန် တံတားတည်ဆောက်ပေးရန် • ထို့အပြင် ဆိပ်ကမ်းဧရိယာ ပတ်ဝန်းကျင်တွင် ကုန်တင်ကား များ မောင်းနှင်မှုနှုန်းကို တစ်နာရီတွင် ၄၀ ကီလိုမီတာဖြင့် လိုက်နာမောင်းနှင်ရန် ဒေသခံအာဏာပိုင်များမှ ပြဋ္ဌာန်း ထားရန်တို့ ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ရေကြောင်းသွားလာမှုကဏ္ဍ	ဆိပ်ကမ်းလုပ်ငန်းလည်ပတ်မှု ဧရိယာတွင် ကမ်းရိုးတန်းရေကြောင်း သွားလာမှုများ မြင့်တက်လာမည် ဖြစ်ပါသည်။ ဆိပ်ကမ်းဧရိယာတွင် ပျမ်းမျှ တစ်နာရီတွင် သင်္ဘော ၁-၂စီး သွားလာမည် ဖြစ်ပါသည်။	အလယ်အလတ်	• ရေကြောင်းသွားလာမှု အန္တရာယ်ကင်းရှင်းစေရန် သင်္ဘောများသွားလာမှု စီမံခန့်ခွဲမှုစနစ်ကို ဆိပ်ကမ်းမှ လုပ်ဆောင်ပြီး ဆိပ်ကမ်းမှ တောင်းဆို ရေယာဉ်များကိုလဲ မှတ်တမ်းတင်ထားရပါမည်။ • ရေကြောင်းသွားလာမှုဧရိယာတွင် လုံလောက်သော ရေကြောင်းမှတ်ဘောများ ထားရှိပြီး ရေကြောင်းသွားလာမှု တူးမြောင်းနှင့် ဆိပ်ကမ်းနယ်နိမိတ်ကို ရှင်းလင်းစွာ ဖော်ပြထားရပါမည်။
ဒေသဖွံ့ဖြိုးမှု ထောက်ပံ့ခြင်း	• စီမံကိန်းလည်ပတ်မှုကာလတွင် အနီးအနားရှိ ဒေသခံများအား ဆိပ်ကမ်းငယ်မှ ကောင်းသော/မကောင်းသော ထိခိုက်မှုများ ဖြစ်ပေါ်လာနိုင်သော်လည်း ၄င်းထိခိုက်မှုသည် တည်ဆောက်ရေး ကာလမှ ထိခိုက်မှုဖြစ်ပေါ်ခြင်းထက်နည်းပါသည်။ • ဒေသခံများနှင့်တွေ့ဆုံဆွေးနွေးပွဲတွင် တက်ရောက်လာသူဒေသခံများမှ လျှပ်စစ်မီးထောက်ပံ့ပေးရန်နှင့် ဒေသတွင်းလမ်းများအား ကောင်းမွန်အောင်ပြုလုပ်ပေးရန် တောင်းဆိုခဲ့ကြပါသည်။	အလယ်အလတ်	• စီမံကိန်း အကောင်အထည်ဖော်သူမှ ဒေသခံပြည်သူများ၏ အကူအညီလိုအပ်ချက်များကို ထောက်ပံ့ပေးရန် CSR အစီအစဉ်ကို ထည့်သွင်းစဉ်းစားရန်လိုအပ်ပါသည်။ CSR အစီအစဉ်တွင် ဒေသခံရပ်ရွာလူကြီးများနှင့် အာဏာပိုင် အဖွဲ့အစည်းများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း ပြုလုပ်ရန် လိုအပ်ပါသည်။

ဇယား ၁.၅-၄

စီမံကိန်းပိတ်သိမ်းမှုကာလအတွင်း ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်သက်ရောက်ခြင်းနှင့် လျော့နည်းသက်သာစေရန် အစီအစဉ်များ

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
ဖုန်မှုန့်နှင့် အသံဆူညံမှုဖြစ်ပေါ်ခြင်းကြောင့် ပတ်ဝန်းကျင် အနောက်အယှက်ဖြစ်ပေါ်ခြင်း	ဖုန်မှုန့်များပျံ့နှံ့ခြင်းနှင့် ဖြိုချခြင်း၊ မြေပြင်ပြန်လည်ပြုပြင်ခြင်း လုပ်ဆောင်မှုများမှ အကျိုးသက်ရောက်မှုသည် ထိခိုက်လွယ်သော ဧရိယာ (စခန်းသစ်နှင့် ငပိတက်ရွာများ) နှင့် နီးပါသည်။	အလယ်အလတ်	• မြေပြင်ပြန်လည်ပြုပြင်ခြင်းလုပ်ဆောင်မှုတွင် ဖုန်မှုန့်ထွက်ပေါ်ခြင်းများ ဖြစ်ပေါ်ပါလိမ့်မည်။ မကြာခဏ ရေဖြန်းပေးခြင်းဖြင့် ဖုန်ထွက်ပေါ်မှုကို သိပ်သည်းစေပြီး ဖုန်ထွက်ပေါ်မှု၏ ၇၅%ကို လျော့ချပေးနိုင်ပါသည်။ • ရွေ့လျားကိရိယာများမှ အသံဆူညံမှုထွက်ပေါ်ခြင်းကို ထိန်းချုပ်နိုင်ရန် ခက်ခဲပါသည်။ ဆူညံမှုလုပ်ငန်းခွင်တွင် အလုပ်လုပ်ကိုင်နေသော ဝန်ထမ်းများအား နားစို့များပေးခြင်းဖြင့် လက်တွေ့ကာကွယ်ခြင်းပြုလုပ်ရပါမည်။ ထို့အပြင် ဖြိုချခြင်းနှင့် မြေပြင်ပြုပြင်ခြင်းများ ပြုလုပ်စဉ် ယာယီ အသံကာများ တပ်ဆင်ခြင်းအားဖြင့် စခန်းသစ်နှင့် ငပိတက်ရွာများသို့ အသံဆူညံမှု ထိခိုက်ခြင်းကို လျော့ချပေးနိုင်မည်ဖြစ်ပါသည်။
ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟကဗ္ဗာ	ကမ်းလွန်အဆောက်အဦးများဖြစ်သော ရေကာတံတိုင်းများ၊ ဆိပ်ခံတံတားနှင့် အခြားအဆောက်အဦးများ ဖြိုဖျက်ရာတွင် အဓိက ထိခိုက်မှုမှာ ပင်လယ်ရေ နောက်ကျိုမှုမြင့်တက်လာမည်ဖြစ်ပါသည်။ ၎င်းအခြေအနေသည် ကမ်းရိုးတန်းရေ အရည်အသွေးနှင့် အဏ္ဏဝါဂေဟအား ထိခိုက်မှုဖြစ်ပေါ်နိုင်ပါသည်။	အလယ်အလတ်	• ကမ်းလွန်တည်ဆောက်မှုကို ဖြိုဖျက်ခြင်းကို ရှောင်ရှားရပါမည်။ ရေကာတံတိုင်းပတ်လည်တွင် ဒီရေတောများ စိုက်ပျိုးခြင်း ပြုလုပ်ရပါမည်။ ဤသို့ပြုလုပ်ခြင်းဖြင့် ကမ်းလွန် အဆောက်အဦးများ ဖြိုချခြင်းအားဖြင့် ကမ်းရိုးတန်းရေ နောက်ကျိုမှု တိုးပွားလာပြီး အဏ္ဏဝါဂေဟထိခိုက်မှုများ လျော့ချနိုင်ပါသည်။ • ဖြိုချဖျက်ဆီးမှု အစီအစဉ်ကို မရှောင်လွှဲနိုင်လျှင် ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်တွင် နောက်ကျိုမှု စသော ထိခိုက်မှုများ လျော့နည်းစေရန် စီမံကိန်းဒီဇိုင်းနှင့် နည်းပညာများကိုပြင်ဆင်ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားပြဿနာ	ထိခိုက်သက်ရောက်မှု	ဦးစားပေး ထိန်းချုပ်ရမည့်အဆင့်	လျော့နည်းသက်သာစေရန် အစီအစဉ်များ
			• စီမံကိန်းအကောင်အထည်ဖော်သူ/ကန်ထရိုက်တာများသည် ပိတ်သိမ်းမှု အစီအစဉ်မစတင်ခင် ၃လနှင့် ပိတ်သိမ်းမှု ပြီးစီးသည့် အချိန်တွင် ကမ်းလွန်အဆောက်အဦးများအနီးရှိ ကမ်းရိုတန်းရေ အရည်အသွေးနှင့် အဏ္ဏဝါဂေဟစနစ်တို့ကို စောင့်ကြည့်လေ့လာရန် လိုအပ်ပါသည်။
အမှိုက်ကဏ္ဍ	• လုပ်ငန်းစဉ်ပိတ်သိမ်းမှုကာလတွင် တိုးမြင့်လာနိုင်သော အမှိုက် ထုတ်လုပ်မှုများမှာ အောက်ဖော်ပြပါတို့ ဖြစ်ပါသည်။ • ဝန်ထမ်းများထံမှ အမှိုက်နှင့် လုပ်ငန်းပိတ်သိမ်းခြင်းဧရိယာ ဥပမာ - အမှိုက်၊ ဖန်နှင့် စားသောက်ကုန်အမှိုက်များ • အကြွင်းအကျန်ပစ္စည်းများ ဥပမာ - သစ်သားအပိုင်းအစ၊ စတီးနှင့် ဘိလပ်မြေ စသည်တို့ဖြစ်ပါသည်။ • အန္တရာယ်ရှိသော အမှိုက်များ ဥပမာ - အသုံးပြုပြီးသော ဘက်ထရီနှင့် ဓါတုပစ္စည်းများ စသည်တို့ဖြစ်ပါသည်။	အနိမ့်	• ကန်ထရိုက်တာမှ ဝန်ထမ်းအားလုံးကို အမှိုက်အမျိုးအစား ခွဲခြင်းစနစ်၊ အစီအစဉ်နှင့် အများနှင့်ဆက်ဆံခြင်းတို့ကို တင်းကြပ်စွာလိုက်နာရန် သတ်မှတ်ထားပါသည်။ • အမှိုက်အမျိုးအစားခွဲခြားမှုကို လုပ်ဆောင်ရန် သင့်တော်သော အရွယ်အစားရှိသည့် အမှိုက်ပုံးများနှင့် သင့်တော်သော ကိရိယာများကို ထောက်ပံ့ပေးရပါမည်။ ပြန်လည်အသုံးချခြင်း၊ ပြန်လည်အသုံးပြုခြင်းနှင့် စွန့်ပစ်ခြင်းစသော အမျိုးအစားခွဲများ အလိုက် အမှိုက်အမျိုးအစားများခွဲရပါမည်။
မြေယာပြန်လည်ပြုပြင်ခြင်းကဏ္ဍ	စီမံကိန်းပိတ်သိမ်းမှုကာလတွင် မြေအသုံးပြုမှုသည် ဆိပ်ကမ်းဧရိယာမှ ဟင်းလင်းပြင်အဖြစ်ပြောင်းလဲသွားမည် ဖြစ်သည်။	အလယ်အလတ်	စီမံကိန်းအကောင်အထည်ဖော်သူများသည် လုပ်ငန်းပိတ်သိမ်းမှု ပြီးစီးသွားလျှင် ဟင်းလင်းပြင်မြေအား စီမံခန့်ခွဲရန် သက်ဆိုင်ရာ အာဏာပိုင်၊ ဒေသခံပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးရပါမည်။ ထိုဟင်းလင်းပြင်မြေအား အသုံးပြုရန် ဥပမာ - ဒီရေတောများ ပြန်လည်စိုက်ပျိုးခြင်း၊ ဆိပ်ကမ်းဧရိယာကို အာဏာပိုင်များအား လွှဲပြောင်းပြီး အသုံးပြုစေရန် တို့ဖြစ်ပါသည်။

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 အကြောင်းအရာချက်များ

- EPC ကန်ထရိုက်တာသည် စီမံကိန်းအတွက်လုံလောက်မှုမရှိသည့် ပတ်ဝန်းကျင် စွမ်းဆောင်ရည် လိုအပ်မှုကို သိရှိနားလည်မှု မရှိခြင်း
- 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၍ အလယ်အလတ်ထိခိုက်မှုဟု ဆုံးဖြတ်သည်။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၂)သည် အသေးအဖွဲ ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုဟု ယူဆလျက် အသက်မွေးဝမ်းကြောင်းမှုတွင် သက်ရောက်မှုနိမ့်၍ အလယ်အလတ်ထိခိုက်မှုဟု 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) ပတ်ဝန်းကျင်တွင် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - တည်ဆောက်ရေးကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

ထားဝယ်နှင့် စီမံကိန်းဒေသတွင် ဆိုက်ကလုံးနှင့် ဆူနာမီ ဖြစ်ပေါ်မှုအတွက် အကြောင်းပြချက်များမှာ -

စီမံကိန်းနေရာသည် ဘင်္ဂလားပင်လယ်အော်တွင်တည်ရှိပြီး ဆိုက်ကလုံးနှင့် ဆက်စပ်နေပါသည်။

မြန်မာနိုင်ငံ၏ မိုးလေဝသနှင့် ဇလဗေဒဆိုင်ရာ ဦးစီးဌာန၏ ငလျင်အန္တရာယ် မြေပုံမှ ဆိပ်ကမ်းငယ်၏ ဧရိယာသည် ငလျင်ဇုန်တွင် အလယ်အလတ်အနေအထားရှိပြီး ၎င်းကြောင့် ထိခိုက်မှု အနိမ့် (သို့မဟုတ်) အလယ်အလတ် (ဖြစ်ပေါ်နိုင်သော မြေပြင်အရှိန်သည် ၀.၁-၀.၁၅ g) ဖြစ်ပေါ်နိုင်ပါသည်။ အိန္ဒိယသမုဒ္ဒရာအတွင်း ငလျင်လှုပ်ခတ်မှုကြောင့် ဖြစ်ပေါ်လာသော ဆူနာမီကဲ့သို့ နောက်တစ်ကြိမ် ဖြစ်ပေါ်လာနိုင်ချေရှိပါသည်။

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စိစစ်ခြင်း

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၁) - ဆိုက်ကလုံးအခြေအနေ

Royal Haskoning (၂၀၁၅) လေ့လာမှုများအရ အဓိကဒေတာများအဖြစ် JTWC၏ ၁၉၆၉မှ ၂၀၁၁ အတွင်းရှိ ဆိုက်ကလုံဒေတာများကို အသုံးပြုထားပါသည်။ ၁၉၆၉ခုနှစ်မှစ၍ အပူပိုင်းမုန်တိုင်းများ၏ အသေးစိတ် သတင်းအချက်အလက်များကို JTWCမှ စုဆောင်းထားရှိပါသည်။

အတိတ်မုန်တိုင်းအချက်အလက်များအရ အောက်ဖော်ပြပါ လေ့လာမှုများကို ပြုလုပ်နိုင်ပါသည်။

- ၁၉၆၉ - ၂၀၁၁အတွင်း ထားဝယ်ကုန်းတွင်းပိုင်းသို့ ဆိုက်ကလုံး ဝင်ရောက်မှု မရှိခဲ့ပါ။
- ဆိုက်ကလုံးအများစုမှာ ထားဝယ်အနောက်ဖက်တွင်ဖြစ်ပေါ်ပြီး အဝေးသို့ ထွက်သွားကြသည်။
- ထားဝယ်နှင့် အနီးဆုံးဆိုက်ကလုံး၏ အကွာအဝေးမှာ ကီလိုမီတာ ၂၀၀ဝေးကွာသည်။
- တောင်တရုတ်ပင်လယ်မှ ဖြစ်ပေါ်ဝင်ရောက်လာသော ဆိုက်ကလုံးမုန်တိုင်း၏ ထားဝယ်သို့ ဝင်ရောက်နိုင်ချေသည် နှစ်တစ်ရာတွင် တစ်ကြိမ်ဝင်ရောက်နိုင်ချေထက်နည်းသည်။
- ၎င်းတို့သည် ဆိပ်ကမ်းငယ်၏ အဓိကရင်းနှီးမြုပ်နှံမှုတွင် ပါဝင်သော အဏ္ဏဝါဖွဲ့စည်းပုံအား ထိခိုက်မှု မဖြစ်ပါ။

ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု (၂) - ဆူနာမီ

၂၀၀၅ခုနှစ်တွင်ထုတ်ပြန်သော ၂၀၀၄ခုနှစ် ဒီဇင်ဘာလ ဆူမားတြား - အန်ဒမန်ငလျှင်မှဖြစ်ပေါ်လာသော 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 ဖြစ်ပေါ်နိုင်ချေအလွန်နည်းသော်လည်း 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။
- ၎င်းတိုင်းတာမှုများသည် စာချုပ်သဘောတူညီမှုနှင့် ပါဝင်ပတ်သတ်သူများနှင့် ညှိနှိုင်းဆွေးနွေးမှုများ လုပ်ဆောင်ရပါမည်။ အရေးပေါ်အခြေအနေကို EMP အစီရင်ခံစာတွင် အသေးစိတ် ဖော်ပြထားပါသည်။

(၃) ပတ်ဝန်းကျင်တွင် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု စီမံခန့်ခွဲခြင်း - စီမံကိန်းလည်ပတ်မှုကာလ

(က) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု ဖော်ပြချက်

စီမံကိန်းလည်ပတ်မှုကာလတွင် အဓိကအန္တရာယ်ဖြစ်ပေါ်မှု အကြောင်းအရာမှာ - ဆိပ်ကမ်းငယ်ကို ဆိုးရွားစွာ ပျက်စီးစေပြီး စီမံကိန်းလည်ပတ်သူ ဝန်းထမ်းများနှင့် အနီးအနားရှိလူထုအား ထိခိုက်ဒဏ်ရာရခြင်း၊ သေဆုံးခြင်းများ ဖြစ်ပေါ်စေပါသည်။

ရေကြောင်းသွားယာဉ်များ တိမ်းမှောက်ခြင်း - သတ်မှတ်ထားသော အရှိန်စံနှုန်းထက် ပိုများသော မောင်းနှင်းမှုနှင့် ဝန်အပိုများ တင်ဆောင်မှုတို့ကြောင့် ရေကြောင်းသွားယာဉ်များ တိမ်းမှောက်ခြင်းဖြစ်ပေါ်ပါသည်။

(ခ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများ စိစစ်ခြင်း

စီမံကိန်းလည်ပတ်မှုတွင် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု - ဆိုးရွားသော သဘာဝတော်တဆထိခိုက်မှု ဖြစ်ပေါ်ခဲ့လျှင် ကပ္ပလီပင်လယ်သည် ထိခိုက်မှုဇရိယာအဖြစ် ပျက်စီးမှုထဲတွင် ပါဝင်နေမည် ဖြစ်ပါသည်။

အခြေခံအကြောင်းတရားများ - လေ့လာမှုများမှ အောက်ဖော်ပြပါ အဖြစ်အပျက်များ၏ အခြေခံအကြောင်းအရာများမှာ (၁) မသင့်တော်သော ရေကြောင်းသွားလာမှု အစီအစဉ်များ (၂) သဘာဝဘေးအန္တရာယ်များနှင့် (၃) လူသားအမှားများ ဖြစ်ပါသည်။

ဖြစ်ပျက်မှုများ၏ ဖြစ်နိုင်ခြေ - စီမံကိန်းလည်ပတ်မှု ဖြစ်ပျက်မှုများ၏ ဖြစ်နိုင်ခြေ အကျိုးသက်ရောက်မှုများမှာ နည်းပါသည်။ (၁) ရေကြောင်းသွားလာမှု နည်းစနစ်များကို လိုက်နာရန် စီမံခန့်ခွဲခြင်း (၂) လက်အောက်ဝန်ထမ်းများနှင့် အော်ပရိတ်တာတို့အား လေ့ကျင့်မှုများ ပေးရန်နှင့် (၃) စက်ရုံအတွက်လုံလောက်သော လုံခြုံမှု စီမံခန့်ခွဲခြင်း တို့ဖြစ်ပါသည်။

(ဂ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု အဆင့်ခွဲခြားခြင်း

စီမံကိန်းလည်ပတ်မှုအတွက် ဖြစ်ပေါ်လာနိုင်သော အကျိုးသက်ရောက်မှုများ - စီမံကိန်းလည်ပတ်မှုအတွက် ဖြစ်ပေါ်လာနိုင်သော အကျိုးသက်ရောက်မှုများသည် ယာယီဓါတ်အားပေးစက်ရုံ၏ လေးနက်သော အကျိုးဆက်များ ဖြစ်ပြီး ဖြစ်ပျက်မှုများ၏ ဖြစ်နိုင်ချေမှာ အနည်းငယ်သာရှိသည်။

(ဃ) ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှု လျော့ချခြင်း

စာချုပ်တွင် ပါဝင်သော အပိုင်းတစ်ခုအနေဖြင့် စီမံကိန်းအကောင်အထည်ဖော်ရာတွင် EPC ကန်ထရိုက်တာမှ အောက်ဖော်ပြပါ အလုပ်များကို လုပ်ဆောင်ရန်လိုအပ်ပါသည်။

- ဆိပ်ကမ်းငယ်သို့ ရေကြောင်းသွားလာမှု အညွှန်းအသေးစိတ်ကို တင်ပြရပါမည်။
- ဆိပ်ကမ်းငယ် စီမံကိန်းလည်ပတ်မှုအဖွဲ့အား ဆိပ်ကမ်းငယ်၏ စီမံကိန်းလည်ပတ်မှု၊ ထိန်းသိမ်းမှုနှင့် ဖြစ်ပေါ်လာနိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများကို စီမံခန့်ခွဲခြင်း စသော လေ့ကျင့်ရေးများပေးပြီး အဖွဲ့ဖွဲ့စည်းထားရပါမည်။ ထိုလေ့ကျင့်ရေးတွင် လုပ်ကိုင် ရမည် အစီအစဉ်များကို EPC ကန်ထရိုက်တာမှ ၎င်းတို့၏ အကျိုးရှိသော

စိတ်ချရသော စီမံကိန်းလည်ပတ်မှုနှင့် ထိန်းသိမ်းမှုဆိုင်ရာ နည်းပညာပိုင်း အရည်အချင်း အကဲဖြတ်ခြင်း စသော တိကျသော အရည်အချင်းစစ်ခြင်းများကို ပြုလုပ်ရပါမည်။

အာမခံအပြင် စီမံကိန်းအကောင်အထည်ဖော်သူသည် စီမံကိန်းလည်ပတ်စဉ် ဖြစ်ပေါ်လာသော အန္တရာယ်များကို စီမံကိန်းလည်ပတ်မှုအဖွဲ့မှ အကျိုးဆက်များနှင့်အတူ ချက်ချင်းရင်ဆိုင် ဖြေရှင်းရန် EPC ကန်ထရိုက်တာမှ အရေးပေါ်အခြေအနေကို တုံ့ပြန်ရန် အစီအစဉ်ကို ပြင်ဆင်ထားရပါမည်။ ၄င်းအစီအစဉ်တွင် အောက်ဖော်ပြပါများ ပါဝင်ပြီးကန့်သတ်ချက်များရှိသည်။

- အရေးပေါ်တုံ့ပြန်မှု အစီအစဉ်၏ နောက်ခံနှင့် ရည်ရွယ်ချက်
- အရေးပေါ်မှုဖြစ်ပေါ်ခြင်း အမျိုးအစား၊ သဘာဝနှင့် တည်နေရာ (စီမံကိန်းအတွင်းနှင့် စီမံကိန်းပြင်ပ)
- အရေးပေါ်တုံ့ပြန်မှု အဖွဲ့အစည်း
- အရေးပေါ်တုံ့ပြန်မှု အစီအစဉ်နှင့် လုပ်ထုံးလုပ်နည်းများ
- လုပ်ထုံးလုပ်နည်းများ အသိပေးခြင်းနှင့် ဆက်သွယ်ရေးစနစ်
- ပျက်စီးဆုံးရှုံးမှု အကဲဖြတ်ခြင်းလုပ်ငန်းစဉ်
- သာမာန်စီမံကိန်းလုပ်ငန်းသို့ ပြန်ရောက်ရှိအောင် အစီအစဉ်နှင့် လုပ်ထုံးလုပ်နည်းများ
- အရေးပေါ်ကိရိယာနှင့် အဆောက်အဦးများရရှိမှု
- Traning, Simulation and Mock-Drills
- အရေးပေါ်အဖွဲ့အစည်းနှင့် လုပ်ထုံးလုပ်နည်းများကို အမြဲစစ်ဆေးခြင်း
- အစီအစဉ်နှင့် အသစ်အဆန်းများကို ပြန်လည်သုံးသပ်ခြင်းတို့ဖြစ်ပါသည်။

၁.၆ စုပေါင်းပြီးဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်မှုကို အကဲဖြတ်စစ်ဆေးခြင်း

စုပေါင်းပြီးဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်မှုကို အကဲဖြတ်စစ်ဆေးခြင်း (CIA) သည် စီမံကိန်းဆိပ်ကမ်းငယ်အနီးရှိ ကမ်းလွန်စီမံကိန်း ဖွံ့ဖြိုးတိုးတက်မှုနှင့် သက်ဆိုင်သည် များကို ဖော်ထုတ်ခြင်း ဖြစ်သည်။ ဥပမာ - LNG ပိုက်လိုင်း၊ ဓါတ်အားပေးစက်ရုံနှင့် သဘာဝဓါတ်ငွေ့သုံး ဓါတ်အားပေး စက်ရုံတို့ဖြစ်ပါသည်။ ၄င်းစုပေါင်းဖြစ်ပေါ်လာသော ထိခိုက်သက်ရောက်မှုများ အကျဉ်းချုပ်ကို ဇယား ၁.၆-၁တွင် ဖော်ပြထားပါသည်။

ဇယား ၁.၆-၁

အခြားသက်ဆိုင်ရာ စီမံကိန်းမှ ဖြစ်ပေါ်လာနိုင်သော စုပေါင်းဖြစ်ပေါ်လာသည့် ထိခိုက်သက်ရောက်မှုများ

စီမံကိန်း	သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ စိုးရိမ်ပူပန်မှု			
	ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်	ရေကြောင်း သွားလာမှု	ကမ်းခြေ တိုက်စားမှု	ဒီရေတောနှင့် ကမ်းခြေသစ်တော
LNG ပိုက်လိုင်း	√	√	√	√
ဓါတ်အားပေးစက်ရုံ	√			√
သဘာဝဓါတ်ငွေ့သုံး ဓါတ်အားပေးစက်ရုံ	√			√
စီမံကိန်းကမ်းရိုးတန်းလမ်း				√

ကမ်းရိုးတန်းရေအရည်အသွေးနှင့် အဏ္ဏဝါဂေဟစနစ်

ဆိပ်ကမ်းငယ်နှင့် LNG ပိုက်လိုင်း စီမံကိန်းများအတွက် သောင်တူးဖော်ခြင်း လုပ်ဆောင်မှုများကြောင့် ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်များကို စုပေါင်းထိခိုက်မှုများ ဖြစ်ပေါ်လာနိုင်ပါသည်။ စီမံကိန်း၃ခုပေါင်းအတွက် သောင်တူးဖော်ခြင်းမှာ ပျမ်းမျှ ၇,၀၅၂,၀၀၀ m^3 (ဆိပ်ကမ်းငယ်မှ ၅,၂၀၀,၀၀၀ m^3၊ LNG ပိုက်လိုင်း မှ ၁,၈၅၂,၀၀၀ m^3 နှင့် ဓါတ်အားပေး စက်ရုံစီမံကိန်းမှအနည်းငယ်) ဖြစ်ပါသည်။ ထို တူးဖော်မှုထုထည်သည် ပျံ့နှံ့အမှုန်များကို တိုးပွားစေပြီး ပင်လယ်ထဲတွင် အောက်ဆီဂျင် ပျော်ဝင်နှုန်းကို လျော့ကျစေပြီး ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ်ကို ထိခိုက်စေပါသည်။

ထို့ကြောင့် စီမံကိန်းအားလုံးအတွက် သောင်တူးဖော်ခြင်းလုပ်ငန်းအတွက် အကောင်းဆုံး စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် စောင့်ကြည့်လေ့လာမှုများကို ဆောင်ရွက်ရပါမည်။

ကမ်းခြေတိုက်စားမှု

ဆိပ်ကမ်းငယ်နှင့် LNG ပိုက်လိုင်းစီမံကိန်းများမှ ရေကာတာတံတိုင်း တည်ဆောက်မှုကြောင့် ကမ်းခြေတိုက်စားမှု စုပေါင်းထိခိုက်ခြင်းများ ဖြစ်ပေါ်လာပါသည်။ ၎င်းအခြေအနေသည် တိုက်စားမှုများ ဖြစ်ပေါ်ပြီး ကမ်းခြေအနေအထားကို ပြောင်းလဲစေပါသည်။

ထို့ကြောင့် စီမံကိန်းအားလုံးအတွက် သောင်တူးဖော်ခြင်းလုပ်ငန်းအတွက် အကောင်းဆုံး စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် စောင့်ကြည့်လေ့လာမှုများကို ဆောင်ရွက်ရပါမည်။

ဒီရေတောနှင့် ကမ်းခြေသစ်တော

ဆိပ်ကမ်းငယ်၊ LNG ပိုက်လိုင်း စီမံကိန်း၊ ဓါတ်အားပေးစက်ရုံနှင့် အခြားစီမံကိန်းများ၏ စီမံကိန်းရှင်းလင်းမှုများ ကြောင့် ဒီရေတောနှင့် ကမ်းခြေသစ်တော၏ စုပေါင်းထိခိုက်မှု ဖြစ်ပေါ်ခြင်း ဖြစ်ပါသည်။ သို့သော် DSEZ နယ်နိမိတ်ဧရိယာအတွင်းရှိ ဒီရေတော ၂၈၀ ဧကနှင့် ကမ်းခြေသစ်တော ဧက ၃၀သည် စီမံကိန်းတည်နေရာကြောင့် ပျက်စီးဆုံးရှုံးပြီး တောရိုင်းသတ္တဝါနှင့် ဒေသခံရွာသူရွာသားများ၏ သစ်တောအရင်းအမြစ်များကို ထိခိုက် စေပါသည်။ သစ်တောများပြန်လည် စိုက်ပျိုးခြင်း အစီအစဉ်ကို ဒီဇိုင်းဆွဲပြီး အကောင်အထည်ဖော် ရပါမည်။

ရေကြောင်းသွားလာမှု

ဆိပ်ကမ်းငယ်နှင့် LNG ပိုက်လိုင်းစီမံကိန်းကြောင့် ရေကြောင်းသုံးယာဉ်များ သွားလာမှုများပြားလာပြီး ရေကြောင်းသွားလာမှု စုပေါင်းထိခိုက်မှုဖြစ်ပေါ်လာပါသည်။ ၄င်းကြောင့် ဒေသခံငါးဖမ်းသမားများ ထိခိုက်မှုဖြစ်ပေါ်ရန် အခွင့်အရေးများပြားလာပါသည်။ ထို့ကြောင့် ဆိပ်ကမ်းငယ်နှင့် LNG ပိုက်လိုင်းများ၏ သတ်မှတ်ထားသော ဇုန်ကို နယ်နိမိတ် သတ်မှတ် ရပါမည်။ ထိုနယ်နိမိတ်သတ်မှတ်ခြင်းကို ဒေသခံအာဏာပိုင်များ၊ ဒေသခံပြည်သူများနှင့် ဒေသအားထိခိုက်မှု နည်းစေရန် သဘောတူညီကာ ဆောင်ရွက်ရပါမည်။

၁.၇ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းများ

၁.၇.၁ ဆောက်လုပ်ရေးပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းများ အကျဉ်းချုပ်

(၁) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အကန့်အသတ်များ

စီမံကိန်းတည်ဆောက်မှုအကြိုကာလနှင့် တည်ဆောက်ဆဲကာလများ၏ တည်ဆောက်မှု အဆင့်ဆင့်တွင် ဖြစ်ပေါ်လာနိုင်သော ပတ်ဝန်းကျင်ပြဿနာများမှာ ESIAလေ့လာမှုကို ပြင်ဆင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေးသူများ ပြင်ဆင်ပေးသည့် အစမ်းဆောက်လုပ်ရေး အစီအစဉ်ပေါ်တွင် မူတည်နေပါသည်။ (ဇယား ၁.၇-၁ နှင့် ဇယား ၁.၇-၂ တွင် ကြည့်ရှုရန်)

ဇယား ၁.၇-၁

တည်ဆောက်ရေးအကြိုကာလအတွက် မျှော်လင့်ထားသော ထိခိုက်မှုများ

ဆောက်လုပ်ရေးအစီအစဉ်များ	ထိခိုက်မှုများ
ကုန်းတွင်းအပိုင်းပြင်ဆင်ရေးဖြစ်သော မြေပြင်ရှင်းလင်းခြင်း၊ မြေဖို့ခြင်း နှင့် သိပ်သည်းခြင်း	ဖုန်မှုန့်၊ ဆူညံမှု၊ ဒီရေတောနှင့် လူမှု/အသက်မွေးဝမ်းကြောင်း

ဇယား ၁.၇-၂

တည်ဆောက်ရေးကာလအတွက် မျှော်လင့်ထားသော ထိခိုက်မှုများ

ဆောက်လုပ်ရေးအစီအစဉ်များ	ထိခိုက်မှုများ
ကုန်းတွင်းပိုင်းတည်ဆောက်မှု	ဓါတ်ငွေ့ထုတ်လွှတ်မှု၊ ဆူညံမှု၊ ရေဆိုး၊ ဆောက်လုပ်ရေး အမှိုက်၊ ကုန်းလမ်းပို့ဆောင်ရေး၊ ဒီရေတောနှင့် လူမှု/အသက်မွေးဝမ်းကြောင်း
သောင်တူးဖော်ခြင်းလုပ်ကိုင်မှုများ	ကမ်းရိုးတန်းရေ၊ အဏ္ဏဝါဂေဟစနစ်နှင့် ရေကြောင်း သွားလာမှု
ရေကာတံတိုင်းနှင့် ကမ်းလွန်အပိုင်းတည်ဆောက်မှု	ကမ်းရိုးတန်းရေ၊ အဏ္ဏဝါဂေဟစနစ်နှင့် ရေကြောင်း သွားလာမှု

မှတ်ချက်။ ။ ဆောက်လုပ်ရေးအစီအစဉ်များသည် အခန်း၄တွင် ပါဝင်သော စီမံကိန်းတည်ဆောက်မှု အစီအစဉ်ပေါ်မူတည်နေပါသည်။

(၂) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု နည်းလမ်းများ

တည်ဆောက်ရေးအကြိုကာလနှင့် တည်ဆောက်ရေးကာလများတွင် အောက်ဖော်ပြပါ ပြဿနာများကို စီမံခန့်ခွဲရန် လိုအပ်သည်။ ၎င်းတို့မှာ - (၁) ယေဘူယျဆောက်လုပ်ရေး (၂) ဒီရေတောစီမံခန့်ခွဲခြင်း (၃) လေထုအရည်အသွေးစီမံခန့်ခွဲမှု (၄) အသံဆူညံမှု (၅) သောင်တူးဖော်ခြင်းနှင့် စုပုံခြင်း (၆) ရေဆိုးစီမံခန့်ခွဲခြင်း (၇) အမှိုက်စီမံခန့်ခွဲခြင်း (၈) အန္တရာယ်ရှိသောအမှိုက် စီမံခန့်ခွဲခြင်း (၉) ယာဉ်သွားလာမှု စီမံခန့်ခွဲခြင်း (၁၀) ရေကြောင်းသွားလာမှု စီမံခန့်ခွဲခြင်း (၁၁) OSH စီမံခန့်ခွဲခြင်း (၁၂) သဘာဝအသုံးပြုမှုများ စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ် (၁၃) လူမှုပတ်ဝန်းကျင် စီမံခန့်ခွဲခြင်း (၁၄) မြေယာသိမ်းဆည်းခြင်းနှင့် (၁၅) အရေးပေါ်စီမံခန့်ခွဲမှု အစီအစဉ် (ရေလွှမ်းခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံး) တို့ဖြစ်ပါသည်။ ဖော်ပြပါ ပြဿနာများအားလုံး၏ စီမံခန့်ခွဲမှု နည်းလမ်းခွဲများကို ပြင်ဆင်ထားပြီး နောက်ဆက်တွဲ ၆(က)အတွဲ (၂)တွင် ဖော်ပြထားပါသည်။ ကန်ထရိုက်တာမှ ၎င်းနည်းလမ်းခွဲများကို အဆင့်မြင့်ကာ ဆောက်လုပ်ရေးကာလ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု နည်းလမ်းများပါဝင်သော အစီအစဉ်ကို လုပ်ဆောင်ရမည်။ ထိုနည်းလမ်းခွဲများတွင် ဆောက်လုပ်ရေးအစီအစဉ်နှင့် စီမံခန့်ခွဲမှု ပြောင်းလဲခြင်းများအတွက် ပြန်လည်သုံးသပ်ခြင်း၊ ပြင်ဆင်ခြင်း သို့မဟုတ် အဆင့်မြှင့်တင်ခြင်း စသည့် တို့ကို စာတမ်းအနေဖြင့် ပြင်ဆင်ရပါမည်။

(၃) စောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာများ

ပတ်ဝန်းကျင်စောင့်ကြည့်လေ့လာခြင်းနှင့် ကြည့်ရှုစစ်ဆေးခြင်းများကြောင့် အောက်ဖော်ပြပါ အစီရင်ခံစာများ ဖြစ်ပေါ်လာသည်။ (၁) အတွင်းပိုင်းစောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာတွင် စီမံကိန်းနေရာ ကြည့်ရှု အစီရင်ခံစာနှင့် ပတ်ဝန်းကျင်စောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာတို့ပါဝင်သည်။ (၂) MONREC သို့ ၂လ တစ်ကြိမ်တင်ရသော စောင့်ကြည့်လေ့လာရေး အစီရင်ခံစာတို့ ဖြစ်ပါသည်။

(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 စီမံကိန်းလည်ပတ်မှု စီမံခန့်ခွဲရေးနည်းလမ်းများ အကျဉ်းချုပ်

(၁) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အကန့်အသတ်များ

ဆိပ်ကမ်းငယ်စီမံကိန်းလည်ပတ်မှု၏ လေထုအရည်အသွေး၊ ဖန်လုံအိမ်ဓါတ်ငွေ့၊ အသံဆူညံမှု၊ ကမ်းရိုးတန်းရေ၊ အဏ္ဏဝါဂေဟဗေဒ၊ ကမ်းခြေတည်ရှိမှု၊ ကုန်းတွင်းသွားလာမှု၊ ရေကြောင်းသွားလာမှုနှင့် စွန့်ပြစ်အမှိုက်များ၏ စီမံခန့်ခွဲရေးနည်းလမ်းများသည် ပတ်ဝန်းကျင်သို့ ထူးခြားသော ထိခိုက်မှုမဖြစ်ပေါ်စေပါ။ ထို့ကြောင့် OEMP သည် CEMPထက် လုပ်ဆောင်မှုများလျော့နည်းပြီး ရိုးရှင်းသော EMS ပြုလုပ်ရန်သာ လိုအပ်ပါသည်။

(၂) ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုနည်းလမ်းများ

စီမံကိန်းလည်ပတ်မှုကာလတွင် အောက်ဖော်ပြပါ ပြဿနာများကို စီမံခန့်ခွဲရန် လိုအပ်ပါသည်။ (၁) ဒီရေတောစီမံခန့်ခွဲခြင်း၊ (၂) လေထုအရည်အသွေးနှင့် ဖန်လုံအိမ်ဓါတ်ငွေ့စီမံခန့်ခွဲခြင်း (၃) အသံဆူညံမှု (၄) သောင်တူးဖော်မှု စီမံခန့်ခွဲခြင်း နှင့် စွန့်ပြစ်စုပုံခြင်း (၅) ရေဆိုးစီမံခန့်ခွဲခြင်း (၆) အညစ်အကြေးစီမံခန့်ခွဲခြင်း (၇) အန္တရာယ်ရှိသော အညစ်အကြေးစီမံခန့်ခွဲခြင်း (၈) ယာဉ်သွားလာမှု စီမံခန့်ခွဲခြင်း (၉) ရေကြောင်းသွားလာမှု စီမံခန့်ခွဲခြင်း (၁၀) ကမ်းခြေတိုက်စားမှု စီမံခန့်ခွဲခြင်း (၁၁) OSH စီမံခန့်ခွဲခြင်း (၁၂) လူမှုပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းနှင့် (၁၃) ရေကြောင်းသွားလာမှုနှင့် အန္တရာယ်ကင်းမှုစီမံခန့်ခွဲခြင်း (၁၄) လုပ်ငန်းလည်ပတ်သူဝန်ထမ်းများ စီမံခန့်ခွဲမှု (၁၅) အရေးပေါ်စီမံခန့်ခွဲမှု အစီအစဉ် (ရေလွှမ်းခြင်း၊ ဆူနာမီနှင့် ဆိုက်ကလုံး)တို့ဖြစ်ပါသည်။

(၃) စောင့်ကြည့်လေ့လာခြင်း စာတမ်း

MER သည် ကမ်းရိုတန်းရေ၊ အဏ္ဏဝါဂေဟစနစ်နှင့် ကမ်းခြေတည်တံ့မှုတို့ကို စောင့်ကြည့်လေ့လာရန် အစီအစဉ်ပြုလုပ်ထားပါသည်။ ကမ်းရိုတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ် အခြေအနေကို တစ်လတစ်ကြိမ် စစ်တမ်းကောက်ယူပြီး အထူးသဖြင့် သောင်တူးဖော်ခြင်းလုပ်ငန်း ပြုပြင်ထိန်းသိမ်းနေချိန်တွင် လုပ်ဆောင်ရပါမည်။ ကမ်းခြေတည်တံ့မှုလေ့လာခြင်း အခြေအနေတွင် ကမ်းခြေပုံစံနှင့် ရေအနက်တိုင်းတာမှု စစ်တမ်းများကို တစ်နှစ်လျှင် နှစ်ကြိမ် ပြုလုပ်ဆောင်ရွက်ရပါမည်။ ပတ်ဝန်းကျင်ဆိုင်ရာ အစီရင်ခံစာကို နှစ်စဉ် MONREC ဆိပ်ကမ်းအာဏာပိုင်များနှင့် အခြားသက်ဆိုင်ရာအာဏာပိုင်များထံသို့ ပို့ဆောင်ပေးရပါမည်။

(၄) ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးခြင်း ဖော်ထုတ်ချက်

ကော်မတီ ၃ခုသည် ဆောက်လုပ်ရေးကာလကို ပြုပြင်ထိန်းသိမ်းသင့်သည်ဟု ထုတ်ဖော်ပြောကြားခဲ့သည်။ သို့သော် ၄င်းအကြံပေးမှုသည် ပတ်ဝန်းကျင်ကို ထောက်ပံ့ပေးသော အစီအစဉ်အဖြစ်အကောင်အထည်ဖော်ခြင်းသာ ဖြစ်သည်။ ကော်မတီ ၃ခုမှ အစိတ်အပိုင်းများနှင့် လုပ်ငန်းတာဝန်များကို သတ်မှတ်ပြောကြားခဲ့သည်။ စီမံကိန်း မကျေနပ်ချက်များကို

ပြောကြားဆွေးနွေးပြီး ဆိပ်ကမ်းငယ်စီမံကိန်းလည်ပတ်မှုမှ အမြန်ဆုံး ထိရောက်စွာ ကိုင်တွယ်ဖြေရှင်းရန်ဖြစ်ပါသည်။

(၅) စစ်ဆေးခြင်း

စစ်ဆေးခြင်းကို စီမံကိန်းလည်ပတ်မှု၏ တစ်နှစ်ပြည့်နောက်ဆုံးအချိန်တွင် ပြုလုပ်မည်ဖြစ်ပြီး နောက်ပိုင်းလိုအပ်ပါက လုပ်ဆောင်သွားရန် လိုအပ်ပါသည်။

၁.၇.၃ စီမံကိန်းပိတ်သိမ်းမှု စီမံခန့်ခွဲရေးနည်းလမ်းများ အကျဉ်းချုပ်

စီမံကိန်းပိတ်သိမ်းမှုကာလ၏ EMPသည် သက်ဆိုင်ရာ အာဏာပိုင်များ၏ ဆုံးဖြတ်ချက်ပေါ်မူတည်ပြီး ၎င်းတို့မှ အစိတ်အပိုင်းအားလုံးဖယ်ရှားပြစ်ရန် ခွင့်ပြုချက်လိုအပ်သည်။

စီမံကိန်းပိတ်သိမ်းကာလအတွက် အကြံပြုထားသော စီမံခန့်ခွဲမှု အစီအစဉ်မှာ -

- လေထုအရည်အသွေးစီမံခန့်ခွဲမှု အစီအစဉ်
- အသံဆူညံမှုစီမံခန့်ခွဲမှု အစီအစဉ်
- ကမ်းရိုးတန်းရေနှင့် အဏ္ဏဝါဂေဟစနစ် စီမံခန့်ခွဲမှု အစီအစဉ် (ကမ်းလွန်အဆောက်အဦးများ ဖြိုချဖျက်ဆီးမှု ပါဝင်သည်)
- အညစ်အကြေးစီမံခန့်ခွဲမှု အစီအစဉ်
- မြေယာပြန်လည်ပြုပြင်ခြင်း စီမံခန့်ခွဲမှု အစီအစဉ်တို့ပါဝင်သည်။

၁.၇.၄ ငွေကြေးအကျဉ်းချုပ်နှင့် အချိန်ဇယား

စီမံကိန်းတည်ဆောက်မှုအကြိုကာလနှင့် တည်ဆောက်ဆဲကာလများတွင် စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးစွမ်းဆောင်မှုတို့ကို စောင့်ကြည့်လေ့လာခြင်းနှင့် အကဲဖြတ်ခြင်းများပြုလုပ်ရန် အမေရိကန် ဒေါ်လာ ၅၁၂,၀၅၀ (အရေးပေါ်ငွေ ၁၀%ပါဝင်သည်) ကို တည်ဆောက်ရေးကာလ ၁၅လတွင် သုံးစွဲရန် ငွေကြေးအဖြစ်သတ်မှတ်ထားသည်။

စီမံကိန်းလည်ပတ်မှုကာလတွင် စောင့်ကြည့်လေ့လာခြင်းနှင့် အကဲဖြတ်ခြင်းများ လုပ်ဆောင်ရန် ကာလ ၂ခုခွဲခြားထားပါသည်။ ပထမကာလမှာ တည်ဆောက်မှု ပြီးစီးသည့်အချိန်မှ ပထမ၅နှစ်တာကာလဖြစ်ပြီး ဒုတိယကာလမှာ စီမံကိန်းကာလတစ်လျှောက်၏ ၆နှစ်ကာလ (စီမံကိန်းလည်ပတ်မှုကာလ စုစုပေါင်းသည် ၇၅နှစ်) ဖြစ်သည်။ ထို့ကြောင့် တစ်နှစ်အတွက် ရည်မှန်းထားငွေသည် အမေရိကန်ဒေါ်လာ ၃၉၄,၃၅၀ (အရေးပေါ်ငွေ ၁၀%ပါဝင်သည်) ဖြစ်ပြီး ပထမ ၅နှစ်အတွက် ခွဲဝေထားရှိပါသည်။ ၆နှစ်မှစ၍ နောင်စီမံကိန်းသက်တမ်းတစ်လျှောက်အတွက် အသုံးပြုရန်ငွေမှ တစ်နှစ်လျှင် အမေရိကန်ဒေါ်လာ ၃,၃၉၈,၄၅၀ (အရေးပေါ်ငွေ ၁၀%ပါဝင်သည်) ဖြစ်သည်။ ထို့ကြောင့် စီမံကိန်းလည်ပတ်မှုကာလအတွက် စုစုပေါင်းကုန်ကျငွေမှာ အမေရိကန်ဒေါ်လာ ၃,၇၉၂,၈၀၀ (အရေးပေါ်ငွေ ၁၀%ပါဝင်သည်) ဖြစ်ပါသည်။ ထို့အပြင် စောင့်ကြည့်လေ့လာခြင်းစရိတ်သည် စီမံကိန်းအခြေအနေနှင့် သင့်တော်မှုအပေါ် မူတည်နေပါသည်။

၁.၈ ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးခြင်းဖော်ထုတ်ချက်

၁.၈.၁ နည်းစနစ်နှင့် ချဉ်းကပ်မှု

အဓိက ၃အုပ်စုသော ပါဝင်သူများနှင့် ၂ကြိမ်တွေ့ဆုံမှုတွင် ပြည်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်းနှင့် ညှိနှိုင်းခြင်းဆိုင်ရာ သတင်းအချက်အလက်များ ရရှိခဲ့ပါသည်။ ငပိတက်၊ စခန်းသစ်၊ ပန်ဒအင်၊ ညောင်ပင်ဆိပ်၊ ဇီးနှစ်ပင်နှင့် မောင်းမကန်ရွာများမှ ကျေးရွာသူ ကျေးရွာသားများအပြင် ရုံး ၁၄ရုံး၊ NGO ၂ခုတို့မှ တာဝန်ရှိသူများ တက်ရောက်ခဲ့ကြပါသည်။

၁.၈.၂ ၂၀၁၅ခုနှစ် ဇန်နဝါရီလ ၂၀-၃၀ရက်အတွင်း ပထမအကြိမ်တွေ့ဆုံဆွေးနွေးခြင်းရလဒ်

ပြည်သူများနှင့် တွေ့ဆုံဆွေးနွေးမှုများသည် သတင်းအချက်အလက်ဖော်ထုတ်မှု၏ ရည်ရွယ်ချက်၂ခုနှင့် ကိုက်ညီပြီး ESIAလေ့လာမှု၏ နောက်အဆင့်များအတွက် ပြည်သူများနှင့် တွေ့ဆုံဆွေးနွေးမှု အခြေခံကောင်းကို ရရှိခဲ့ပါသည်။

(၁) အစိုးရအာဏာပိုင်အဖွဲ့အစည်းများ

SWBနှင့် နိုင်ငံအလိုက်၊ ဒေသအလိုက်ဆိုင်ရာ အစိုးရအာဏာပိုင်များမှ ဖော်ထုတ်သော ပြဿနာများမှာ

ESIA တွင်ပါဝင်သူများ ။ ။ စီမံကိန်းအတွက် ပြည်သူများနှင့် ညှိနှိုင်းဆွေးနွေးခြင်း၊ ပတ်ဝန်းကျင်နှင့် လူမှုရေး စစ်တမ်းများကောက်ယူခြင်း လုပ်ဆောင်မှုများပြုလုပ်ရန် မြို့နယ်၊ ခရိုင်ရှိ သက်ဆိုင်ရာရုံးများကို အကြောင်းကြားရန်

မြေရယူခြင်း ။ ။ မြေရယူခြင်းအတွက် ပေးလျော်ရာတွင် တရားဝင်လမ်းညွှန်ချက်များနှင့် လုပ်ဆောင်မှုများကို လိုက်နာဆောင်ရွက်ရန်

ESIA ရလဒ်များကို တင်ပြခြင်း ။ ။ ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေးသူများသည် နေပြည်တော်ရှိ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီဌာနသို့ တိုက်ရိုက်တရားဝင်စာတင်ပြီး ESIA လေ့လာမှုပြုလုပ်ရန် တောင်းခံရမည်။

ပင်လယ်လိပ်များ၏ အသိုက် ။ ။ လက်ရှိအချိန်တွင် ထိန်းသိမ်းစောင့်ရှောက်ထားသော ပင်လယ်လိပ်များ၏ အသိုက်ဧရိယာသည် မောင်းမကန်ကမ်းခြေမှ ၁၅ ကီလိုမီတာကွာဝေးသော ကျွန်းငယ်လေးဖြစ်ပါသည်။ ၄င်းကျွန်းငယ်ကို ၃ ဉချိန်ကာလများတွင် တပ်မတော် (ရေ)မှ စောင့်ကြပ်ကြည့်ရှုပါသည်။

ရေဆိုးများစွန့်ထုတ်ခြင်း ။ ။ မစွန့်ပြစ်မီ ရေဆိုးများကို ပြုပြင်သန့်စင်ရန် အကြံပြုပါသည်။

(၂) အခြားစိတ်ပါဝင်စားသူများ

ဒေသတွင်းအခြေပြုအဖွဲ့အစည်းမှ ဖော်ထုတ်သော ပြဿနာများမှာ -

မှန်ကန်သော စီမံကိန်း သတင်းအချက်အလက်များ ။ ။ တိကျသော စီမံကိန်းအစီအစဉ်နှင့် အခြေအနေ သတင်းအချက်အလက်များကို ပြည်သူထံသို့ ပေးပို့ရန်

အလုပ်အကိုင်အခွင့်အလမ်း ။ ။ ဒေသခံများအား အလုပ်အကိုင်အခွင့်အလမ်းများပေးရန်နှင့် အသက်မွေးဝမ်းကြောင်းမှုနှင့် ဆိုင်သောလေ့ကျင့်မှုများပေးရန်

ပေးလျော်ခြင်း ။ ။ စီမံကိန်းကြောင့် ထိခိုက်သော ပြည်သူများကို တရားမျှတသော ပေးလျော်မှုနှုန်းဖြင့် ပေးလျောရန်

ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း ။ ။ စီမံကိန်းလုပ်ဆောင်မှုများသည် ပတ်ဝန်းကျင်နှင့် အဏ္ဏဝါဂေဟစနစ်ကို ထိခိုက်မှုမရှိအောင် သတိထားရန်၊ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုကို အကောင်းဆုံး လုပ်ဆောင်မှုများ ပြုလုပ်ရန်၊ အစိုးရအာဏာပိုင်နှင့် NGO များမှ လက်ခံသော တတိယအဖွဲ့အစည်းမှ ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်လေ့လာခြင်းများကို ပြုလုပ်ရမည်ဖြစ်ပါသည်။

NGO များ၏ အခန်းကဏ္ဍ ။ ။ NGOများမှ ESIA စာတမ်းပြုလုပ်ရာတွင် ထောက်ပံ့မှု အခွင့်အရေးများ ရရှိရန်

ဒေသခံများအား လျှပ်စစ်မီးထောက်ပံ့ခြင်း ။ ။ စီမံကိန်းမှ လျှပ်စစ်မီးကို ဒေသခံများအား ပေးဝေပြီး ရန်ကုန်မြို့တွင် ကောက်ခံသည့် လျှပ်စစ်မီတာခနှုန်းထား (တစ်ယူနစ် ၃၅ကျပ်)ဖြင့်သာ ကောက်ခံရန်တို့ဖြစ်ပါသည်။

(၃) ဒေသခံပြည်သူများ

ငပိတက်၊ ညောင်ပင်ဆိပ်၊ စခန်းသစ်၊ မူဒူး ကျေးရွာများမှ ကျေးရွာသူ ကျေးရွာသားများ၏ ဖော်ထုတ်ချက် ပြဿနာများမှာ အောက်ဖော်ပြပါတို့ဖြစ်ပါသည်။

ငပိတက်ကျေးရွာ

- လေထုညစ်ညမ်းထုတ်လွှတ်ခြင်းအတွက် စိုးရိမ်ပူပန်ခြင်း
- ချောင်းပိတ်ဆို့ပြီး ဒေသခံများ အရင်ကဲ့သို့ ငါးဖမ်းမရခြင်းအတွက် စိုးရိမ်ပူပန်ခြင်း
- စီမံကိန်းဖွံ့ဖြိုးမှုကြောင့် ရွာလမ်းများ ပိတ်ဆို့ခြင်းအတွက် စိုးရိမ်ပူပန်ခြင်း
- ဆောက်လုပ်ရေးကာလ၏ သယ်ယူပို့ဆောင်မှုကြောင့် တုန်ခါမှုများ ဖြစ်ပေါ်ပြီး နေအိမ်များကို ထိခိုက်မည်ကို စိုးရိမ်ပူပန်ခြင်း
- စီမံကိန်းဖွံ့ဖြိုးမှု လုပ်ဆောင်ခြင်းကြောင့် ဓါတ်ငွေ့ထုတ်လွှတ်မှုများ၊ ဖုန်နှင့် တုန်ခါမှုများ ဖြစ်ပေါ်ခြင်းကြောင့် သီဟိုဠ်စေ့ ထုတ်လုပ်ခြင်းများ ကျဆင်းသွားမည်ကို စိုးရိမ်ပူပန်ခြင်း
- စီမံကိန်းလုပ်ဆောင်မှုများကြောင့် အဏ္ဏဝါဂေဟစနစ်ကျဆင်းလာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- စီမံကိန်းအကောင်အထည်ဖော်မှုကြောင့် ဖြစ်ပေါ်လာသည်ကို စီမံကိန်း အကောင်အထည် ဖော်သူမှ တာဝန်ယူ ဖြေရှင်းရန် အကြံပြုခြင်း
- သဘာဝသယံဇာတများကို ရေရှည်တည်တံ့အသုံးပြုနိုင်ရန် ပတ်ဝန်းကျင် ကာကွယ်ခြင်းများ ပြုလုပ်ရန် အကြံပြုခြင်း
- ကျေးရွာများအား စီမံကိန်းမှ လျှပ်စစ်မီးထောက်ပံ့ပေးရန်
- စီမံကိန်းအကောင်အထည်ဖော်သူများသည် ကျေးရွာနှင့် ပတ်ဝန်းကျင်အာ ထောက်ပံ့ပေးလျှင် ကျေးရွာသူ ကျေးရွာသားများမှ စီမံကိန်းအာ သဘောတူမည် ဖြစ်ပါသည်။

ညောင်ပင်ဆိပ်ကျေးရွာ

- စီမံကိန်းကြောင့် ချောင်းပိတ်ဆို့ပြီး ဒေသခံများ၏ ငါးဖမ်းသင်္ဘောများ ယခုကဲ့သို့ ခေါက်တုံ့ခေါက်ပြန် သွားလာ၍မရခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း

- ဓါတ်ငွေ့ထုတ်လွှတ်မှု ညစ်ညမ်းခြင်းကြောင့် လူထုကျန်းမာရေး ထိခိုက်မှုနှင့် အသက်မွေးဝမ်းကြောင်းမှုများ ပြောင်းလဲသွားခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ဒီရေတောများဆုံးရှုံးသွားသောကြောင့် ဒေသခံများ အစားအသောက်နှင့် ဝင်ငွေများ ပျောက်ဆုံးသွားခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ပင်လယ်သို့သွားသောလမ်းအား စီမံကိန်းတာဝန်ရှိသူများမှ ပိတ်ဆို့ထားခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ကျေးရွာများကို ပြန်လည်နေရာချထားပေးသည့်အခါ အခြားသောနေရာများကဲ့သို့ အရင်းအမြစ်များမရှိခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ဂတ်စ်ပိုက်လိုင်း ယိုစိမ့်ခြင်းဖြစ်ပေါ်မည်ကို စိုးရိမ်ပူပန်ခြင်း
- ကျေးရွာသူ ကျေးရွာသားများ၏ မကျေနပ်ချက်များကို ဖြေရှင်းပေးရန်အတွက် စိုးရိမ်ပူပန်ခြင်း (မကျေနပ်ချက်များ ဖြေရှင်းပေးခြင်း)
- စီမံကိန်းအကောင်အထည်ဖော်မှုသည် ကျေးရွာ၊ ပတ်ဝန်းကျင်နှင့် လူထုအား ထိခိုက်မှုမရှိလျှင် စီမံကိန်းအား သဘောတူညီပါမည်။

စခန်းသစ်နှင့် ပန်ဒအင်ကျေးရွာများ

- ဆိပ်ကမ်းငယ်စီမံကိန်း တည်ဆောက်မှုနှင့် လည်ပတ်မှုများသည် မြစ်ဝနှင့် နီးကပ်နေသောကြောင့် ဒေသခံများ၏ ငါးဖမ်းသင်္ဘောများ ယခုကဲ့သို့ ခေါက်တုံ့ခေါက်ပြန် မသွားလာနိုင်ခြင်း ဖြစ်ပေါ်မှုကို စိုးရိမ်ပူပန်ခြင်း
- ဓါတ်ငွေ့ထုတ်လွှတ်မှု၊ အခိုးအငွေ့များနှင့် ရေဆိုးများစွန့်ပြစ်မှုကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ဒီရေတောများ ဆုံးရှုံးသွားသောကြောင့် ဒေသခံတို့၏ အစားအသောက်နှင့် ဝင်ငွေများ ပျောက်ဆုံးသွားခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ပင်လယ်သို့သွားသောလမ်းအား စီမံကိန်းတာဝန်ရှိသူများမှ ပိတ်ဆို့ထားခြင်း ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ဆောက်လုပ်ရေးကာလ၏ သယ်ယူပို့ဆောင်မှုကြောင့် တုန်ခါမှုများဖြစ်ပေါ်ပြီး နေအိမ်များကို ထိခိုက်မှု ဖြစ်ပေါ်မည်ကို စိုးရိမ်ပူပန်ခြင်း
- သောင်တူးဖော်ခြင်း လုပ်ငန်းများကြောင့် စခန်းသစ်ရှိ ငါးဖမ်းနေရာများ ပျောက်ကွယ်မှု ဖြစ်ပေါ်လာမည်ကို စိုးရိမ်ပူပန်ခြင်း
- စီမံကိန်းအကောင်အထည်ဖော်မှုသည် ကျေးရွာ၊ ပတ်ဝန်းကျင်နှင့် လူထုအားထိခိုက်မှု မရှိခဲ့လျှင် စီမံကိန်းအား ကျေးရွာလူထုမှ သဘောတူပါမည်။

ဇီးနှစ်ပင်နှင့် မောင်းမကန်ကျေးရွာများ

- စီမံကိန်းသည် ဇီးနှစ်ပင်ရွာ အနီးရှိချောင်းကို အသုံးပြုမည်ကို စိုးရိမ်ပူပန်ခြင်း
- ဆိပ်ကမ်းငယ်စီမံကိန်းတည်ဆောက်မှုနှင့် လည်ပတ်မှုများသည် ဇီးနှစ်ပင်ရွာချောင်းနှင့် နီးသောကြောင့် ဒေသခံများ၏ ငါးဖမ်းသင်္ဘောများ ယခုကဲ့သို့ ခေါက်တုံ့ခေါက်ပြန် မသွားလာနိုင်ခြင်း ဖြစ်ပေါ်နိုင်သည်ကို စိုးရိမ်ပူပန်ခြင်း
- ရေဆိုးများ စွန့်ပြစ်မှုကြောင့် ဒီရေတောများ ပျက်စီးမှုဖြစ်ပေါ်မည်ကို စိုးရိမ်ပူပန်ခြင်း
- စောင့်ကြည့်လေ့လာမှုပြုလုပ်ချိန်တွင် ဒေသခံရွာသူ ရွာသားများမှ ပါဝင်ခွင့် ရှိ/မရှိကို သိရှိလိုခြင်း တို့ဖြစ်ပါသည်။

၁.၈.၃ ၂၀၁၆ခုနှစ် ဇန်နဝါရီလ ၂၆-၂၈ရက်အတွင်း ဒုတိယအကြိမ် တွေ့ဆုံဆွေးနွေးခြင်းရလဒ်

(၁) အစိုးရအာဏာပိုင်အဖွဲ့အစည်းများ

SWBနှင့် နိုင်ငံအလိုက်၊ ဒေသအလိုက်ဆိုင်ရာ အစိုးရအာဏာပိုင်များမှ ဖော်ထုတ်သောပြဿနာများမှာ -

- ပြန်လည်နေရာချထားပေးမည့်ဖြစ်သော ဧရိယာနှင့် အိမ်အရွယ်အစားများအား သိရှိလိုခြင်း
- ငပိတက်ရွာရှိ ကျောင်းသားများနှင့် ကလေးများအတွက် ယာဉ်အန္တရာယ် ဖြစ်ပေါ်မှုအတွက် စိုးရိမ်ပူပန်ခြင်းနှင့် ဆောက်လုပ်ရေးဧရိယာများတွင် ရှင်းလင်းသော ဆိုင်းဘုတ်များ တပ်ဆင်ထားရန်
- ဆောက်လုပ်ရေး အစီအစဉ်တွင် ပါရှိသော သောင်တူးဖော်ခြင်းလုပ်ငန်း အသေးစိတ်အား သိရှိလိုခြင်း
- စီမံကိန်းအကောင်အထည်ဖော်သူများပါမကာ ကျေးရွာသူ ကျေးရွာသားများလည်း ကမ်းရိုးတန်းလမ်းအား အသုံးပြုခွင့်ရရှိရန်
- အလုပ်အကိုင်အခွင့်အလမ်းအပြင် လျှပ်စစ်မီးနှင့် လမ်းအသုံးပြုမှု စသော အခြေခံ လိုအပ်ချက်များကို ထောက်ပံ့ပေးရန်
- ကျေးရွာအား ရေရှည်တည်တံ့သော အကျိုးရှိမှု ပေးရန်
- စီမံကိန်းအကောင်အထည်ဖော်စဉ် ဖြစ်ပေါ်လာသော ပြဿနာအားလုံးကို SWBအပြင် သက်ဆိုင်ရာ အာဏာပိုင်များနှင့် ဆွေးနွေးတိုင်ပင်ရမည် ဖြစ်ပါသည်။

(၂) အခြားစိတ်ပါဝင်စားသူများ

အခြားစိတ်ပါဝင်စားသူများ (NGOs) ၏ ဖော်ထုတ်ချက် ပြဿနာများမှာ -

- မြေပိုင်ရှင်များအား သင့်တင့်လျောက်ပတ်သော မြေပေးလျော်ကြေးများပေးရန်
- ကျေးရွာသူ ကျေးရွာသားများ၊ စီမံကိန်းအကောင်အထည်ဖော်သူနှင့် သက်ဆိုင်ရာ အာဏာပိုင်များအကြား ဖြစ်ပေါ်လာမည့် စိုးရိမ်ပူပန်မှုများ
- အလုပ်သမားများ စုဆောင်းရာတွင် ပွင့်လင်းစွာ ပြုလုပ်ရန်တို့ဖြစ်ပါသည်။

(၃) ဒေသခံပြည်သူများ

ငပိတက်၊ ညောင်ပင်ဆိပ်နှင့် မူဒူးကျေးရွာများမှ ဖော်ပြခဲ့သော ပြဿနာများမှာ -

ငပိတက်ကျေးရွာ

- အခြားသော သင်္ဘောဆိုက်ကပ်ရာနေရာနှင့် ငါးဖမ်းနေရာများအတွက် သိရှိလိုခြင်း
- ငပိတက်ရွာအတွင်းရှိဒေသလမ်းများအား တိုးတက်အောင် စီမံကိန်းမှ ထောက်ပံ့ပေးရန်
- တံတား၏အမြင့် (ဘာတနီချောင်းအနီး ၃ ကီလိုမီတာ တွင်ရှိသော လမ်း) သည် ငါးဖမ်းသင်္ဘောများအမြင့်နှင့် ကိုက်ညီမှုမရှိခြင်း (ပျမ်းမျှ ၈-၁၄ မီတာ)
- အလုပ်အကိုင်အခွင့်အလမ်းကိုသိရှိလိုခြင်း
- ကျေးရွာနှင့် စီမံကိန်းပတ်ဝန်းကျင်အား ထောက်ပံ့ပေးလျှင် လူထုမှ စီမံကိန်းအား သဘောတူညီမည် ဖြစ်သည်။

ညောင်ပင်ဆိပ်ကျေးရွာ

- အထူးသဖြင့် အလုပ်အကိုင်အခွင့်အလမ်းသိရှိလိုခြင်း
- အလုပ်သမားများ နှင့် ကျေးရွာသူ ကျေးရွာသားများ ကွဲပြားစေရန် အလုပ်သမားများမှ တူညီဝတ်စုံများ ဝတ်ဆင်ရန် အကြံပြုခြင်း
- ကျေးရွာနှင့် စီမံကိန်းပတ်ဝန်းကျင်အား ထောက်ပံပေးလျှင် လူထုနှင့် စီမံကိန်းအား သဘောတူညီမည် ဖြစ်ပါသည်။

စခန်းသစ်နှင့် ပန်ဒအင်ကျေးရွာများ

- အလုပ်သမားနှင့် ဝန်ထမ်းများအားလုံး တူညီဝတ်စုံဝတ်ဆင်ရန် အကြံပြုခြင်း
- စီမံကိန်း ကမ်းလွန်ဆောက်လုပ်ရေး ဧရိယာတွင် သင်္ကေတများ၊ ရေကြောင်းမှတ်ဘောငများ ထားရှိရန် အကြံပြုခဲ့ပါသည်။

ဇီးနှစ်ပင်နှင့် မောင်းမကန်ကျေးရွာများ

- စီမံကိန်းကမ်းလွန်ဆောက်လုပ်ရေးဧရိယာတွင် သင်္ကေတများ၊ ရေကြောင်းမှတ်ဘောငများ ထားရှိရန် အကြံပြုခဲ့ပါသည်။

CHAPTER 1

EXECUTIVE SUMMARY

CHAPTER 1

EXECUTIVE SUMMARY

1.1 PRESENT OF PROJECT PROPONENT

The Small Port Project is proposed by Myandawei Industrial Estate Company Limited ("MIE"), 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 relevant concession agreement, the Company is granted the right to plan, develop, own and operate the Project facilities and infrastructure to be located in a designated area inside the Dawei Special Economic Zone ("DSEZ").

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

1.2 OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

1.2.1 Corporate Environmental and Social Policies

The Project Proponent is committed to the sustainable development principle. In this regard, the Project Proponent will manage environmental aspects of the Project in accordance with the Corporate Governance Policy, Italian-Thai, 2015 which include Policy on occupational safety, health, and working environment and Policy on the Corporate Social Responsibility.

1.2.2 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 (4) categories. The essence of each category can be briefly concluded as follows:

(1) Foundation of 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) EIA Process and Environmental Management Requirements: 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) Environmental Standards and Social Management Requirements: 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) Laws 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. The relevant ones are shown and elaborated in the Final Report.

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 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.

1.2.6 Project Environmental and Social Standards

Environmental management of the Project during construction and operation will comply with the national or international environmental and social 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 emissions following the standards which are specifically agreed in the drafted concession agreement of the Project.

Table 3.6-1 in Chapter 3 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*** in Chapter 3 presents national environmental quality standard (ambient air quality and noise). ***Table 3.6-4*** in Chapter 3 presents national effluent standards to be adopted for port, harbor, and terminal facilities.

1.3 PROJECT DESCRIPTION AND ALTERNATIVES

1.3.1 Project Background

The Project will involve physical development in sectors-transport

The transport sector development will construct a small port to serve, in conjunction with the recently completed small port, sea transport need of the initial phase development of Dawei Special Economic Zone (DSEZ).

1.3.2 Project Location and Overview of the Project Site

The Project can be divided into three major components: (i) onshore component; (ii) offshore component and; (iii) the project coastal road. The onshore facilities will be constructed on a 100 acre land plot outside DSEZ. The offshore facilities will inside of coastal water area (Estuary of Pan Din In River) accommodating one breakwaters, an approach channel, and one jetty for vessel. The small port site is approximate 4.4 km distance northern from Muanmagan beach. The project coastal road will include two paved traffic lanes, capable of handling heavy trucks for hauling goods to and from the small port. The length of road approximated 8.3 km.

1.3.3 Project Development and Implementation Schedule

The project construction will take about 15 months to complete. The concession agreement was obtained in early august 2015, the Project should be completed for operation in 2017.

1.3.4 Project Facilities

(a) Small Port

Table 1.3-1 summarizes salient information on the major facilities to be constructed or acquired under the Project.

(b) The project coastal road

The project coastal road will be 8.3 km long and 7 m wide with 1 m ROW. The road will be paved with asphalt concrete. Cross drainage will be provided at strategic locations to allow drainage of storm water under the road into the sea and will be upgraded for four lane in future depends on demand. Lighting will be provided along the road as necessary. A bridge will be constructed at km 3+000 with 30 m. length for crossing a stream.

TABLE 1.3-1

SUMMARY OF MAJOR PROJECT FACILITIES

Facilities	Key Information	Purposes or Functions
Access Channel		Entrance with adequate water depth for various type of vessels
- capacity	One vessel per hour in each direction	
- dimension	Length 3 km, width 150 m., depth 8 m.	
- turning cycle	Diameter 360 m, depth 8 m.	
Breakwater	One breakwater which 1.6 km long	Minimize wave in mooring area
Revetment	Slope protection length 400 m.	Prevent shoreline erosion caused by waves generated by vessels and tug boats
Stock yard	2 stocks yard, each covering an area about 20 acres	Store container of material and equipments.

Source: ITD, 2016

1.3.5 Design Codes, Standards and Guidelines

The design of Project facilities will comply with the following design codes and standards and guidelines include Euro Code (BS EN) for structure design, Maritime Structure (BS 6349), PIANC for approach channel design.

1.3.6 Pre-Construction Phase

During the pre-construction phase, project activities related to site preparation will have environmental implications. Major tasks include land acquisition, land clearing, and land filling and compaction. In addition, the construction of the project coastal road will necessitate relocation of about 12 houses in Nga Pitat Village with full compensation for land, houses and properties in accordance with the resettlement action plan to be prepared. The pre-construction of the project will be completed in about 4-5 months.

1.3.7 Construction Phase

(a) Onshore Structure of Small Port

The construction of storage yards will consist of the following activities; (i) foundation works including piling; (ii) construction of reinforced concrete floors; and (iii) construction of drainage facilities and support utilities such as lighting.

(b) Construction of the project coastal road

The construction of the project coastal road will essentially be civil works, involving clearing the road alignment corridor, grading, compacting, sub-base construction, surfacing, and construction of drainage systems and stream crossing along the road.

(c) Construction of Offshore Facilities

(c1) Dredging

The construction of small port will necessitate dredging of the sea bed to create the approach channel, ship turning area, and ship berths. The total volume of dredged material is approximately 5,200,000 m^3. None of dredged material will be disposed in both offshore and onshore areas. All of 5,200,000 m^3 of dredged material will be used for reclamation of stockyard area and land filling in other DSEZ projects.

(c2) Breakwater Construction

One rock breakwater will be constructed-the breakwater about 1.6 km long. The breakwater has been planned as rubble mound breakwaters. It consists of a mound of coarse stone, also known as a core, covered or protected by blankets or layers of heavier stones. The construction requires the use of both land-based and floating heavy equipment. Typical land-based equipments are used is crawler cranes, hydraulic excavators, bulldozers, and tipper trucks. Floating equipment commonly used is floating crane and hopper barges. Tugboats are used for moving the floating equipment.

(c.3) Other Offshore Structure

The construction of the jetty and ship berths will consist of the following activities: (i) piling; (ii) construction of support foundations; and (iii) construction of reinforced concrete decks and platforms.

(d) Construction Materials

Basic construction materials such as sand and aggregate will be sourced from quarries near DSEZ and from the dredged materials, if suitable. Cement, steel and other materials will be procured from sources in Thailand or Myanmar whichever will be more cost-effective. Large stones for construction of the breakwater will be sourced from a local quarry.

(e) Man Power

It is anticipated that 273 man powers are required for construction phase.

(f) Construction Schedule

The small port and project coastal road would be completed in 15 months.

1.3.8 Operation Phase

Port Operation: The Small Port shall basically serve the General Cargo ship in the initial stage and then gradually convert to Container ship in the future, subject to the demand growth. The number of vessel to mooring at small port is approx. 1 vessel/hour.

Maintenance Dredging: Maintenance dredging of the approach channel would need to be carried out one time per two years depending on the rate of sedimentation and monsoon. The frequency and the extent of maintenance dredging will be determined by the design engineers.

Beach Erosion Rehabilitation: The wave breaker could create beach erosion on one side and beach accretion on the other side. Sand from the accretion side will be removed to fill up the eroded beach.

Port Waste Management: Wastes from ships will need to be collected and treated in facilities to be provided before disposal at the selected sites.

Project Coastal Road: Conditions of the project coastal road will be routinely examined and repair and maintenance will be carried out to ensure good conditions of the traffic surface and road safety. The annual maintenance period of coastal road is approximate 1 time per year

1.3.9 Description of Project Alternatives

There are two alternative sites for the small port.

Alternative Site 1: The proposed small port will be located inside the estuary reach of Pan Din In River, about 1 km from Alternative Site 2.

Alternative Site 2: This site is in the coastal water outside the Pan Din In River estuary.

1.3.10 Comparison and Selection of the Project Alternatives

The two alternative sites for small port are compared based on consideration of potential impacts of the two alternative sites on the following:

1) Marine Ecology
2) Navigation
3) Coastal water quality

Based on the scores as table below, Alternative Site 1 is the most preferred alternative.

Topic	Alternative 1	Score	Alternative 2	Score
Marine Ecology	Disturb marine ecology in case of dredging activities	1	Disturb and damaged marine ecology in case of dredging and underwater blasting activities	0
Navigation	Obstruct navigation of fishing boats during dredging activities and breakwater construction	1	Obstruct navigation of fishing boats during dredging activities, breakwater construction and underwater blasting	0
Coastal Water Quality	Contamination due to rock blasting and dredging activities	1	Contamination only dredging activities	0
Total Score	3		0	
Rank	1		2	

Remark: 0 = Worst, 1 = Medium, 2 = Good

1.4 DESCRIPTION OF THE ENVIRONMENT

1.4.1 Setting the Study Limits

A. Study Area and Scope of the Environment

The study area covers land areas within a 5 km radius of the Project site, a total area of about 78.6 km^2 (approx. 20,000 acres).

The scope of the Environment is prescribed in the EIA Procedure to cover physical, biological, socio-economic, cultural and visual components.

Information on environmental settings of the study area was collected from secondary sources and limited field surveys carried out by the Consultant.

B. Local Administration

The study area covers six (6) villages under the jurisdiction of Launglon Township Administrations. The villages are (i) Nga Pitat, (ii) Nyaung Bin Seik, (iii) Pan Din In, (iv) Sakhanthit, (v) Veenapin, and (vi) Muangmagan.

1.4.2 Physical Components

The small port is located inside Pan Din In Estuary (approx. 400 m. with 4 m depth). The onshore of study area is relatively flat with range of elevation between 1 to 4 m above mean sea level, whereas, the eastern part is varied with mangrove forest, sand dune, Pan Din In River and mountain ranges.

The field surveys conducted in the study area indicated clean environment as inferred from the following:

- Values of all ambient air quality parameters both wet and dry seasons met World Bank's air quality standards.
- Levels of ambient noise and vibration both wet and dry seasons met World Bank's noise and vibration standards.
- Seawater at four sampling stations both wet and dry seasons 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 (freshwater) both wet and dry seasons was met the WHO standards for drinking purpose.
- Sea bed sediment samples both wet and dry seasons were not contaminated by heavy metals and organic pollutants, which met the NOAA's requirement.

1.4.3 Biological Components

At least 75 plant species were identified in the area which three (3) are classified in the IUCN's Red Lists (2013) as near-threatened species (NT). Nearly 39 wildlife species were recorded in the surveys, and mostly are classified as Least Concern Species (LC).

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.

1.4.4 Socio-economic Components

A. Socio-economic Conditions

The key findings on socio-economic conditions of these communities are summarized below:

- The study area has a total population of 10,597 living in 1,523 households, an average household size of 7 persons, and a female to male ratio of 1.065 to 1 (results from interviewed with village headman during January 2015).
- 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 five villages. Hospital services are available only in Maungmagan, about 1 to10 km from individual villages.
- Fishing and collecting aquatic fauna are the main economic activities of the peoples in these five (5) villages
- Annual average income per household of these five (5) villages is about 2,650 USD, or in a range of 1,220-4,400 USD. Expenses are slightly lower than earnings. Its annual average is about 2,550 USD, or in a range of 1,080-4,400 USD (results from interview edwith village headman during January 2015).
- Unemployment rate is very low in these communities as the major occupations are family business of fishery and farming.
- 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.

B. Land Use

There are two types of land use, including (i) forest land and (ii) miscellaneous land.

C. Infrastructure

It was found that the study area is inadequate in infrastructure and facilities.

Road: the study area has two roads, including the road from the ITD camp site to the existing small port and the road from ITD camp site to Muangmagan village

Navigation: Types and number of boats were recorded at the existing small port during 23-24 January 2015, the results show that number of boats plying the three navigation routes at this time is still small and the route can support much more traffic.

Electricity: Currently, there are no electricity supply systems in the villages. Some households use small generators.

Water Supply: Currently, there are no piped water supply systems in the villages around the project site. The primary source of domestic water supply is groundwater from shallow and bore wells

Waste Management: At present, there are no proper solid waste management and sanitation systems in the study area. Domestic solid wastes are collected inside the villages using inappropriate containers, and are disposed of by opening dumps or open burning within the village boundaries.

1.4.5 Cultural Components

Religions and Beliefs: The majority of people belong to Dawei ethnic group of Bamar, practicing Theravada Buddhism and speaking the native language of Dawei.

Sites of Traditional and Historical Value: Temples and cemeteries exist in every village. An important historical and religious site of Na Bule is located nearby the villages.

Natural Resources Use for Livelihoods: The coastal villagers rely mostly on marine and mangroves resources for their livelihoods. Nga Pitat villagers utilize mangroves and Pyin Gyi creek as storm shelters for their fishing boats. Mudu community lives on land resources. Their major crops are paddy and fruits produced by simple cultivation methods. Livestock raising is practiced in small-scale mainly for household consumption.

Key Institutions and Organizations: The local communities pay respect to their formal and informal leaders. Only youth groups and fire fighting 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 11 km and 7 km from the Project site, respectively.

1.5 IMPACT AND RISK ASSESSMENT MITIGATION MEASURES

1.5.1 Summary Impact Assessment and Mitigation Measures

The summary major impact assessment and mitigation measures during 4 phases (pre-construction, construction, operation, and decommission phase) were described in ***Table 1.5-1*** to ***Table 1.5-4***.

TABLE 1.5-1

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING PRE-CONSTRUCTION PHASE

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Impact on Ecosystem	The Small Port Project will eliminate 64.8 acres of degraded mangrove, 16.2 acre of natural mangrove, and 10.3 acres of beach forest and swamp areas. The Project Coastal Road will eliminate only 13.84 acres of beach forest.	Medium	• 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.
Biomass Waste Disposal	The clearance of vegetation cover could generate as much as 6,839.90 tons of biomass waste for small port site and 13.84 tons of biomass waste for project coastal road	Medium	• The biomass wastes will consist of trunks, stems, branches, and leaves. The components that could be used for construction, charcoal making, and firewood should be sorted out. The remaining unusable components should be reduced in size and disposed of in the Project site by land fill. No open burning should be allowed.
Impacts on Livelihood of Villagers	For small port project, villagers in Nga Pitat Village will be adverse affected due to loss of some part of mangrove area. This area is one of sources of firewood for villagers. For project coastal road, 12 households of Nga Pitat village who living within the right of way will be relocated to proposed resettlement area at Nga Pitat village.	High	(1) Small Port 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. (2) Project coastal road The Project Proponent will need to prepare a detailed of resettlement plan in consultation with the 12 affected households, village headman and committees of Nga Pitat Village, and concerned authorities including MONREC. The plan will need approval from these authorities. If justified, supports will be provided to the 12 affected households to enable them to adjust to the new resettlement site.
Environmental Disturbances Caused by Dust, Noise and Gaseous Emissions	Increase dust, noise, and emissions from land clearing and land filling activities and mobile equipment.	Medium	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 small port and project coastal road to reduce noise impact to Sakhanthit and Nga Pitat Villages.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Impacts from Gaseous Emission	Increase exhaust gas emission from heavy equipments and vehicles	Low	• 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.
Noise	Increase noise level from heavy equipment and vehicle during construction of small port and project coastal road on sensitive receptor (Sakhanthit and Nga Pitat Villages).	Medium	• 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 EPC contractor will be required to regularly monitor ambient noise levels at the receptors, particularly during the noise generation period. • 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.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Coastal Water and Marine Aquatic Ecology	- Increase of water turbidity during dredging activities. - Siltation during dredging is approximate 500 m. from approach channel, It is not make affected to coral reef and seagrass areas. The reason is the nearest coral reef area from small port is North Island with distance approx. 28 km. whereas the nearest seagrass area from small port is locate on Myick with distance approx. 40 km. - The effected from dredging activities to endanger species is negligible due to none of any endanger species found in and around project site.	Medium	(a) **Dredging Activities** • Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments; • Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities. • The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time. • Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea. • In case of damage on sediment pipe, the dredging activities must be stopped. • Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area. • Check and maintenance all machine and equipment to prevent oil leakage into sea. • Check and maintenance HD (Hopper Dredger) and CSD (Cutting Suction Dredger) to ensure that no sediment overflow into the sea. • Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area. • Monitoring coastal water quality especially during dredging activities and the results must be sent to all concerned agencies. (b) **Disposal** • Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology. • Use the dredged materials for on-land disposal within the Initial Industrial to the maximum extent. (c) **Marine Ecology** • Apply the same mitigation measures as recommended for coastal water quality. • Monitoring marine ecology especially during dredging activities and the results must be sent to all concerned agencies. • Provide information on the construction schedule and dredging area to local fishermen living near the port. • Coordinate with local authorities to protect coral and other marine resources.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Wastewater	During the construction phase, the following wastewaters will be generated and need to be controlled: - Domestic sewage generated by daily living activities of about 273 construction personnel at peak of the construction (approx. 41 m^3/day) - Wash waters in the construction site, mainly from truck wheel washing and concrete wash waters (approx. 42 m^3/day) - Surface runoff (84,218 m^3 from small port and 39,060 m^3 from project coastal road)	Medium	**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 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 for both small port and project coastal road 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. 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.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
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)	Medium	**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 or recycle. 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.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Road Traffic	Increase number of vehicles (approx. 25 vehicles/day for small port and 18 vehicles/day for project coastal road) may increase chance on road damage and accident to local villagers.	Medium	• Consultation with the concerned authorities at the national, regional, and township levels on develop and implement a Construction Traffic Management Plan t • 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. • 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; • Employ local people a Nga Pitat village to give a sign when local villagers walk across the road during construction • 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
Navigation	Impacts during the construction phase would be impeded local navigation due to dredging and construction of offshore facilities and increased risk of accidents. The number of vessels approx. 9 vessels/day during construction phase	Medium	• A comprehensive Vessel Traffic System and Management Information System (VTS MIS) will be required for this Terminal. • Install signs and warning signs that can be clearly seen (200 meter from the construction area) to show the boundary of offshore construction areas. • All vessels operating in nighttime must receive special permits. • All concerned safety rules have to follow the laws related to transportation section of Myanmar. • Provide information on the boundaries of offshore construction areas to all fishing boat operators. • Train all concerned crew on navigation safety in the offshore construction areas. • Carry out routine check and maintenance of vessels to follow safety instructions. • Prepare and maintain readiness for implementing an emergency plan related to marine accidents.
Community Health, Safety 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. **Security Risk:** The influx of workers could also pose security risks to the communities in terms of crimes and drug abuses.	Medium	**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** • The EPC contractor will be required to establish and implement a site security system and appropriate measures, including prevention of drug abuse.

TABLE 1.5-2

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING CONSTRUCTION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Local Communities	**(i) Local Economy**: The Project construction will generate a cash flow of about US$ 21,840 per month (estimate from household survey in study area, October 2015) from local services, particularly foods and sundries. Thus local economy will be boosted up. **(ii) Livelihood**: The major livelihood effect is adjustment of 12 household that relocated from project coastal road right-of-way in new relocated area and impact during construction phase to local villager around project sites such as accident from project transportation, impede of navigation, and loss of some area forest resources that change for small port site. **(iii) Infrastructure and Services**: The Project construction could compete with the communities in using limited local infrastructure and services include local road and medical service. **(iv) Culture and Tradition**: construction personnel, who are not local, could have conflicts with locals related to differences in cultural and traditional practices and value.	Medium	**(i) Local Economy** • Priority should be given to local employment, especially the villages close to the construction site; e.g. Nga Pitat, Nyaung Bin Seik, Sakhanthit, Pan Din In, and Veenapin villages. • The recruitment process should be fair and transparent and wage rates are commensurate with experiences and qualifications. • The employment conditions will need to comply with the requirements in the national labor law, the social security law and standard wage rate, and other applicable laws and regulations. • The Project Proponent should establish good relationship with the locals and provide the locals with timely information about the project, likely impacts and mitigation measures, and procedures to address local concerns and grievances. • Disclose relevant information before the construction of major components and during the construction through such methods as Information billboard, Information disclosure via village headmen or village community leaders • Conduct attitude surveys to collect information on local concerns, issues, and problems of the communities (200 samples within 5 villages). **(ii) Livelihood** • Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase **(iii) Infrastructure and Services:** • 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** • All project personnel should be made aware of local cultures, traditions and norms. • The Project Proponent should establish good relationship with the locals and actively support and participate in traditional and cultural events.

TABLE 1.5-3

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING OPERATION PHASE

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Ambient Air Quality and Greenhouse Gas	**Ambient Air Quality** The main air quality impact during operation is increase number of vehicle that using project coastal road. **Greenhouse Gas** Main Source of greenhouse gas emission during operation of Project facilities will mostly result from vessels (approx. 1 general cargo/hr.) The calculation results is very less (0.29 Mt CO_2 eq.) or 0.29% when compare with Total GHG Emissions Excluding Land-Use Change and Forestry in Myanmar (98.93 MtCO2 eq.	Medium	• Use low sulfur diesel fuel • Check and maintenance vehicle regularly to minimize the exhaust emission. • Speed reductions by vessels approaching a port can result in significant reductions in nitrogen oxide emissions. • Control and formulate monitoring program on air quality throughout operation period.
Noise	The impact from operation of small port is vehicle using project coastal road. The major sensitive receptor that get affect from noise level increase is Nga Pitat village (close to project site).	Medium	• Limit speed of vehicles at the Project site at 40 km/hr. and speed of ships. • Install temporary noise barriers, if necessary, to minimize noise impacts on sensitive areas • Transportation shall be carried out only during the day time. • Always maintain road surface in good condition.
Maintenance Dredging	Increases in turbidity of the sea water during maintenance dredging which will be impact on coastal water quality and marine ecology	Medium	• The mitigation measures are similar to those proposed for dredging during the construction phase
Shoreline Stability	Affect the sediment supply from the catchment area and interrupt the sand supply from the estuaries to the beach system. For this project, the affected come from setting of 1.6 km of breakwater.	Medium	• Recheck and reclaim sand (bleach nourishment) on the eroded beach around the shoreline of Project site every year. • Based on limited physical and environmental information available, as well as engineering judgment, Regular shoreline monitoring is recommended to gain the necessary information and prepare the setback line or beach erosion protection with hard structure such as groynes if high erosion on the shoreline.
Waste Waters	Waste Waters of the small port will come from the following sources: • Ship wastes • Port Wastewaters include domestic sewage from port workers and wastewater from washing of port facilities • Stormwater	Medium	**Ship Wastes** • The port operation office will need to enforce appropriate controls on the discharge of ship wastes in line with MARPOL. • In addition, the port operation office will need to prepare a contingency plan and establish an organization for implementing the plan including reporting system to effectively handle oil and chemical spillage incidents from ships. **Port Wastewaters** • In addition to a waste treatment system for handling ship wastes, a central wastewater collection and treatment system will be required to take care of domestic sewage and other port wastewaters. • The port operation office should try to reuse wastewater as much as possible to minimize its volume. • The port operation office will prohibit ships and port operators to discharge all kinds of wastes and wastewaters directly into the Andaman Sea.

TABLE 1.5-3

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING OPERATION PHASE (CONT'D)

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Waste	During the operation phase, the following waste will be generated and need to be controlled: • Used lubricant. • Sludge and other solid wastes from wastewater treatment plants • Hazardous waste such as used batteries, chemicals etc. • Garbage, about 20 kg/day of garbage will be generated by the port workers and staff.	Medium	**1. Used Lubricant** Set up and operate a system for collection of used lubricant and engine oils in all workshops and engine maintenance facilities. Contractors will be appointed to remove and dispose the collected lubricant and oils. **2. Solid Wastes from Wastewater Treatment Plants** If the wastewater is treated using such high rate biological processes as activated sludge process and a fixed film aerobic process, the sludge dewatering unit of the wastewater treatment plants will generate organic sludge with 20-35% water content. This surplus sludge could be disposed of as garbage or could be used as fertilizer in the green area. **3. Hazardous Wastes** The port operation office will need to set up and operate a hazardous waste management system covering waste classification, separation, collection, storage, transfer and disposal. The hazardous waste management system will comply with applicable regulations of the government, if any. It will need to have a registration system to enable tracking of hazardous wastes. The hazardous wastes will be storage and disposed by waste disposal services. The method of disposal will follow best international practices. If hazardous waste disposal services are not available, the port operation office may consider using the outside services. **4. Garbage** If the port area cannot be served by the garbage collection services of the local government, the port operation office will need to address this issue. It will need to set up and operate a simple garbage management system as the garbage volume will be small, less than two tons per day. Proper containers will be provided at all garbage sources for collection and storage at sources before collection. The garbage will be daily collected using a small garbage truck and transported to a disposal site inside or outside the port area as appropriate.
Land traffic	The land traffic impact comes from transportation of construction equipment, materials, and workers that use project coastal road to DSEZ zone such as LNG Terminal, Initial Phase Power Plant and ITD Camp Site.	Medium	• Prepare and implement an improvement program for improving safety of the local road network to cope with expected increase in traffic volume during port operations. • Construction the bridge at Nga Pitat village for local villagers and children walk across the project coastal road. • In addition, the local administration should impose a regulation limiting truck traffic speed in the areas around the port at not exceeding 40 km/hr.
Navigation	Port operations will invariably increase traffic in the coastal waters within the port operational area. Approximate 1-2 of vessels/hour will navigate to small port area.	Medium	• The port will have a vessel traffic management system to ensure navigation safety and keep records of vessels calling at the port. • The navigation area will have adequate number of buoys and signs to clearly indicate the navigation channel and the port boundary.
Community Development Supports	During the operational phase, the impacts of the small port both positive and negative on the nearby communities will be much less than those during the construction. In the public consultation meetings, several participants requested supports for electricity supply and improve on local road.	Medium	• The Project Proponent should consider a CSR program to provide community assistance in line with these needs. The CSR program would need to be designed and implemented in consultation with the authorities concerned and the community leaders.

TABLE 1.5-4

SUMMARY IMPACT ASSESSMENT AND MITIGATION MEASURE DURING DECOMMISSION PHASE

Environmental and Social Issue	Impacts	Control Priority	Mitigation Measures
Environmental Disturbances Caused by Dust and Noise	The effects of dust diffusion and noise during demolition and land reclamation activities to closest sensitive areas (Sakhanthit and Nga Pitat villages,).	Medium	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 Sakhanthit and Nga PitatVillages.
Coastal Water and Marine Ecology	The main concern will be increases in turbidity of the sea water during demolition of offshore facilities such as breakwater, jetty, and support facilities. This situation will be impact on coastal water quality and marine ecology.	Medium	• Avoid demolition of offshore structure. Consider to planting the mangrove around breakwater. This can reduce impact on coastal water marine ecology in term of increase turbidity during demolition of offshore structure. • If cannot avoid demolition activities, project must be design and technology to minimize impact on coastal water and marine ecology in term of increase turbidity. • The project developer/contractor must monitor the coastal water quality and marine ecology around offshore facilities at least 3 months prior to demolition activities and after demolition complete.
Waste	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.	Low	• 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	During decommission phase, the land use will be change from port area to open area after demolition complete.	Medium	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

The construction phase, two uncertain events or two environmental risks would be of concern to the Project Proponent.

- The Project may not be able to comply with environmental requirements prescribed by MONREC or other concerned authorities.
- The Project may be opposed to by stakeholders, especially the nearby communities.

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
- inadequate supervision and monitoring of environmental mitigation activities
- changes in designs or construction methods without mitigation measures
- changes in the environmental requirements during the construction without the revision mitigation measures

Risk 2-Public opposition to the Project

Potential causes:

- misunderstanding of the nature, severity and extent of impacts of the Project
- rough relationship between the Project and the surrounding communities

C. Risk Classification

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

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

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 6.2-3 (Chapter 6)***.

(2) Environmental Risk Management - Construction Phase

A Risk Identification

Dawei and proposed project, is a location potentially subject to cyclone and tsunami occurrence due to

- The location of project site related to Cyclones in the Bay of Bengal.
- According to Seismic Hazard Map from Meteorological and Hydrological Department, Myanmar, the small port 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.

B 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.

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 marine structures of the small port.

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. 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.

The measures will be implemented through contractual arrangements and stakeholder engagement. The detail of emergency plan are described in EMP Report.

(3) Environmental Risk Management - Operational Phase

A. Risk Identification

During the commissioning and operational phases, the major concerns are on possible hazardous events which, if occur, would seriously damage the small port and could cause injuries and fatalities to operational personnel and people in the nearest communities.

Vessel collision: The vessels collision often occurs as a result of: higher speed of vessel than standard or excessive load.

B. Risk Analysis

Operational Risks If a serious accident occurs, the damages would be contained accidental area in Andaman Sea.

Underlying Causes: Several studies traced the incidents to the following root causes or underlying causes: (i) improper navigation procedures; (ii) natural disaster and (iii) human error.

Likelihood of Occurrence: The likelihood of occurrence of the operational risks would be low if: (i) management on navigation follow to regulation; (ii) training on crew and operator; and (iii) efficient plant safety management.

C. Risk Classification

Operational Risks: The operational risks could have serious consequences on the temporary power plant, their likelihood of occurrence is low. Therefore, they are classified as moderate risks.

D. Risk Mitigation Measures

The Project Proponent will, as part of the contract, require the EPC contractor to carry out the following tasks:

- Submit a detailed plan of navigation route to small port.
- Organize and conduct training of the small port operational team to be nominated by the Project Proponent in the operation and maintenance and risk management of the small port. The training will use the work procedures prepared by the EPC contractor. 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 project.

In addition to the insurance, the Project Proponent should require the EPC contractor to prepare an emergency response plan to enable the small port 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

1.6 CUMULATIVE IMPACT ASSESSMENT

Cumulative Impact Assessment (CIA) is identified concerning the offshore development projects nearby the proposed small port, for example, LNG Terminal, Power plants and Boil-off Power Plant. The proposed cumulative impacts are summarized in ***Table 1.6-1***.

TABLE 1.6-1

POTENTIAL CUMULATIVE IMPACTS FROM OTHER RELEVANT PROJECT

Project	Environmental Concerned			
	Coastal Water and Marine Ecology	Navigation	Shoreline Erosion	Mangrove and Beach Forest
LNG Terminal	√	√	√	√
Power Plants	√			√
Boil-off Power Plant	√			√
Project Coastal Road				√

Coastal Water Quality and Marine Ecology

The cumulative on coastal water and marine ecology in case of dredging activities of Small Port and LNG Terminal Project. Total dredged material during dredging in case of combination of three project approximate 7,052,00 m^3 (5,200,000 m^{3}from small port and 1,852,000 m^3 from LNG Terminal and minor from power plants project). This volume is may cause of affect in both coastal water and marine ecology in term of increase of suspended solid and reduce dissolve oxygen in the sea.

Therefore, best management plan and monitoring program during dredging activities from all projects must be proposed and operated.

Shoreline Erosion

The cumulative on shoreline erosion in case of setting of breakwaters from small port and LNG Terminal Project. This situation may change condition of beach which cause of erosion situation.

Therefore, best management plan and monitoring program on beach erosion and shoreline stability from related projects must be proposed and operated.

Mangrove and Beach Forest

The cumulative on mangrove and beach forest in case of site clearing for small port, LNG Terminal Project, power plants, and other projects. Even through the project located in DSEZ demarcation area, approximate 280 acres of mangrove area and 30 acres

of beach forest will be loss for project sites which impact on wildlife habitat and forest resource for local villager. The reforestation program should be design and implemented.

Navigation

The cumulative on navigation in case of increase of vessels for small port, and LNG Terminal Project. These may increase chance on accident to local fishermen. Therefore, project boundaries of exclusion zone for the small port and LNG terminal must be defined. The boundaries will need agreement from both concerned authorities and local people to minimize impacts on the locals.

1.7 ENVIRONMENTAL MANAGEMENT PLAN

1.7.1 Summary of CEMP

(1) Scope of Environmental Management

Environmental issues expected at various stages of pre-construction and construction were identified based on a tentative construction schedule prepared by the Consultant for the ESIA study purpose (see ***Table 1.7-1- Table 1.7-2***).

TABLE 1.7-1

ANTICIPATED IMPACTS OF THE PRE-CONSTRUCTION

Construction Activities	Impacts
Onshore Preparation include land clearance, land filling and compaction	Dust, Noise, Mangrove, and Social / Livelihood

TABLE 1.7-2

ANTICIPATED IMPACTS OF THE CONSTRUCTION

Construction Activities	Impacts
Onshore construction	Exhaust Gas, Noise, Wastewater, Construction Waste, Land Traffic, Mangrove, and Social / Livelihood
Dredging Activities	Coastal Water , Marine Ecology, and Navigation
Breakwater and offshore construction	Coastal Water and Marine Ecology, and Navigation

Note: Duration of activities based on project construction schedule in ***Chapter 4***.

(2) Environmental Management Sub Plans

The following issues will be managed during the pre-construction / construction phase: (1) general construction, (2) mangrove management (3) air quality management, (4) noise, (5) dredging and disposal, (6) wastewater management, (7) waste management, (8) hazardous waste management, (9) traffic management, (10) navigation management,(11) OSH management, (12) natural used monitoring plan (13) social environmental management, (14) land acquisition management and (15) emergency management plan (flood, tsunami, and cyclone). A sub-management plan for each of the identified issues is prepared and the 15 sub-plans are presented in ***Appendix 6A of Volume II***. The Contractor will update the sub-plans and include in the Contractor-CEMP. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in construction schedule and management review changes.

(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 operation of the small port will not create any significant environmental impacts apart from social impacts related to sub-plans such as air quality and greenhouse gas, noise, coastal water and marine ecology, shoreline stability, land traffic, navigation, and waste management. Therefore, the OEMP will require much less activities and a much simpler EMS compared to those of the CEMP

(2) Environmental Management Sub Plans

The following issues will be managed during the operation phase: (1) mangrove management (2) air quality and greenhouse gas management, (3) noise, (4) maintenance dredging and disposal, (5) wastewater management (from onshore and vessel), (6) waste management, (7) hazardous waste management, (8) traffic management, (9) navigation management, (10) shoreline erosion management, (11) OSH management (12) social environmental management and CSR Program, (13) vessel traffic and safety management, (14) operation staff management and (15) emergency management plan (flood, tsunami, and cyclone).

(3) Monitoring Reports

The MER such scheduled monitoring of coastal water and marine ecology and shoreline stability. Coastal water and marine ecology will be conducted Once a month collection especially during maintenance dredging. Shoreline stability include Beach Profile and Bathymetric Survey will be conducted 2 times/year. Annual environmental reports will be prepared for submission to MONREC, Port Authorities, and other concerned authorities.

(4) 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 small port operation will be effectively addressed as quick as possible.

(5) Audit

An audit is proposed at the end of the first year of operation and thereafter, if necessary.

1.7.3 Summary of EMP during Decommission Phase

The EMP during decommission phase depended on decision of the Concerned Authorities confirm to remove of all components at the end of concession.

The recommended management plan during decommission phase include:

- Air Quality Management Plan;
- Noise Management Plan;
- Coastal Water and Marine Ecology Management plan (in case of demolition of offshore structure);
- Waste Management Plan and;
- Land Reclamation Management Plan.

1.7.4 Summary of Budget and Schedule

During the pre-construction and construction phases, a budget of about 512,050 US$ (include 10% contingency) 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 2 period separation. 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 394,350 US$ equivalent (include 10% contingency) will be allocated for the five first year, and an annual budget of 3,398,450 US$ (include 10% contingency) will be allocated from the 6th year throughout the project life. Therefore, total cost during operation phase approx. 3,792,800 US$ (include 10% contingency). In addition, the monitoring cost will be adjusted depended on situation and suitability of the project.

1.8 PUBLIC CONSULTATION AND DISCLOSURE

1.8.1 Methodology and Approach

Both of two consultation meetings and information disclosure were held with the three major groups of stakeholders. About 14 officials, 2 NGOs and villagers from Nga Pitat, Sakhanthit, Pan Din In, Nyaung Bin Seik, Veenapin and Maungmagan participated in the meetings

1.8.2 The Result of First Consultation Meeting during 20-30 January 2015

The consultation meetings successfully met the two objectives of information disclosure and establishing the groundwork for public consultation during the next stage of the ESIA study. Feedbacks from the three groups of stakeholders were:

(1) Government Authorities

Issues identified by the SWB and government authorities at the national and regional levels:

- **Participation in the ESIA:** The Project must inform the district, township officials about the schedule of the public consultation, including environmental and social survey activities.
- **Land acquisition:** Compensation for land acquisition must follow official guidelines and practices.
- **Submitting the ESIA results:** The Consultant has to submit an official letter to inform the Environment Conservation Department at Naypyidaw directly about the conduct of ESIA study.
- **Nesting of sea turtles:** Currently, there is a conservation area for nesting of leatherback turtle on a small island about 15 km from Muangmagan beach. This islet is guarded by the navy during the nesting period.
- **Wastewater discharge:** Recommendation on wastewater treatment before discharge.

(2) Other Interested Parties

Issues identified by the community based organizations:

- **Correct project information:** Accurate information about the Project plan and situation should be provided to the peoples;
- **Employment opportunities:** Provision of job opportunity to the locals, including relevant vocational training;
- **Compensation:** Fair compensation rate for the project affected people;
- **Environmental management:** The Project must be aware pf environmental impact, marine ecology in particular. Best practices should be employed for environmental management. Environmental monitoring should be conducted by a third party acceptable to the Government authority and NGOs;
- **Roles of NGO:** The NGO should have opportunity to contribute to the ESIA report.
- **Electricity supply to locals:** Electricity from the project should be provided to the locals with a tariff rate as used in Yangon (35 Kyat/unit).

(3) Local Community Groups

Issues identified by villagers in Nga Pitat, Nyaung Bin Seik, Sakhanthit and Mudu communities were described as follow:

Nga Pitat Village

- Concerns on pollutions from air emissions
- Concerns on creek will be closed, and villagers cannot do fishing as before
- Concerns on village road will be closed due to project development

- Concerns on vibration from transportation during construction period will be affected to the houses.
- Concerns on low production such as cashew nut is caused by emission from the project development such as dust, vibration.
- Concerns on declination of marine ecology from project activity
- Suggestion the developer must be take action to resolve problem due to project development
- Suggestion on environmental protection to ensure sustainable use of natural resources.
- The Project should provide electricity supply to the villages.
- If project developer support to village and environment, people agree on the project

Nyaung Bin Seik Village

- Concern on the project will close the creek so that fishing boats of villagers cannot go back and forth, as doing now.
- Concerns on pollutions from air emissions, human health impact, and change livelihoods
- Concerns on losing mangroves forest where is their food and income sources of village.
- Concerns on access road to the sea will be closed by the developer.
- Concerns on relocation of the village and afraid of not having these resources in case of relocation to the other place.
- Concerns on gas leakage from pipeline
- Concern on channels for the villagers to file complaints (grievance redress mechanism)
- If project developer have not effect to village and environment, people agree on the project

Sakhanthit and Pan Din In Village

- Concern on the project will close the estuary during construction and operation of the small port so that fishing boats of villagers cannot go back and forth, as doing now.
- Concerns on gas emissions, smoke and discharge of wastewater which will damage environment.
- Concerns on losing mangroves forest where is their food and income sources of village.
- Concerns on access road to the sea will be closed by the developer.
- Concerns on vibration from transportation during construction period will be affected to the houses.
- Concern on loss of fishing ground area in Sakhanthit Village due to dredging activities

- If project developer have not effect to village and environment, people agree on the project

Veenapin and Muangmagan Village

- Concerns on the project will use creek near Veenapin Area.
- Concern on the project will close the creek at Veenapin village during construction and operation of the small port so that fishing boats of villagers cannot go back and forth, as doing now.
- Concern on wastewater discharge which will damage mangroves.
- Concern on local villagers can participate during monitoring on project

1.8.3 The Result of Second Consultation Meeting during 26-28 January 2016

(1) Government Authorities

Issues identified by the SWB and government authorities at the national and regional levels:

- Concern on size of house and place of resettlement area
- Concern on traffic accident to student and child at Nga Pitat village and must be set clearly symbol to indicate on construction area.
- Concern on detail of dredging activities must be include in construction plan
- Villager can be use coastal road, not only project developer.
- Benefit to both villagers and project developer during project development
- Beside job opportunity, developer should support for basic infrastructure such as electricity, road to affected villages
- Long term sustainable on affected village
- All problem during project implementation must be discuss with SWB and concerned authorities.

(2) Other Interested Parties

Issues identified by the Other Interested Parties (NGOs):

- Concerns on fair compensation to affected land owner
- Concerns on channel between villager to developer and concern authorities
- Concerns on transparent recruitment of worker

(3) Local Community Groups

Issues identified by villagers in Nga Pitat, Nyaung Bin Seik and Mudu communities were described as follow:

Nga Pitat Village

- Concerns on Alternative boatyard and fishing ground area
- The project should be support on local road improvement in Nga Pitat Village
- Concerns on the height of bridge (at km 3 of access road near Britney Creek) will not support the height of fishing boat (approx 8-14 m.)
- Concerns on Job Opportunity
- With supporting to village and environment from the project, people agree on the project

Nyaung Bin Seik Village

- Concerns on Job Opportunity especially for local villager
- Suggestion the worker should wear uniform which can indicate between worker and villagers.
- With supporting to village and environment from the project, people agree on the project

Sakhanthit and Pan Din In Village

- Recommend that all staff and worker should be wear same uniform
- Recommend that project must be setting sign or buoy to indicate offshore construction area

Veenapin and Muangmagan Village

- Recommend that project must be setting sign or buoy to indicate offshore construction area

CHAPTER 2

INTRODUCTION

CHAPTER 2

INTRODUCTION

2.1 PRESENTATION OF THE PROJECT PROPONENT

The Small Port Project is proposed by Myandawei Industrial Estate Company Limited ("MIE"), 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 relevant concession agreement, the Company is granted the right to plan, develop, own and operate the Project facilities and infrastructure to be located in a designated area inside the Dawei Special Economic Zone ("DSEZ").

Myandawei Industrial Estate Company Limited is a concessionaire who has the right to develop and operate the Initial Industrial Estate, Two-lane Road, Small Port, and Small Water Reservoir Project as part of the Dawei SEZ Initial Phase Development located in Dawei District, the Republic of the Union of Myanmar.

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

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2.2 PRESENTATION OF THE ENVIRONMENTAL AND SOCIAL EXPERTS

The ESIA Consultant engaged by MIE 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 and 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.

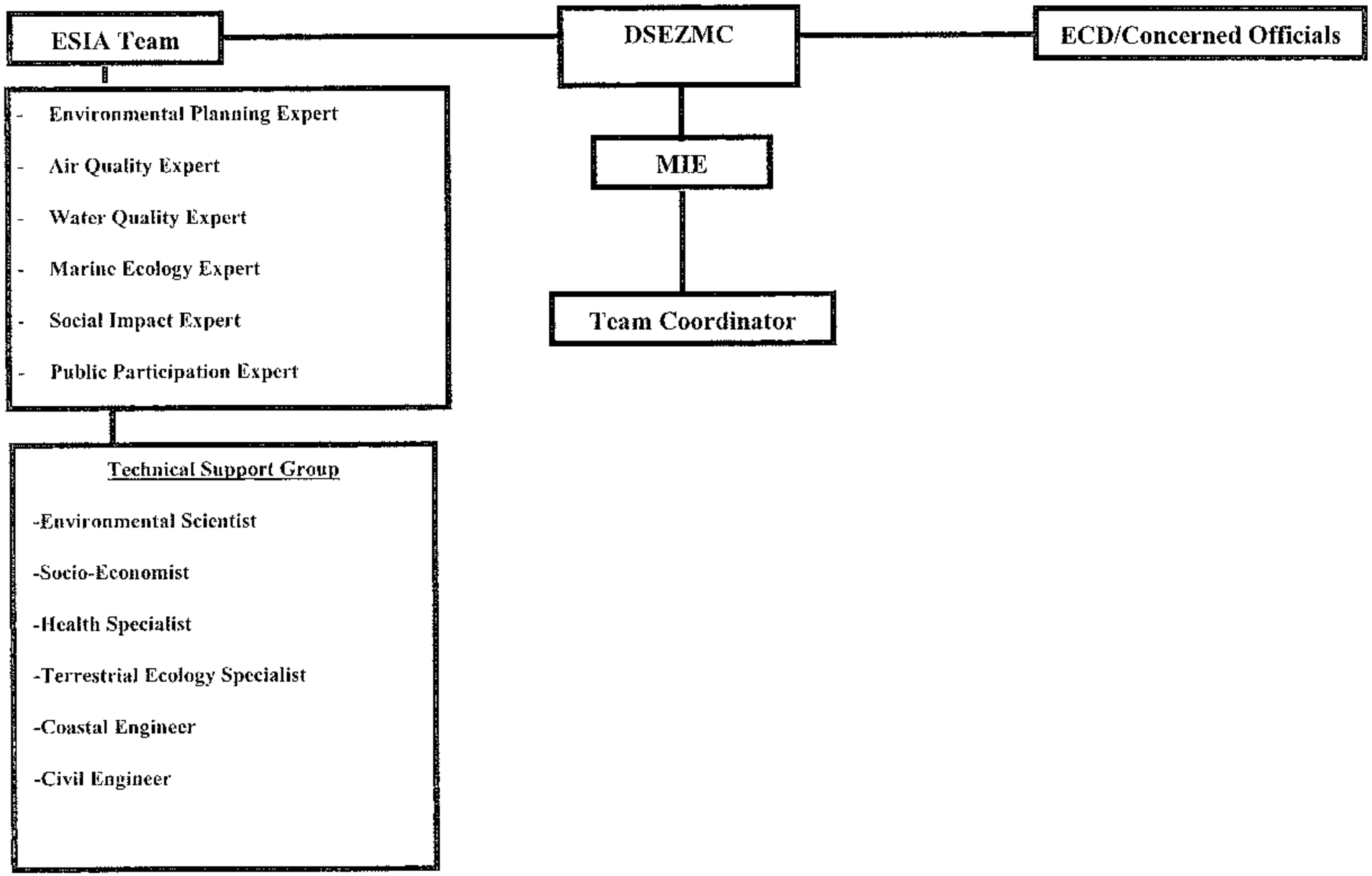


FIGURE 2-1 : ORGANIZATIONAL STRUCTURE FOR CONDUCTING AND MANAGING THE ESIA STUDY

CHAPTER 3

OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

CHAPTER 3

OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 OVERVIEW OF CORPORATE ENVIRONMENTAL AND SOCIAL POLICIES

The Project Proponent is committed to the sustainable development principle. In this regard, the Project Proponent will manage environmental aspects of the Project in accordance with the Corporate Governance Policy, Italian-Thai, 2015

The Company has established the policy in term of environment and social which can summarize as follow:

Policy on occupational safety, health, and working environment

- 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.
- The Company shall encourage all employees to understand and recognize occupational safety and health concern in their operation.
- The Company recognizes an important of operational accident prevention.
- The Company shall support and promote the improvement of working environment and working with safety and healthy.
- The management shall supervise occupational safety, health, and working environment of the subordinates according to related Company's regulation.
- The Company shall support and promote safety campaign for maximum effectiveness of an application of the policy in practice.
- 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 the Corporate Social Responsibility

- 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.
- 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.
- 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.

- 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.

- 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.

- 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.

- CSR Report - The Company will disclose the information related to CSR activities of the Company in the annual report.

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 Constitution of the Union of Myanmar (2008), 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. Constitution of the Union of Myanmar (2008)

The new Constitution of the Union of Myanmar (2008) has provisions regarding the protection of the environment in Myanmar, thus supporting the National Environmental Policy (1994). Articles in the Constitution relevant to environmental protection are Articles 37, 45 and 390. They are quoted below:

Article 37

a) The Union is the ultimate owner of all lands and all natural resources above and below the ground, above and beneath the water and in the atmosphere in the Union;

b) The Union shall enact necessary law to supervise extraction and utilization of State owned natural resources by economic forces;

Article 45

The Union shall protect and conserve natural environment.

Article 390

Every citizen has the duty to assist the Union in carrying out the following matters:

a) Preservation and safeguarding of cultural heritage;
b) Environmental conservation;
c) Striving for development of human resources;
d) Protection and preservation of public property.

These three Articles in the Constitution provide a basis for legalizing and institutionalizing environmental management in development activities, including environmental health impact assessment and social impact assessment.

C. Environmental Conservation Law (2012)

The Environmental Conservation Law (2012) was enacted by the national assembly on 30 March 2012 to establish a legal basis for environmental management of the country. The Environmental Conservation Law is comprehensive containing 42 articles in 14 chapters:

1) Title and Definition (Articles 1 and 2)
2) Objectives (Article 3)
3) Formation of Environmental Conservation Committee (Articles 4 to 6)
4) Duties and Powers of Minister (Articles 7 to 8)
5) Environmental Emergency (Article 9)
6) Environmental Quality Standards (Articles 10 to 12)
7) Environmental Conservation (Articles 13 to 16)
8) Management of Urban Environment (Article 17)
9) Conservation of Natural Resources and Cultural Heritage (Articles 18 to 20)
10) Prior Permission (Articles 21 to 25)
11) Insurance (Articles 26 to 27)
12) Prohibitions (Articles 28 to 30)
13) Offences and Penalties (Articles 31 to 34)
14) Miscellaneous (Articles 35 to 42)

The Environment Conservation Law (2012) states the following objectives:

1) To implement the National Environment Policy

2) To provide basic principles and give guidance for systematic integration of environmental conservation matters in the sustainable development process

3) To promote a good and clean environment and to conserve natural and cultural heritage for the benefit of both present and future generations

4) To reclaim ecosystems that are in the early stages of degradation as far as possible

5) To manage prevention of degradation of natural resources and to enable the sustainable use

6) To implement for the promotion of public understanding and educational programs for dissemination of environmental awareness

7) To promote international, regional and bilateral cooperation in environmental affairs

8) To enable cooperation among government departments, government organizations, international organizations, non-governmental organizations and individuals in matters of environmental conservation.

Although the Environmental Conservation Law states eight objectives, the first objective is its prime objective-to implement the National Environmental Policy. The remaining seven objectives are essentially tools or means for the policy implementation.

In essence, the Environmental Conservation Law (2012) has the following key provisions:

1) It defines the word "environment" to include not only the physical natural environment but also biological, and socio-economic environment, including historical, cultural and aesthetic factors. This definition is in line with international practices.

2) It establishes an Environmental Conservation Committee (ECC) to be a national body for policy making and overseeing environmental education and environmental management activities of various government departments and organizations, and for handling environmental emergency;

3) It prescribes duties and powers of the Ministry designated to be in charge of environmental management in collaboration with relevant sector or line ministries and departments-the Ministry designated is the Ministry of Natural Resource and Environmental Conservation (MONREC). The Ministry is the implementing arm of the ECC.

4) It prescribes environmental quality standards that will need to be issued by the Ministry.

5) It assigns the Ministry the responsibility for maintaining and operating a comprehensive monitoring system for the use of hazardous agro-chemicals and environmental impacts of waste disposal and development activities.

6) It requires businesses in industrial estates and designated special areas to contribute to the cost of environmental management.

7) It assigns the Ministry the responsibility for management of urban environment through land use planning and zoning, and implementing appropriate pollution control measures.

8) It requires the Ministry to cooperate with and provide technical assistance to line departments in managing natural resources and biological resources, including ecosystems.

9) It provides the Ministry authority to impose environmental performance requirements as a condition in granting permits to businesses that produce, import, expert, store, carry or trade in materials which cause impact on the environment prohibited by the Ministry.

10) It has provisions for legal action against businesses which operate without the permits or violate the prohibitions contained in the rules, notifications, orders, directives and procedures issued under this Law. Penalties could be imprisonment or compensation or both. However, in prosecuting an offender under this Law, prior sanction of the Ministry shall be obtained.

11) It authorizes the Ministry, in the interest of the Government and the public with the approval of the Union Government, to exempt or relieve any government department, organization or private business from complying with any provisions contained in this Law.

The Environmental Conservation Law has to be implemented through implementation rules, specific laws, and specific procedures and guidelines. For example, most of the provisions of this Law are captured in the Environmental Impact Assessment Procedure.

D. Environmental Conservation Rules (2014)

The Environmental Conservation Rules was prepared by MONREC for implementing the Environmental Conservation Law. The available document in English is has issued on 5 June 2014 pending approval of the Government. The Environmental Conservation Rules contains 74 articles or sections in 14 chapters:

1) Title and Definition (Articles 1 and 2)

2) Adopting Policy Relating to Environmental Conservation (Articles 3 to 6)

3) Environmental Conservation (Articles 7 to 26)

4) International, Regional and Bi-lateral Cooperation Relating to Environmental (Articles 27 to 28)

5) Conservation (Articles 29 to 35)

6) Environmental Management Fund (Articles 36 to 37)

7) Environmental Emergency (Articles 38 to 39)

8) Environmental Quality Standards (Article 40)

9) Management of Urban Environment (Articles 41 to 46)

10) Waste Management (Articles 47 to 50)

11) Conservation of Natural Resources and Cultural Heritages (Articles 51 to 61)

12) Environmental Impact Assessment (Articles 62 to 68)

13) Prior Permission (Article 69)

14) Prohibitions (Articles 70 to 74)

In essence, the Environmental Conservation Rules prescribes:

1) Functions, duties, activities, and authorities of MONREC and the Environmental Conservation Department of MONREC related to the various work areas indicated in the titles of Chapters 2 to 14;

2) Responsibility of investors to have an EIA prepared for submission to MONREC;

3) Composition, functions and responsibility of the EIA Report Review Body which consists of experts from various relevant government organizations;

4) The need for investors to apply for a prior permission before executing investment plans; and

5) Institutional arrangements for cooperation and coordination between ECD and other government organizations at the national, region and state levels.

It is noted that the contents related to various aspects of the EIA are already prescribed in the EIA Procedure.

3.2.2 Regulations Related to Environmental Impact Assessment and Management

Requirements related to environmental (and social) impact management for development projects are described in two related documents-EIA Procedure (2015), EIA Guidelines (2014), and National Environmental Quality (Emission) Guideline (2015). The essence of these three documents is presented below:

A. EIA Procedure

To implement the Environmental Conservation Law, MONREC prepared an Environmental Impact Assessment (EIA) Procedure for guiding and supervising EIA of proposed development projects, on 29 December 2015. The Procedure is comprehensive and covers not only the preparation and review of EIA documents including environmental management plans (EMP), but also the 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. The Procedure therefore covers requirements for all four basic management elements-plan, implement, monitoring and reporting, and control (or plan-do-check-act in the Deming management cycle).

The Procedure has 11 chapters containing 131 articles or sections.In the screening stage, ECD, based on the Project Proposal submitted by the Project Proponent,

shall determine the necessary level of environmental assessment and submit that determination to the Ministry. The Ministry shall determine whether the Project, according to **Annex 1** 'Categorization of Economic Activities for Assessment Purposes' of the Procedure, is an EIA Type Project, or an IEE Type Project, or is not required to undertake any environmental assessment. Components of basic infrastructure (such as an access road, transmission tower or waste disposal facility) that are required for a larger project (such as a mine or a power plant) shall be considered to be part of that larger project. In such circumstances, the Ministry may determine whether an IEE or an EIA will be required for the projects or activities that are treated as a single project or activity.

This Project falls into the category of ESIA type project. All ESIA type projects will undergo three stages of the EIA process:

(i) Scoping Stage

- The scope of EIA covers adverse environmental, social, socio-economic, health, occupational safety or health effect relevant to the Project (**Article 2**).
- The EIA considers all relevant alternatives for Project design, construction, and operation (**Article 2**).
- The Scoping is essentially a preliminary environmental impact assessment to establish the scope and terms of reference for the detailed EIA investigation (**Articles 48**).
- The scoping stage study will: (i) present the project context; (ii) define areas which could be affected by the proposed project; (iii) establish as much as possible baseline information on existing environmental conditions of the project area (**Article 49**); (iv) hold the public consultation and disclosure of project and environmental impact information (**Article 50**); (v) tentatively identify key environmental impacts and propose tentative mitigation measures (**Article 49**); (vi) propose terms of reference for the detailed EIA study (**Article 52**).
- The scoping report will be structured as prescribed in the Procedure (**Articles 51**).

(ii) EIA Investigation Stage

1) The scope of EIA covers adverse environmental, social, socio-economic, health, occupational safety or health effect relevant to the Project (**Article 56**).

2) The EIA considers all relevant alternatives for Project design, construction, and operation (**Article 58**).

3) The final EIA report will present two (2) environmental management plans-Construction Phase EMP and Operation Phase EMP (**Articles 2**).

4) The final EIA Report will meet the requirements for structure, content, and quality as prescribed in the EIA Procedure and be in line with international practice (**Articles 51**).

5) The EIA will continue the initial findings presented in the Scoping Report and the TOR proposed in the Scoping Report (**Articles 52**).

6) An EIA investigation shall consider all biological, physical, social, economic, health, cultural and visual components of the environment, together with all pertinent legal matters relating to the environment (including land use, resources use, and ownership of and rights to land and other resources) that may be affected by the Project during all project phases including preconstruction, construction, operation, decommissioning, closure, and post-closure; and shall identify and assess all Adverse Impacts, residual impact, cumulative impact, and risks for environment, social and, if relevant, health that potentially could arise from the Project (**Articles 56**).

7) Mitigation measures to be implemented in the Project construction and operation will be designed to meet or comply with applicable national standards, international standards adopted by the Government and/or the Ministry, or, in the absence of relevant national or adopted international standards, such standards as may be agreed with the Ministry. The standards adopted will be benchmarks for evaluating environmental performance of the Project (**Articles 57**).

8) In conducting the EIA, public consultations will be held in line with the requirements in the EIA Procedure, both during the Scoping stage and the EIA stage (**Articles 61** and **63**).

9) The EIA shall consider the views, concerns, and perceptions of stakeholders, communities and individuals that could be affected by the Project or who otherwise have an interest in the Project. The EIA should include the results of public consultations and negotiations with the affected populations on the environmental and social issues. Public concerns should also be taken into account in assessing impacts, designing mitigation measures, and selecting monitoring parameters (**Articles 60**).

10) The EIA investigations and review and the EIA review and approval will be governed by the processes indicated in **Articles 67**.

11) Submission of EIA Report will follow the requirements in **Articles 64** to **65**.

(iii) EMP Implementation Stage

1) The Project Proponent shall fully implement the EMP, all Project commitments, and Conditions, and is liable to ensure that all contractors and subcontractors of the Project comply fully with all Applicable Laws, the EMP, Project commitments and Conditions when providing services to the Project (**Articles 103**).

2) The Project Proponent shall be responsible for, and shall fully and effectively implement, all requirements set forth in the ECC, applicable laws, and standards (**Articles 104**).

3) The Project Proponent shall bear full legal and financial responsibility for all Adverse Impacts and all actions and omissions of itself and its contractors, subcontractors, officers, employees, agents, representatives, and consultants employed, hired, or authorized by the Project acting for or on behalf of the Project, in carrying out work on the Project (**Articles 102, a**).

4) The monitoring component of the two (2) EMPs will clearly specify responsibilities and tasks of the Project Proponent in monitoring and reporting environmental performance of the Project in line with the requirements prescribed in **Chapter 9** of the EIA Procedure.

5) During the implementation of the EMPs, the Project Proponent will support the monitoring and inspection of the Ministry as required in **Chapter 9** of the EIA Procedure.

B. Environmental Impact Assessment Guidelines (2014)

MONREC drafted the Environmental Impact Assessment Guidelines on 31 July 2014. The objectives of the EIA Guidelines are to provide a common framework for EIA reporting, to present project proponents and their environmental consultants with clear guidance on structure, content and scope of EIA reports and to ensure that EIA reporting is consistent with legal requirements, good practices and professional standards. It is noted that the EIA Guidelines will be revised after a trial period of 2 years in order to take account of new developments in EIA sector, possible modifications of environmental legislation, and comments from the EIA practitioners and Governmental Authorities.

In line with its objectives, the EIA Guidelines elaborates subjects in the EIA Procedure, including (i) characteristics of an EIA; (ii) legal requirements for EIA; (iii) the relation between the EIA process and the project planning cycle; (iv) outline of scoping report and information requirements; (v) terms of reference for EIA in the scoping report; (vi) outline of the EIA report and environmental management plan, and information and presentation requirements; (vii) public consultation requirements in the scoping and EIA stages; and (viii) reporting requirements.

C. 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.

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

Requirements for environmental protection and social impact management are mostly prescribed in various sector laws and regulations. For example, the Factory Act 1951 makes it mandatory for every factory to have adequate facilities for waste and effluent disposal. However, the issuance and enforcement of environmental quality standards are normally based on specific national environmental law.

A. Law Related to Environmental Quality Standards

The Environmental Conservation Law (2012) in Article 7(d) and Article 10 authorizes MONREC to establish the following environmental quality standards and guidelines:

Article 7 (d)

The duties and powers relating to the environmental conservation of the Ministry are as follows:

(d) prescribing environmental quality standards including standards on emissions, effluents, solid wastes, production procedures, processes and products for conservation and enhancement of environmental quality;

Article 10

The Ministry may, with the approval of the Union Government and the Committee, stipulate the following environmental quality standards:

(a) suitable surface water quality standards in the usage in rivers, streams, canals, springs, marshes, swamps, lakes, reservoirs and other inland water sources of the public;

(b) water quality standards for coastal and estuarine areas;

(c) underground water quality standards;

(d) atmospheric quality standards;

(e) noise and vibration standards;

(f) emissions standards;

(g) effluent standards;

(h) solid wastes standards;

(i) other environmental quality standards stipulated by the Union Government

However, Article 12 requires that the environmental quality standards stipulated by MONREC will need to consider any environmental quality standard stipulated by any government departments or organizations under any existing laws.

Article 12

If any environmental quality standard stipulated by any Government department, Government organization under any existing law is more than the quality standard stipulated by the Ministry, it shall remain in force; however, if it is less than such standard, only the standard stipulated by the Ministry shall be in force.

To implement the above articles of the Environmental Conservation Law (2012), MONREC issued National Environmental Quality (Emission) Guidelines dated 23 December 2015. The Emission Guidelines cover general emission standards for

gaseous emissions, effluents, noise, and odor; and standards specific to each sector. The standards are mainly based on those recommended by WHO or IFC, whichever appropriate. However, ambient environmental quality standards have not yet been issued.

B. Laws Related to Social Impact Management

(1) Community Health and Safety

The need for development projects to safeguard community health and safety is indicated in the **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.

(2) Occupational Health and Safety

The Constitution (2008), Article 24, is the foundation on which laws and regulations could be promulgated to support measures to ensure occupational health and safety (OHS) of employees as well as their other welfare and benefits. This Article states:

"The Union shall enact laws to protect the rights of workers, if necessary."

In addition, **the Social Security Law (2012)** states clearly that employers have to take care of employees' benefits, security and welfare, especially benefit from injury and occupational diseases. This law is therefore related to occupational health and safety (OHS) of employees.

However, the OHS legislative framework in Myanmar is embodied in **the Factories Act (1951) and the Oilfield (Labor and Welfare) Act (1951). The Factories Act (1951)** is relevant to the OHS issue of this Project. This Act includes ten main chapters such as Health, Safety, Welfare, Special Applications and Extensions, Working Hours of Adults, Employment of Young Persons, Punishments and Procedure, etc.

Some important sections under the chapter of "Health" are:

- Cleanliness,
- Disposal of waste and effluent,
- Ventilation and equable temperature
- Dust and fume
- Artificial humidification
- Overcrowding
- Lighting and artificial lighting
- Drinking water, etc.

Some Sections under the chapter of "Safety" are

- Fencing of machinery
- Work on or near machinery in motion
- Employment of young persons on dangerous machinery
- Devices for cutting off power
- Cranes and such other lifting and hoisting machinery
- Revolving machinery
- Pressure plant
- Floors, passages, stairs and means of access
- Pits, sumps, openings in floors, etc
- Excessive weights
- Protection of eyes
- Precaution against dangerous fumes
- Arrangement to be made against fire
- Explosive or inflammable dust, fume

The Government estimates that current level of coverage of workers with occupational health services is 15 to 20%. The development of occupational health services in the country is targeting to increase the coverage of working population with occupational health services.

The Ministry of Health has a special department dealing with workers' health. The three top priority occupational diseases in the country are occupational respiratory diseases (asthma and chronic obstructive pulmonary disease), noise induced hearing loss and occupational poisoning.

However, the country does not have a special program for prevention of top priority occupational diseases. There are no initiatives to minimize gaps between different groups of workers in terms of levels of risk and health status, including a program for occupational health and safety of health-care workers.

The country has partial requirement to manage chemicals at the workplace that deal with all phases of chemical's life cycle, including production, use and waste. Despite insufficient capacity on inspection the workplace health, the country has initiatives to stimulate the development program for healthy workplaces.

(3) The Leave and Holidays Act, 1951 (No.58)

The Leave and Holidays Act (1951) was firstly adopted on 1 January 1952, by the International Labour Organization, Myanmar. Recently, the Act was amended in July 2014. The key objectives of this Act are to allow workers (daily wage worker/ temporary worker/permanent worker) to have a leave and holiday allowances, religious or social activities with earn allowance, and health insurance allowances.

The Act contains 18 main Sections, including:

Section I: this section provides the name of this Act namely "**The Leave and Holidays Act, 1951 (No.58)" (the Act).**

Section II: this section provides technical terms of the Act and meanings.

Section III: this section contains the details about public holidays. Also, the conditions of allowance are demonstrated separately, with and without pay respectively.

The followings describe the right of workers to leave and have a holiday:

- Causal Leave (6 days)
- Earned Leave (10 days)
- Medical Leave (30 days)
- Maternity leave
- Public Holiday (21 days)
- Penalty for Violation

Section IV: this section contains specific obligations between employers and employees, i.e. fix the time which earned leave, earned leave and etc.

Section V: this section emphasizes and describe obligation types of leave, including: (i) Casual leave with wages or pay (six day at any one time), (ii) Casual leave shall not be combined with any other types of leave, and (iii) Casual leave will be lapsed if it does not taken off.

Section VI: this section contains the conditions in case of leave on medical reason.

Section VII: this section contains the condition of medical leave, regarding to the provision of subsection (5) of section 6: the employee does not take the medical leave within the year, it shall be lapsed. In case of leave on medical certificate, employees can be granted in continuation of earned leave.

Section VIII: this section contains the clarification of working period for 12 months continuously. It is noted that employers shall be granted by offering earned leave, casual leave or leave on medical certificate proportionate to the period of service.

Section IX: this section contains the condition between employer and employee in terms of agreement or contract, in detail, to take leave or holidays on terms less than those provided in the Act.

Section X: this section contains details about the rights of employee under the Act.

Section XI: this sections contains recommendations for employers to keep and maintain (such as registers and records).

Section XII: this section contains the instructions that should be followed, which is inspection. It is highly recommended to alter or recruit an inspector to observe, define functions, the class of employees and trade and etc., in accordance with the factories Act or related Acts.

Section XIII: this section contains the case of exemption of trade, industry or establishment and etc, for such period and subject to such conditions as may be specified therein.

Section XIV: this section contains the details describing about penalties concerned with the Act.

Section XV: this section contains the details describing about determination of employer in certain cases.

Section XVI: this section contains the details describing about cognizance of offences.

Section XVII: this section contains the statement concerned with changes of Act's details by altering, adding or deleting any of the provisions of the Schedule and any such amendment shall have effect as if it were a provision of the Act.

Section XVIII: this section contains additional changes by the President through notification to make rules for carrying out the purposes of the Act.

(4) Involuntary Resettlement

In Myanmar, the 2008 Constitution states that the government is the ultimate owner of all land. The Government can conduct compulsory acquisitions in the state or public interest. For private investors, they can acquire land or land use rights from either the Government or from a private land rights owner. In case of foreign investor, the land can be leased from private owners or users. They are required to pay the current market value and submit the lease to the Myanmar Investment Commission (MIC). According to the Land Acquisition Act (1894), besides compensation at market value, crops' value is included. However, there are no detailed regulations defining specific compensation levels for all types of land and assets. There is also no effective process to negotiate the level of compensation.

Similar to involuntary resettlement processes, there are no core principles or hierarchy of compensation approaches, and no guidance on voluntary or involuntary resettlement. The latest draft Environmental Impact Assessment (EIA) Procedure doesn't state requirement either on resettlement nor livelihood restoration of affected persons and indigenous peoples. It is just mentioned that all such Projects shall apply the international best practice on Involuntary Resettlement.

(5) Cultural Impact Concerns

The Protection and Preservation of Cultural Heritage Regions Law (1998) is to minimize impacts of development projects on local heritage and cultural

settings. The purposes of this law are to: (i) implement the protection and preservation policy with respect to perpetuation of cultural heritage that has existed for many years; (ii) promote public awareness and participation in the protection and preservation of cultural heritage regions; and (iii) carry out protection and preservation of the cultural heritage regions in conformity with international conventions committed to by the State.

(6) The Protection and Preservation of Ancient Monuments Law (2015)

This law effective on 26th August 2015, enacts by the Pyidaungsu Hluttaw. This law contains (10) chapters, including:

Chapter I: Title and Definition

This chapter contains the title of Law, namely "**The Protection and Preservation of Ancient Monuments Law**". Also, technical terms are provided in this chapter in relevant to Ancient Monuments Law (2015).

Chapter II: Objectives

This chapter contains seven (7) main objectives, including:

- To implement the policy of protection and preservation for the perpetuation of ancient monuments;
- To protect and preserve ancient monuments so as not to deteriorate due to natural disaster or man-make destruction;
- To uplift hereditary pride and to cause dynamism of patriotic spirit by protecting and preserving ancient monuments;
- To have public awareness of the high value of ancient monuments;
- To protect and preserve ancient monuments from destruction;
- To search and maintain ancient monuments;
- To carry out in respect of protection and preservation of ancient monuments in conformity with the International Convention and Regional Agreement ratified by the State.

Chapter III: Specification of an Ancient Monument

The following chapter describes the buildings which are consistent with the definitions are specified as ancient monument.

Chapter IV: Protection, Preservation, Return and Acceptance of Ancient Monuments

This chapter contains the activities of Ministry which carry out the functions and duties of perpetuation, protection, preservation, return and acceptance of an ancient monument.

Chapter V: Inspection of an Ancient Monument

This chapter contains about inspection and decision of the Ministry to any ancient monument whether it is a real or not.

Chapter VI: Informing that an Ancient Monument is found

This chapter explains about the process of person who finds any object which has no owner or custodian. The duty of department shall inspect whether it is a real ancient monument or not and keep or cause to keep as may be necessary in accord with the stipulations when the information is received.

Chapter VII: Applying for prior Permission, Scrutiny and Issue

This chapter contains the stipulations/condition for the development or activities concerned with cultural heritage regions. This solely relies on the permission of the Ministry of Culture and the Department.

Chapter VIII: Prohibitions

This chapter contains specific prohibitions/regulations, to ensure that water resources and rivers are properly treated by individual or public.

Chapter IX: Penalties

This chapter contains regulations and penalties for those who illegally break the law or regulations. The penalties will be punished by imprisonment or fine. In addition, the court will pass any orders for those who are convicted, of any offence in relation to the laws.

Chapter X: Miscellaneous

This chapter contains additional terms of **The Protection and Preservation of Ancient Monuments Law (2015).**

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

This law effective on 22nd July 2015, enacts by the Pyidaungsu Hluttaw. This law contains (9) chapters, including:

Chapter I: Title and Definition

This chapter contains the title of Law, namely "The Protection and Preservation of Antique Objects Law (2015)". Also, technical terms are provided in this chapter in relevant to Antique Objects law (2015).

Chapter II: Objectives

The objectives of this law are as follows:

- To implement the policy of protection and preservation for the perpetuation of antique objects;

- To protect and preserve antique objects so as not to deteriorate due to natural disaster or man-made destruction;

- To uplift hereditary pride and to cause dynamism of patriotic spirit by protection and preservation of antique objects;

- To have public awareness of the high value of antique objects;

- To carry out in respect of protection and preservation of antique objects in conformity with the International Convention and Regional Agreement ratified by the State.

Chapter III: Specification of an Antique Object

This chapter describes the buildings which are consistent with the definitions are specified as antique object.

Chapter IV: Protection, Preservation, Submission and Acceptance of Antique Objects

This chapter contains the functions and duties of Ministry may delegate the Department in respect of protection, preservation, submission and acceptance of antique objects.

Chapter V: Inspection of an Ancient Building

This chapter contains the function of Ministry for decision making which shall be final and conclusive on submission of the expert group in respect of whether it is a real ancient building or not.

Chapter VI: Informing that an Antique Object is found

This chapter explains about the process of person who finds any object which has no owner or custodian. The duty of department shall inspect whether it is a real antique object or not and keep or cause to keep as may be necessary in accord with the stipulations when the information is received.

Chapter VII: Applying the permission for an Antique Object

This chapter contains about the process of any department, organization or person shall apply for permission for an antique object to the department or the division delegated. The department or the division delegated by the department may grant permission or refuse to grant permission after scrutinizing the application.

Chapter VIII: Offences and Penalties

This chapter contains regulations and penalties for those who illegally break the law or regulations. The penalties will be punished by imprisonment or fine. In addition, the court will pass any orders for those who are convicted, of any offence in relation to the laws.

Chapter IX: Miscellaneous

This chapter contains additional terms of **"The Protection and Preservation of Antique Objects Law (2015)".**

(8) The Factories Act (1951)

The law became effective on 1951 and this Factories Act contains nine (9) chapters including:

Chapter I: Preliminary

This chapter contains the title of Law, namely "**The Factories Act (1951)**". Also, technical terms and definitions are provided in this chapter.

Chapter II: The Inspecting Staff

This chapter contains the definitions of inspector, the powers of inspectors and certifying surgeons.

Chapter III: Health

This chapter explains about the detail process of cleanliness, ventilation and equable temperature, dust and fume, artificial humidification, overcrowding, lighting artificial, drinking water, latrines and urinals, spittoons.

Chapter IV: Safety

This chapter contains about safety for process including:

- Fencing of machinery,
- Work on or near machinery in motion,
- Employment of young persons on dangerous machinery,
- Device for cutting off power,
- Shuttling engine
- Casing of new machinery
- Prohibition of employment of women and children near cotton openers
- Hoists and lifts
- Cranes and such other lifting and hoisting machinery

- Revolving machinery
- Pressure plant
- Floors, passages, stairs and means of access
- Pits, sumps, openings in floors, etc
- Excessive weights
- Protection of eyes
- Precautions against dangerous fumes
- Explosive of inflammable dust, fume, etc
- Arrangement to be made against cases of fire
- Power to require specifications of defective parts or tests of stability
- Safety of buildings and machinery
- Power of President to make rules to supplement this Chapter

Chapter V: Welfare

This chapter contains about welfare for process including:

- Washing facilities
- Facilities for storing and drying clothing
- Facilities for sitting
- First aid appliances
- Canteens for workers
- Rest sheds, rest rooms and lunch rooms
- Creches
- Powers of President to make rules to supplement this Chapter

Chapter VI: Special Applications and Extensions

This chapter contains special application and extensions of processes including:

- Dangerous operations
- Submission of notice of certain accidents
- Submission of notice of certain diseases
- Power to direct inquiry into cases of accident and disease
- Power to take samples
- Building operations and other works of engineering
- Docks, wharves, quays, warehouses and ships

Chapter VII: Working Hour of Adults

This chapter explains about the working hour of adults including:

- Weekly working hours
- Weekly holidays
- Substituted holidays
- Daily working hours
- Intervals for rest
- Spread over
- Nights shifts
- Prohibition of overlapping shifts.
- Notice of periods of work for adults
- Register of adult workers
- Power to make rules for exemption
- Power to made orders for exemption
- Wages for overtime

Chapter VIII: Employment of Young Persons

This chapter contains about the permission and prohibition of employment of young children including:

- Certificate of fitness
- Effect of certificate of fitness granted to adolescent
- Working hours for children
- Notice of period of work for children
- Register of child Workers
- Power to require medical examination
- Power to make rules

Chapter IX: Punishments and Procedure

This chapter contains regulations, punishments and procedure of worker including:

- Ordinary punishment for offences
- Enhanced punishment after previous conviction
- Offences by workers
- Punishment for obstructing Inspector

- Power of Court competent to make orders
- Distinct offences
- Punishment for using false certificate of fitness
- Punishment for permitting double employment of children on the same day
- Determination of occupier
- Exemption of occupier or manager from liability
- Presumption as to employment
- Onus as to age
- Cognizance of offence
- Period of limitation for prosecution

Chapter X: Supplemental

This chapter contains additional terms of **"The Factories Act (1951)"**.

(9) Social Security Law (2014)

This law was enacted on 31 August 2012. The law states clearly that employers have to take care of employees' benefits, security and welfare, especially benefit from injury and occupational diseases. The employers are required to strictly comply with this law. This law is therefore related to occupational health and safety (OHS) of employees.

C. Law Related to Ecological Concerns

(1) The Forestry Law (1992)

The purposes of this law are to: (i) implement the national forest policy and environmental conservation policy; (ii) promote public cooperation in implementing these policies; (iii) develop the economy of the State; (iv) prevent destruction of forest and biodiversity; (v) carry out simultaneously the conservation of natural forests and the establishment of forest plantations; and (vi) contribute to fuel requirements of the country. The law clearly governs all forest land. Government's permission and fees are required for timber extraction, harvesting of firewood, and or other economic uses of forest land. Under this law, forest dwellers can be forcibly evicted despite their long-term traditional residence.

(2) 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.

(3) The Conservation of Water Resources and River Law (2006)

The law became effective on 2 October 2006, enacted and promulgated by the State Peace and Development Council. This law contains seven (7) chapters, including:

Chapter I: Title and Definition

This chapter contains the title of Law, namely "**The Conservation of Water Resources and River Law (2006)**". Also, technical terms are provided in this chapter in relevant to conservation and water resources and river law.

Chapter II: Aims

This chapter contains four (4) main objectives, including:

- To conserve and protect the water resources and rivers system for public utilization.
- To ensure the smoothness and safety waterway navigation of rivers and creeks.
- To contribute the State Economy through enhancing water resources and river system.
- To protect the environment.

Chapter III: Duties and Powers of the Ministry of Transport

This chapter contains the statements describing details about key legislative duties and powers of the Ministry of Transport.

Chapter IV: Duties and Powers of the Directorate

This chapter contains the statement describing details about key legislative duties and powers of the Directorate.

Chapter V: Prohibitions

This chapter contains specific prohibitions/regulations, to ensure and regulate water resources and rivers that are properly treated by individual or public.

Chapter VI: Penalties

This chapter contains regulations and penalties for those who illegally break the laws or regulations. The penalties will be punished by imprisonment or fine.

Chapter VII: Miscellaneous

This chapter contains additional specific terms of **The Conservation of Water Resources and River Law (2006)**.

D. Laws Related to Coastal and Marine Environments

Laws related to coastal and marine environments are described in different sectoral laws under two ministries, the Ministry of Livestock and Fisheries and MONREC. For instance, the Marine Fisheries Law (1990), the Freshwater Fisheries Law (1991), 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.

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.

3.2.4 Law Specific to the Project Site

Within the project site, there are 2 key laws related to Small Port Project, including:

(i) Myanmar Special Economic Zones Law (2014)

The Special Economic Zone ("SEZ") Law was initially promulgated on 27 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.

The SEZ law contains 12 chapters, including:

Chapter I : Title and Definition

This chapter gives the entitled name "the Myanmar Special Economic Zone Law (2014)" and contains the expression of technical terms.

Chapter II : Objectives

This chapter contains eight (8) key objectives of this law, as follows:

(a) to follow the guideline framework of the maintenance, protection and safeguarding the sovereignty in terms of operating foreign investment businesses;

(b) to develop the economic stability by establishing and operating the SEZ;

(c) to develop the industry and high technologies;

(d) to improve the goods processing, trading and service business;

(e) to enable the citizens to train, learn and transfer the high technologies;

(f) to create more employment opportunities;

(g) to develop the infrastructures.

Chapter III : Special Economic Zone (SEZ)

This chapter contains the following statements:

(a) Government Authority in establishing SEZ to further strengthen economic momentum.

(b) The SEZ components must composed of high-tech industrial zones, information and telecommunications technology zones, export processing zones, port area zones, logistics and transportation zones, scientific and technological research and development zones service business zones, sub-trading.

(c) The types of work and place may be included in the SEZ are as follows:

- Production Based Businesses
- Services Business
- Infrastructure Construction Business
- Other businesses, with an approval of the Government

(d) The Condition of the SEZ establishment (under ***section 4 illustrated as follows***).

<u>According to Section 4</u>

➢ a zone implemented under this Law in accordance with the economic policies adopted by the State;

➢ a zone managed according to the nature of the work of Special Economic Zone in accordance with this Law;

➢ a zone invested and used in the currency determined by the Central Body with the approval of the Government;

➢ a zone which conforms to the international commercial market based on goods processing and export for the fulfilment of the objectives contained in ***section 3***;

(e) a zone which practices speedy one-stop service system for the office works relating to the Special Economic Zone.

(f) The Encouragement for investors in the SEZ Operating Works in Priority

Chapter IV : Formation of Central Body, Central Working Body and Management Committees relating to the Myanmar Special Economic Zone and Functions and Duties thereof

This chapter contains the following statements:

"The Government

(a) Shall form the Central Body relating to the Myanmar Special Economic Zone comprising a suitable person from the relevant ministries, Government departments and organizations as members for enabling to carry out the functions and duties contained in this Law in respect of establishing and operation the Special Economic Zone;

(b) Shall determine and assign duty to the Vice-Chairman, the Secretary and the Joint Secretary from among the members, in forming the Central Body."

"The functions and duties of the Central Body

(a) Implementing, supervision and causing to abide by the provisions contained in this Law;

(b) Submitting the proposal, suitable place, necessary area, extent of territory and boundary demarcation to the Government for establishing the Special Economic Zone, after obtaining and scrutinizing the opinion of the relevant Government departments and organizations;

(c) Forming the Central Working Bodies and Management Committees, with the approval of the Government, to enable implementation of the works relating to Special Economic Zone;

(d) Adopting projects and plans for the development and management of the Special Economic Zone;

(e) Scrutinizing the Special Economic Zone's development plan submitted by the Management Committee and granting approval;

(f) Assigning duty to the Management Committee for the implementation of the works contained in section 6, supervising the functions of such Management Committee, inspecting from time to time and coordinating with the relevant Government departments and organizations;

(g) Scrutinizing the business proposal submitted by the developer or investor and approving, refusing or causing to amend and operate;

(h) Determining the categories of investment businesses which are entitled to be operated according to the Special Economic Zone and allowing the developer or investor to operate with the approval of the Government;

(i) Determining as the large, medium and small investment business based upon the category of business, amount of initial investment, with the approval of the Government;

(j) Determining the category of currency to be used within the Special Economic Zone with the approval of the Government;

(k) Determining the taxes and revenues, rentals and land-use premiums to be levied under this Law, with the approval of the government, giving exemption and relief;

(l) Arranging enable carrying out office work by the speedy one-stop service within the Special Economic Zone;

(m) Forming the department and organizations, with the approval of the Government, for carrying out administrative, security, management and development matters in the Special Economic Zone and determining the functions and duties thereof, causing the management committee to directly supervise such organizations, causing such organizations to comply with and carry out the functions and duties according to the directive of the Management Committee;

(n) Submitting report on the situation of the implementation in respect of the Special Economic Zones to the Government;

(o) Carrying out other functions and duties assigned by the Government in relation to the Special Economic Zone."

"The Central Body, with the approval of the Government

(a) Shall form the Central Working Bodies comprising persons from the stipulated Government departments and organizations for enabling to support in implementing the works relating to the Special Economic Zone;

(b) Shall form a Management Committee each according to the Special Economic Zone with the persons from stipulated Government departments and organizations, to enable carrying out functions and duties contained in section 13;

(c) In forming under sub-sections (a) and (b), shall determine and assign duty to the Chairman, Vice-chairman, Secretary and Joint- secretary;

(d) May appoint, in substitution, the members of the Central Working Body and Management Committees formed under sub-section (a) and (b) and reform as may be necessary;

(e) may form and assign duty to other suitable working bodies."

"The functions and duties of the Central Working Body

(a) Submitting the proposal for the construction of Special Economic Zone, proposal of investment business submitted by the Management Committee, Developer or investor to the Central Body after scrutinizing;

(b) Scrutinizing the Special Economic Zone plan submitted by the Management Committee for the implementation of the Special Economic Zone and submitting to the Central Body;

(c) Submitting the Central Body after scrutinizing, for enabling to determine the category of Special Economic Zone, work in priority, category of work to be carried out according to zone, category of large, medium and small investment business;

(d) Studying and submitting on the matters of international Special Economic Zone, advising and submitting to the Central Body, other Special Economic Zones and areas which should be carried out in Myanmar;

(e) Coordinating with relevant departments and organization for enabling to carry out investment businesses in the relevant Special Economic Zone, with the permission of the Central Body in accord with the stipulation;

(f) Advising and submitting, after scrutinizing on the administrative, management and other legal matters in the Special Economic Zone;

(g) Carrying out other functions and duties assigned by the Central Body."

"The functions and duties of the Management Committee

(a) Submitting the Special Economic Zone development plan to the Central Body and Central Working Bodies and obtaining approval for enabling to implement and operate the Special Economic Zone successfully;

(b) Arranging to enable operation of the investment businesses to be carried out in the relevant Special Economic Zone with the approval of the Central Body, in accordance with the stipulation;

(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;

(d) Coordinating with the relevant Government departments and organizations as may be necessary for enabling to give protection to the property, profits and other rights of the investor in conformity with the existing Laws;

(e) Coordinating with the relevant Government departments and organizations as may be necessary for enabling to obtain entry visa and residency for foreign investors and their employees, technicians and staff working in the Special Economic Zone;

(f) Coordinating to facilitate the Central Bank of Myanmar as may be necessary, in implementing financial management, supervising foreign currency exchange and financial businesses for the investors in the Special Economic Zone and in communicating and carrying out with the banks permitted to do foreign banking business in Myanmar;

(g) Coordinating with the developers, investors or companies which will take responsibility to construct the infrastructures in any Special Economic Zone and giving permission to do so in accord with the stipulating and supervising their activities;

(h) Carrying out one-stop service relating to the works which may be allowed by the Management Committee according to the existing Law;

(i) Scrutinizing and approving the construction works, designs in accord with the main plan of the Special Economic Zone;

(j) Supervising for the natural environmental conservation and protection in the 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 stipulating, causing the developer or investor to perform in line with them;

(k) Carrying out the functions and duties specifically assigned by the Government and the Central Body."

"The Management Committee shall carry out that the developer or the investor employs the citizen businessman, company or organization in term of contract for the works in their businesses invested within the Special Economic Zone except the work which require specific expertise. If the investor asks advice it shall be coordinated to enable to obtain suitable citizen businessman, company or organization for his work."

Chapter V : Special Privileges of Investor

This chapter contains the Special Privileges and stipulations for the investors. Strictly, establishing and operating offices within the SEZ must be complied with the related existing laws, with the permission of the Management Committee.

Chapter VI : Specific Duties of Developer or Investor

This chapter contains the specific duties of developers or investors (his employees, technicians, staff and family members). In detail, this chapter will describe responsibilities of developers or investors, to do e.g. paying tax and company/enterprise registration etc, in accordance with the related laws and regulations.

Chapter VII : Land Use

This chapter contains regulations/laws/procedures in relation to land-use interference (land acquisition and expropriation) for the project, which the Central Body, developer and investor shall follow strictly. This provides a condition of related land use permission that developers or investor should follow strictly.

Chapter VIII : Banks and Finance Management and Insurance Business

This chapter contains financial management and insurance guideline for the project, especially for the businesses that are operated in foreign currency, within the SEZ. Also, there is a guideline for foreign insurance companies/joint insurance companies, within the SEZ, in accordance with the stipulations.

Chapter IX : Management and Inspection of Commodities by Customs Department

This chapter contains various concerned conditions for developers or investors in terms of the export processing zone and sub-trade zone, and regulations issued by the Customs Department. Practically, the laws or regulations must be strictly obeyed.

Chapter X : Quarantine Inspection and Confinement so as not to spread Contagious Disease

This chapter contains the Quarantine Prevention Department's statement in terms of responsibility of developers or investors to ensure that contagious disease through transporting goods, vehicles, containers, animals and plants will not take place. In addition to that, quarantine inspection and confinement may be complied with export import items or investment businesses.

Chapter XI : Matters relating to Labor

This chapter provides regulations, recommendations and conditions in relation to labour matters for developers or investors to follow to procedures.

Chapter XII : Miscellaneous

This chapter contains additional information related to practical procedures for developers, investor or related agencies such as the Government, the relevant Union Ministries and Region or State Ministries etc.

(ii) The Dawei Special Economic Zone Law (2011)

The Dawei Special Economic Zone Law (DSEZ) Law was enacted on 27 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 law contains 12 main chapters, including:

Chapter I : Title and Definition

This chapter gives the entitled name "the Dawei Special Economic Zone Law (2011)" and contains the expression of technical terms.

Chapter II : Objectives

This chapter contains five (5) main objectives, illustrated as follows:

- To implement the DSEZ by the supervision of the Central Body, this is based on the Myanmar Special Economic Zone's objectives (***section 3***);
- To be the pivotal place for the trade and transportation of South East Asian Region;
- To enhance the businesses of the DSEZ;
- To provide more employment opportunities for local inhabitants in the DSEZ and;
- To enhance the existing infrastructure of the DSEZ.

Chapter III : Dawei Special Economic Zone

This chapter contains the details concerned with the establishment of the SEZ. Also, the components of the DSEZ are clearly demonstrated including

- High-tech industrial zones;
- Information and telecommunications technology zones;
- Export processing zones;
- Logistics and transportation zones;
- Scientific and technological research and development zones;
- Service business zones;
- Sub-trading zones and;
- Zones prescribed by the Government, from time to time.

The following lists are types of business that the Myanmar Government supports, to be established within the DSEZ:

- Port business;
- Industrial business;
- Electrical Power and related service businesses;
- Logistic transportation businesses;
- Constructing motor roads, high-way roads and railroads businesses;
- Exporting petroleum and natural gas to local and foreign countries and
- Constructing petroleum and natural gas exporting pipeline businesses;
- Production based businesses such as goods processing business, hi-tech production business, industries, agriculture, livestock breeding and fishery, mineral produce business and forestry produce business;
- Services businesses such as trading, logistics and transportation, storage, hotel and tourism, education and health, residential quarters, infrastructure supply and support centers, green areas which conserve and protect the natural environment, recreation and resort centres;
- Infrastructure construction businesses such as road, bridge, airport, port, electricity, communication and water supply, environment conservation and protection, and wastes control;
- Other businesses determined by the Central Body, with the approval of the Government.

In addition, the followings are encouraged to be used or applied in the DSEZ:

(a) hi-tech industries;

(b) businesses which will further promote the economic development of the State;

(c) businesses which will further promote trade and service;

(d) businesses which will further promote the infrastructures;

(e) businesses which will create more employment opportunities for citizens;

(f) businesses which include citizen's investment in foreign investment businesses;

(g) businesses for conservation and protection of natural environment;

(h) other businesses prescribed by the Central Body, from time to time, to carry out in priority.

Chapter IV : Formation of the Management Committee of the Dawei Special Economic Zone and Functions and Duties thereof Formation of the Committee

This chapter contains descriptions concerned with the formation of the management committee of the DSEZ, established by the Government, and functions and duties that the committee shall follow in practice.

Chapter V : Special Privileges of Investor

This chapter contains the stipulations, in terms of business types in the DSEZ that investors shall follow, such as manufacturing finished products from raw materials, process production by machinery, carrying out warehousing, transport and service providing etc. Also, additional specific regulations (e.g. income tax exemption and capital asset transfer) are included in this chapter.

Chapter VI : Specific Duties of Developer of Investor

This chapter contains the specific duties for developers and investors (his employees, technicians, staff and their family members) in the DSEZ. This chapter will ensure all activities within the DSEZ are in accordance with the related laws and regulation, for instance, payment of tax, business registration and report to the Management Committee etc.

Chapter VII : Land Use

This chapter contains the regulations concerned with land use that the Central Body and developers or investor will follow in practice:

The Central Body

- Land lease or land use approval for developers or investors (for at least 30 years).

Developers or Investors

- Follow the prescribed terms and conditions.
- Rent, mortgage or sell the land and building to another person: shall be operated and based on the stipulations.
- Shall not modify the topography or the contour of land without permission.
- If natural mineral resources or antiques not relating to the permitted enterprise or not included in the original agreement, a report must be sent to the Management Committee.

Chapter VIII : Banks and Finance Management and Insurance Business

This chapter contains financial management and insurance guideline for the project, especially for the businesses that are operated in foreign currency, within the DSEZ. Also, there is a guideline for foreign insurance companies/joint insurance companies, within the DSEZ, in accordance with the stipulations.

Chapter IX : Management and Inspection of Commodities by Customs Department

This chapter contains various concerned conditions for developers or investors in terms of the export processing zone and sub-trade zone, and regulations issued by the Customs Department. Practically, the laws or regulations must be strictly obeyed.

Chapter X : Quarantine Inspection and Confinement so as nor t to spread Contagious Disease

This chapter contains the Quarantine Prevention Department's statement in terms of responsibility of developers or investors to ensure that contagious disease through transporting goods, vehicles, containers, animals and plants will not take place. In addition to that, quarantine inspection and confinement may be complied with export import items or investment businesses.

Chapter XI : Matters relating to Labour

This chapter provides regulations, recommendations and conditions in relation to labour matters for developers or investors to follow to procedures.

Chapter XII : Miscellaneous

This chapter contains additional information related to practical procedures for developers, investor or related agencies such as the Government, the relevant Union Ministries and Region or State Ministries etc.

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:

Chapter III

8. The State shall encourage the investors in the Dawei Special Economic Zone to operate the following works in priority:

(g) businesses for conservation and protection of natural environment.

Chapter IV

10. The functions and duties of the Management Committee of the Dawei Special Economic Zone are as follows:

(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;

Chapter VI

31. 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.

Chapter VII

33. The Central Body:

(c) shall not modify or alter, without permission, the topography or the contour of the land for which he obtained lease or land use;

(d) shall report immediately to the Management Committee if natural mineral resources or antiques not relating to the permitted enterprise and which are not included in the original agreement are found above or under the land which he is entitled to lease or use. If the Management Committee permits, he may continue to operate on such land. If not, he shall shift to the substituted area;

34. 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.

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***.

For marine operations of the LNG terminal and small port components, MARPOL will be relevant. MARPOL 73/78 is the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. MARPOL 73/78 is one of the most important international marine environmental conventions. It was designed to minimize pollution of the seas, including dumping, oil and exhaust pollution. Its stated object is to preserve the marine environment through the complete elimination of pollution by oil and other harmful substances and the minimization of accidental discharge of such substances.

TABLE 3.3-1

RELEVANT INTERNATIONAL TREATIES SIGNED BY MYANMAR

No.	International Environmental Conventions/ Protocols/ Agreements	Date of Signature	Date of Ratification	Date of Member	Cabinet Approval Date
1	Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome, 1956		4-11-1959 (Adherence)	4/11/1959	
2	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)	11/6/1992	25-11-1994 (Ratification)		41/94 9-11-94
3	Convention on Biological Diversity, Rio de Janeiro, 1992	11/6/1992	25-11-1994 (Ratification)		41/94 9-11-94
4	The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972		29-4-1994 (Acceptance)		6/94 9-2-94
5	ASEAN Agreement on the Conservation of Nature and Natural Resources, Kuala Lumpur, 1985	16/10/1997			
6	Catagena Protocol on Biosafety, Cartagena, 2000	11/5/2001			13/2001 22-3-01
7	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997		13-8-2003 (Accession)		26/2003 16-7-03
8	Convention on the International Maritime Organization, 1948	6/7/1951	25-11-1994 (Ratification)		
9	MARPOL 73/78, 1978	4/8/1988			
10	United Nations Convention on the Law of the Sea, 1982	21/8/1996			

3.4 MYANMAR GOVERNMENT INSTITUTIONAL FRAMEWORK

3.4.1 Arrangement at the National and Sector Level

At the national level, the Environmental Conservation Committee (ENCC) serves as mechanism for inter-ministerial coordination. Authorities and functions of ENCC are prescribed in Articles 7 to 13 of the EC Rules Environment of the Republic of the Union of Myanmar.

One of ENCC's main functions related to this Project is to oversee the management of the EIA process by MONREC through ECD. ECD will serve as coordinator among various concerned sector departments to ensure that the EIA and implementation of EMP will address environmental and social issues of concerns of relevant sector departments.

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

3.4.2 Arrangements at the Project Area

A. Institutional Framework of Myanmar Government

Myanmar's Subnational Administrative Structure

The Republic of the Union of Myanmar is composed of seven (7) regions, named in the 2008 Constitution. There are 6 self-administered zones or divisions and 1 union territory. In detail, there are 325 townships and 67 districts in Myanmar's states and regions, according to Myanmar Information Management Unit (2011), Myanmar Statistical Year book (2011), and Ministry of National Planning and Economic Development. The smallest formal administrative unit is called "village", with various groups (towns, village, and urban) can be grouped into townships. Collections of townships are organized as districts and can be turned the form into regions or state (collections of districts).

State and region governments comprise of an unicameral, partially elected state or region Hluttaw, an executive led by a Chief Minister and a cabinet of state/region ministers, and state or region judicial institutions.

The ***Figure 3.4-1*** below illustrates organization structure of state and region government. In detail, there are nine (9) ministries and twelve (12) union ministeries.

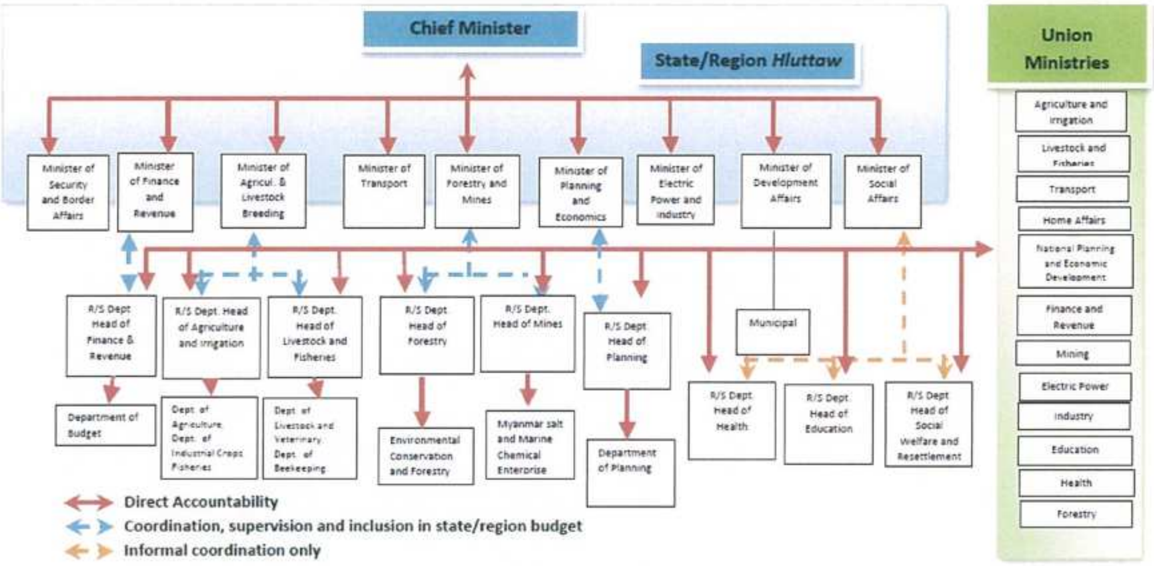


FIGURE 3.4-1 : ORGANIZATIONAL STRUCTURE OF STATE AND REGION GOVERNMENT

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.

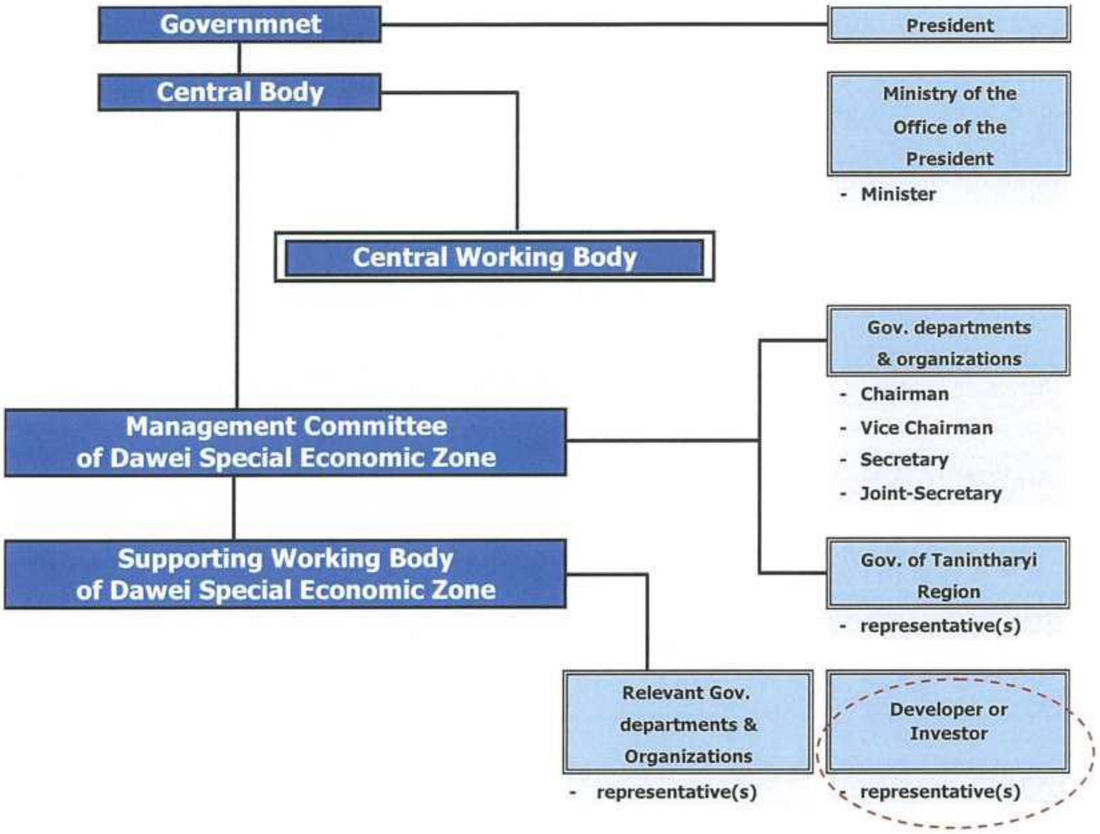


FIGURE 3.4-2 : ORGANIZATIONAL STRUCTURE OF DAWEI SPECIAL ECONOMIC ZONE (DSEZ)

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 labour practices with a view to establishing cordial relations between employers and workers according to the existing Laws in Myanmar - Registering foreign workers in Myanmar according to directive of the Myanmar Foreign Investment Commission.
7	Directorate of Trade	Responsible for the formulation of trade policies and plans with the aim to regulate the smooth flow of internal and external trade.
8	Department of Development Affairs	Responsible for the urban development.
9	Department of Road Transportation	Passenger transportation service for inter-city transportation and intra-city transportation, to carry out the transportation services of local goods and export items. The Directorate of Road Transport carries out registration of motor vehicles and driving licenses.
10	Department of Investment and Company Administration	Responsible for register the incorporation and administration of companies, in accordance with the provisions of the Myanmar Companies Act, 1914.
11	Department of Custom	Responsible for levy duty on imported goods in accordance with the existing laws, rules and regulations, to oversee the imports and exports whether they are complied with the existing laws and regulations or not and to investigate and prevent illegal imports and exports.
12	Department of Law, Court and Justice	For giving legal advice on matters relating to international conventions and regional agreements, and also on matters of bilateral or multilateral treaties, memorandums of understanding, memorandums of agreement, local and foreign investments and other instruments that are to be ratified by the Union of Myanmar.
13	Department of Municipality	Dealing with locally affairs, to the close contact with the daily life of the citizens.
14	Representative from Tanintharyi Division	To communicate with Local Government.

3.5 INTERNATIONAL POLICIES, GUIDELINES AND STANDARDS

International policies, guidelines and standards relevant to environmental and social impacts of projects that are referred to by most countries are those issued by the World Health Organization (WHO), the U.S. Environmental Protection Agency (EPA), the World Bank, and the International Finance Corporation (IFC). The policies, guidelines and standards of the World Bank and IFC are cross referenced and complementary as the IFC is an organization of the World Bank Group. They are also adopted by most development organizations such as the Asian Development Bank. It should be noted that the guidelines and standards recommended by the World Bank and IFC, especially those related to environmental pollution, also gave due consideration to the guidelines and standards of the EPA and WHO.

Only those international policies, guidelines and standards relevant to this Project are discussed herein.

3.5.1 IFC's Standards and Guidelines

IFC's standards and guidelines relevant to this Project are described in two documents:

- Performance Standards on Environmental and Social Sustainability, January 1, 2012; and
- Environmental, Health, and Safety-General Guidelines, April 30, 2007; and
- Environmental, Health, and Safety Guidelines for Port, Harbour, and Terminal (April 30, 2007).

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 Port, Harbour, and Terminal.

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 Port, Harbour, and Terminal (April 30, 2007)

This publication provides EHS guidelines and standards specific to Port, Harbour, and Terminal projects. It covers the following subjects:

- Environment covering: (i) Dredged materials management; (ii) Air emissions; (iii) General waste reception; (iv) Wastewater; (v) Solid waste management; (vi) Hazardous materials and oil management; (vii) Biodiversity; and (viii) Noise.
- Occupational Health and Safety covering issues described in the General EHS Guidelines and additional issues specific to Port, Harbour, and Terminal, including: (i) Physical hazards; (ii) Chemical hazards; (iii) Confined spaces; (iv) Exposure to organic and inorganic dust; and (v) Exposure to noise.

- Community Health and Safety covering issues described that Community health and safety issues during the construction of ports are common to those of most large infrastructure or industrial facilities, and are discussed in the General EHS Guidelines. These impacts include, among others, dust, noise, and vibration from construction vehicle transit, and communicable diseases associated with the influx of temporary construction labor. The following operation phase issues are specific to ports: Port marine safety, Port security, and Visual impacts

- 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.

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 and Table 3.6-3*** presents national ambient environmental quality standard (air quality and noise). Most of national ambient environmental quality standard adapted from World Bank / IFC. ***Table 3.6-4*** presents national effluents level standards to be adopted for port, harbour, and terminal project. The national effluents level standards for both coastal liquefied natural gas facilities and port, harbour, and terminal projects will be set for management plan of this project.

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/m^3 150 μg/m^3 200 μg/m^3 150 μg/m^3 125 μg/m^3	- Thermal Power: Guidelines for New Plant, Pollution Prevention and Abatement Handbook WORLD BANK GROUP, 1998 - WHO Ambient Air Quality Guidelines stated on Environmental, Health, and Safety Guidelines: Environment Air Emissions and Ambient Air Quality of International Finance Corporation, 2007
Ambient Noise Levels - industrial and commercial area - residential areas	Leq (24 hrs) Leq (1 hr) 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, 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

TABLE 3.6-2

NATIONAL AMBIENT AIR QUALITY STANDARDS

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

Sources : National Environmental Quality (emission) Guidelines, 2015.

TABLE 3.6-3

NATIONAL NOISE LEVEL STANDARDS

Receptor	One Hour LAeq (dBA)	
	Day time 07:00-22:00	Nighttime 22:00-07:00
Residential, Institutional, Education	55	45
Industrial Commercial	70	70

Sources : 1) National Environmental Quality (emission) Guidelines, 2015.

TABLE 3.6-4

NATIONAL EFFLUENTS LEVEL STANDARDS FOR PORT, HARBOUR, AND TERMINAL PROJECT

Parameter	Unit	Maximum Concentration
Biological oxygen demand	mg/l	30
Chemical oxygen demand	mg/l	125
Oil and grease	mg/l	10
pH	-	6-9
Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

Sources : 1) National Environmental Quality (emission) Guidelines, 2015.

2) Indicative Values for Treated Sanitary Sewage Discharges, Environmental, Health, and Safety (EHS) Guidelines, General EHS Guidelines : Environmental Wastewater and Ambient Water Quality, World Bank / IFC, April 2007.

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

CHAPTER 4

PROJECT DESCRIPTION AND ALTERNATIVES

4.1 PROJECT BACKGROUND

The Project is part of the infrastructure development under the Initial Phase Development of DSEZ. Brief information on the Initial Phase Development of DSEZ is given in ***Appendix 4A***.

The Project will involve physical development in sectors-transport

The transport sector development will construct a small port to serve, in conjunction with the recently completed small port, sea transport need of the initial phase development of Dawei Special Economic Zone (DSEZ).

Under this Project, MIE will construct and operate the following facilities in DESZ under a 75 year concessions:

- Small Port: length 3 km, width 150 m., depth 8 m. to support general cargo (approx. 1 vessel per hour).
- Storage area, and support buildings and facilities: 100 acre with 2 storage yards and support facilities.
- The Project Coastal Road: 8.3 km with 2 lanes and 7 m. width from small port to ITD camp site.

4.2 PROJECT LOCATION, OVERVIEW MAP, AND SITE LAYOUT MAPS

4.2.1 Project Location and Overview of the Project Site

The Project can be divided into three major components: (i) onshore component; (ii) offshore component and; (iii) the project coastal road. The onshore facilities will be constructed on a 100 acre land plot (about 40.5 ha[1]) outside DSEZ as indicated in a base map of DSEZ in ***Figure 4.2-1***. The offshore facilities will inside of coastal water area (Estuary of Pan Din In River) accommodating one breakwaters, an approach channel, and one jetty for vessel. The small port site is approximate 4.4 km distance northern from Muanmagan beach. The project coastal road will include two paved traffic lanes, capable of handling heavy trucks for hauling goods to and from the small port. The length of road approximated 8.3 km.

[1]1: hectare is about 2.47 acres

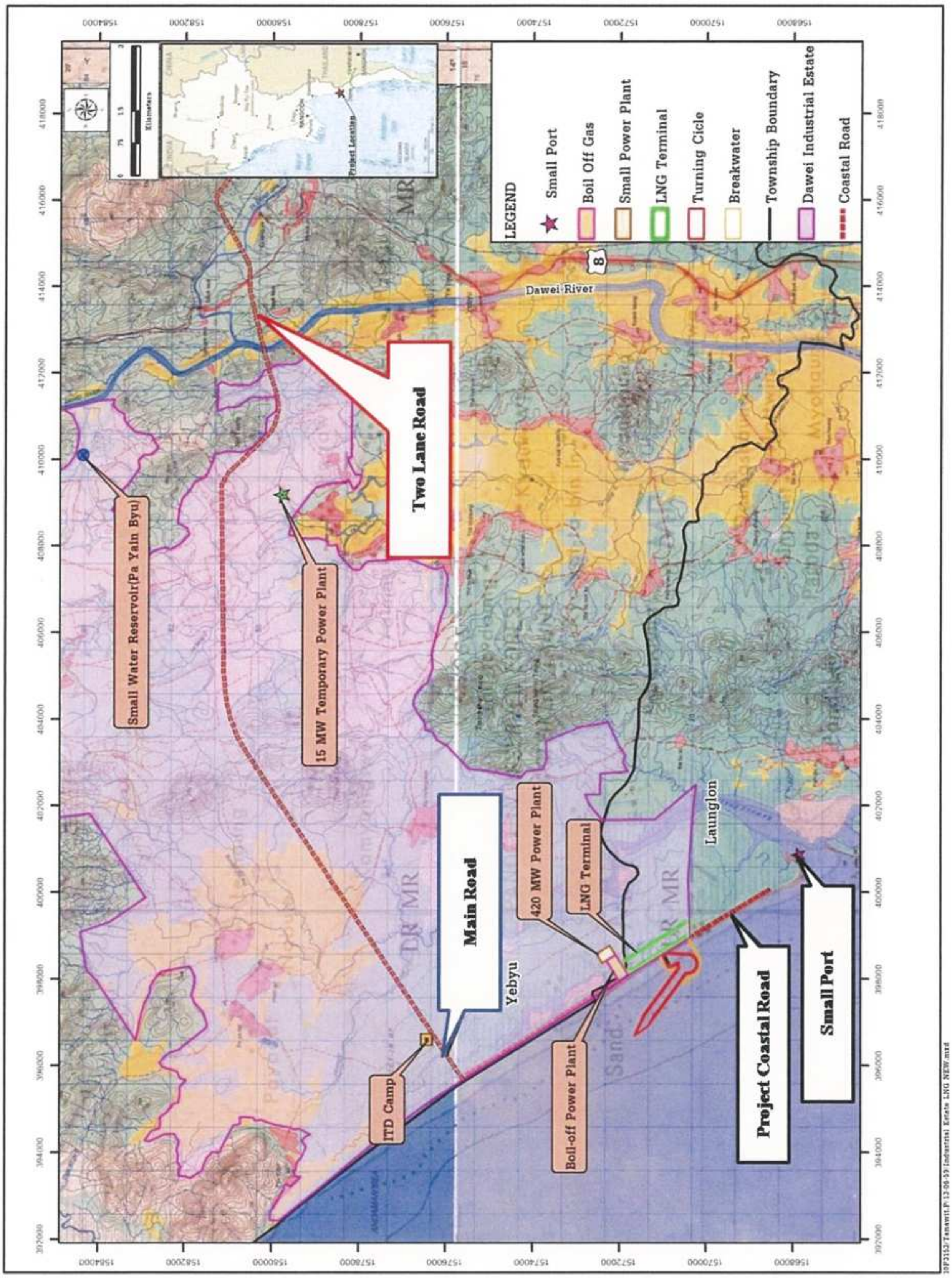


FIGURE 4.2-1: DSEZ MAP SHOWING THE PROJECT SITE

Figure 4.2-2 is a satellite imagery of part of small port covering the onshore Project site. The site is about 9 km from the entrance of DSEZ and can be reached by the existing unpaved coastal road running from the entrance of DSEZ to the existing small port. This road will be upgraded.

The onshore site has a trapezium shape with totally area is 100 acres. Adjacent to the northern boundary of the Project site are the sites of the mangrove and beach forest. Adjacent to the southern boundary of the Project site are the sites of Pan Din In River.

The nearest community is the fishing village of Nga Pitat, about 2.64 km from the northern boundary of the Project site and Sakhanthit village, about 1.51 km from the southern boundary of the Project site.

These two villages is outside the boundary of DSEZ. Other four villages, Nyaung Bin Siek, Pan Din In, Veenapin and, Muangmagan are further away, about 4.18 km, 2.30 km, 3.44 km and about 4.38 km from the Project site, respectively.

Existing geographical conditions of the onshore Project site can be divided into six types:

- Scattered patches of degraded mangrove areas
- Patches of degraded beach forest
- Strand of fertile mangrove existing in the second part of the Project site
- Sand beach/sand dune
- Water Body (Swamp area)
- Existed Road

Photo 4.2-1 shows photographs of various types of land in the onshore project site.

Table 4.2-1 presents estimates of each type of land use in the Project site. The area is largely degraded mangrove.

TABLE 4.2-1

TYPES AND AREAS OF LAND USE IN PROJECT SITE

Types	Area (Acre)	Area (%)
Beach Forest	2.46	2.46
Degraded Mangrove	64.8	64.8
Fertile Mangrove	16.2	16.2
Swamp (Water Source)	7.78	7.78
Existed Road	1.60	1.60
Sand Beach	7.16	7.16
Total	**100**	**100**

Source : Results from Field Survey by TEAM, January 2015.

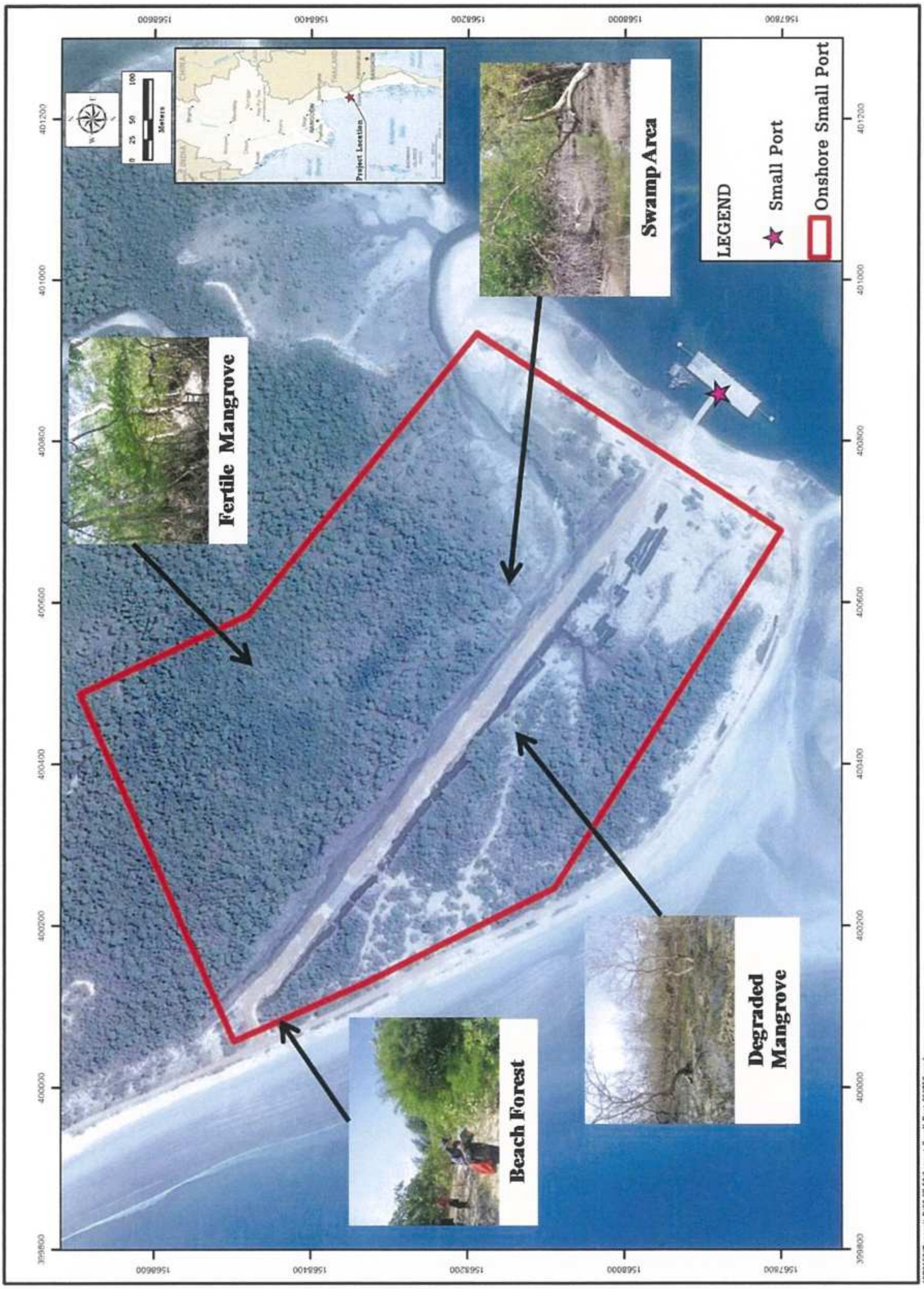


FIGURE 4.2-2 : OVERVIEW OF SMALL PORT

Scattered patches of degraded mangrove areas	**Fertile mangrove**
Degraded beach forest	**Water source (swamp area)**
Existing road	**Sand beach**

PHOTO 4.2-1 : EXISTED SMALL PORT AREA

Existing geographical conditions of the project coastal road with 20 m. ROW can be divided into six types:

- Village / Agriculture Land
- Cashew Nut / Perennial Area
- Patches of degraded beach forest
- Sand beach
- Water Body (Andaman sea)
- Existed Road

Figure 4.2-3 is a satellite imagery of the project coastal road site.

Photo 4.2-2 shows photographs of various types of land in the project coastal road with 20 m. ROW.

House in 20 m. ROW	**Beach forest**
Agriculture land	**Cashew nut**
Sand beach and Andaman Sea	**Existing road**

PHOTO 4.2-2 : THE PROJECT COASTAL ROAD WITH 20 M. ROW

FIGURE 4.2-3 : OVERVIEW OF THE PROJECT COASTAL ROAD

Table 4.2-2 presents estimates of each type of land use in the Project Coastal Road with 20 m. ROW. The area is largely sand beach areas.

TABLE 4.2-2

TYPES AND AREAS OF LAND USE IN THE PROJECT COASTAL ROAD WITH 20 M. ROW

Types	Area (Acre)	Area (%)
Beach Forest	13.84	29.84
Village/Agriculture Land	2.98	6.42
Cashew Nut/ Perennial Tree	0.86	1.86
Sand Beach	23.12	49.85
Road	4.30	9.46
Water Bodies/Sea	1.20	1.20
Total	**46.39**	**100**

Source : Results from Field Survey by TEAM, January 2015.

4.2.2 Site Layout Maps

The layouts of small port facilities and 9 km of the project coastal road are presented in ***Figure 4.2-4*** to ***Figure 4.2-6***, respectively.

4.3 PROJECT DEVELOPMENT AND IMPLEMENTATION SCHEDULES

The project construction will take about 15 months to complete. ***Figure 4.3-1*** shows a tentative project implementation schedule in bar chart. Regarding ***Figure 4.3-1***, the concession agreement was obtained in early august 2015, the Project should be completed for operation in 2017.

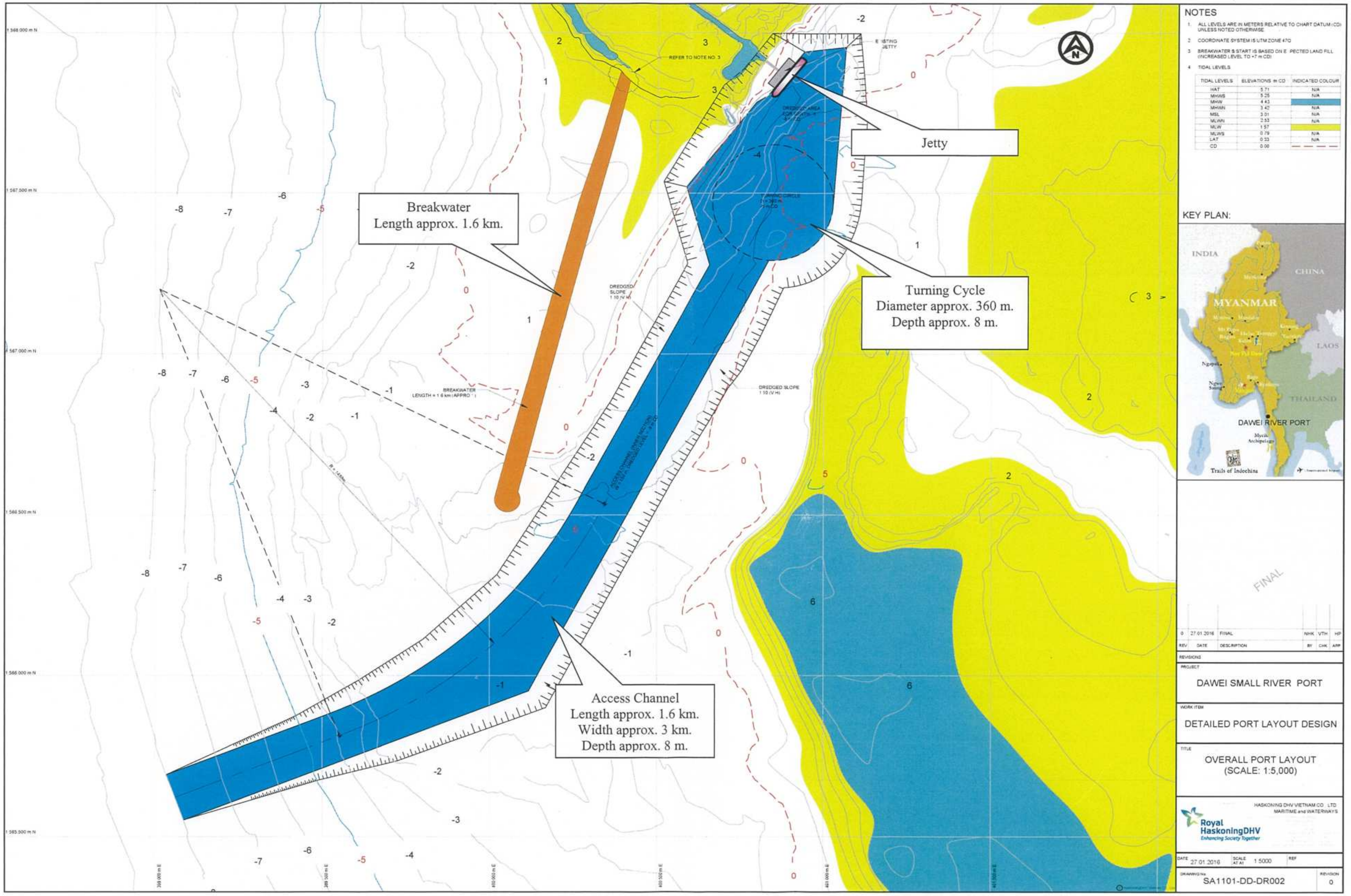


FIGURE 4.2-4 : LAYOUT OF OFFSHORE FACILITIES

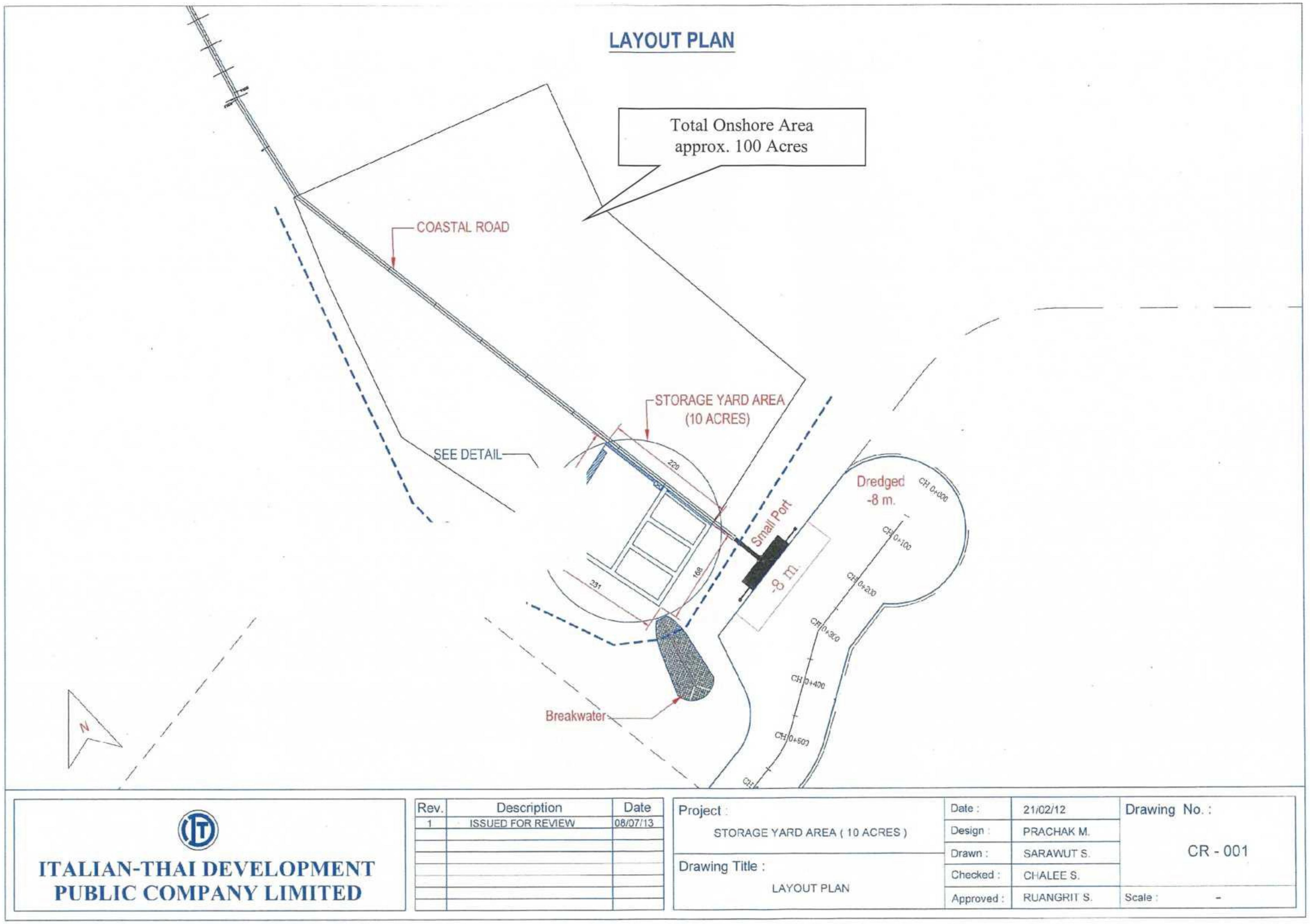


FIGURE 4.2-5 : LAYOUT OF ONSHORE FACILITIES

FIGURE 4.2-6 : LOCATION OF THE PROJECT COASTAL ROAD AREA

Item	Description	QTY	Unit	Month												Remark
				1	2	3	4	5	6	7	8	9	10	11	12-15	
				NTP												
A	SMALL PORT NO.1 (remain work)															
1	SURVEY WORK	1	LS													
2	MOBILIZATION															
	2.1 Marine Equipment	1	LS													
	2.2 On Shore Equipment	1	LS													
	2.3 Manpower	1	LS													
3	SLPOE PROTECTION for SMALL PORT#1	1	LS													
4	ELECTRICAL SYSTEM (Lighting)	1	LS													
5	LIGHTING TOWER (High Mass)	2	set													
6	LEADING LIGHT TOWER															
	6.1 For Navigation Aids	1	set													
	6.2 On Breakwater	2	set													
7	NAVIGATION AIDS	5	set													
8	PAINTING FOR TRAFFIC	180	sq.m													
9	SITE CLEARING and DEMOBILIZATION	1	LS													
B	NORTH & SOUTH BREAKWATER															
1	MOBILIZATION															
	1.1 Marine Equipment	1	LS													
	1.2 On Shore Equipment	1	LS													
	1.3 Manpower	1	LS													
2	NORTH BREAKWATER															
	2.1 Slope Protection	1	LS													
	2.2 Breakwater	130	m													
3	SOUTH BREAKWATER	1	LS													
	3.1 Slope Protection	1	LS													
	3.2 Breakwater	100	m													
4	SITE CLEARING and DEMOBILIZATION	1	LS													
C	COASTAL ROAD															
1	MOBILIZATION															
	1.1 Equipment	1	LS													
	1.2 Manpower	1	LS													
2	COASTAL ROAD CONSTRUCTION	9,300	m													
3	TEMPORARY BRIDGE	1	LS													
4	DRAINAGE SYSTEM	1	LS													
5	PAINTING FOR TRAFFIC	2,790	sq.m													
6	SITE CLEARING and DEMOBILIZATION	1	LS													
D	STOCK YARD NO.1 (10 ACRES)															
1	MOBILIZATION															
	1.1 Equipment	1	LS													
	1.2 Manpower	1	LS													
2	EARTH WORK	55,000	sq.m													
3	BULIDING WORK	1	LS													
	3.1 Port Administration Buliding	135	sq.m													
	3.2 Warehouse	324	sq.m													
	3.3 Fence	800	m													
4	DRAINAGE SYSTEM	1,000	m													
5	SITE CLEARING and DEMOBILIZATION	1	LS													

FIGURE 4.3-1 : TENTATIVE SCHEDULE OF PROJECT CONSTRUCTION

4.4 PROJECT DETAILS

4.4.1 Project Facilities

(a) Small Port

Table 4.4-1 summarizes salient information on the major facilities to be constructed or acquired under the Project.

TABLE 4.4-1

SUMMARY OF MAJOR PROJECT FACILITIES

Facilities	Key Information	Purposes or Functions
Access Channel		Entrance with adequate water depth for various type of vessels
- capacity	One vessel per hour in each direction	
- dimension	Length 3km, width 150 m., depth 8 m.	
- turning cycle	Diameter 360 m, depth 8 m.	
Breakwater	One breakwater which 1.6 km long	Minimize wave in mooring area
Revetment	Slope protection length 400 m.	Prevent shoreline erosion caused by waves generated by vessels and tug boats
Stock yard	2 stocks yard, each covering an area about 20 acres	Store container of material and equipments.

Source: ITD, 2016

(b) The project coastal road

The project coastal road will be 8.3 km long and 7 m wide with 1 m ROW. The road will be paved with asphalt concrete. Cross drainage will be provided at strategic locations to allow drainage of storm water under the road into the sea and will be upgraded for four lane in future. Lighting will be provided along the road as necessary. A bridge will be constructed at km 3+000 with 30 m. length for crossing a stream. ***Figure 4.4-1*** and ***Figure 4.4-2*** show tentative layout of the project coastal road and bridge.

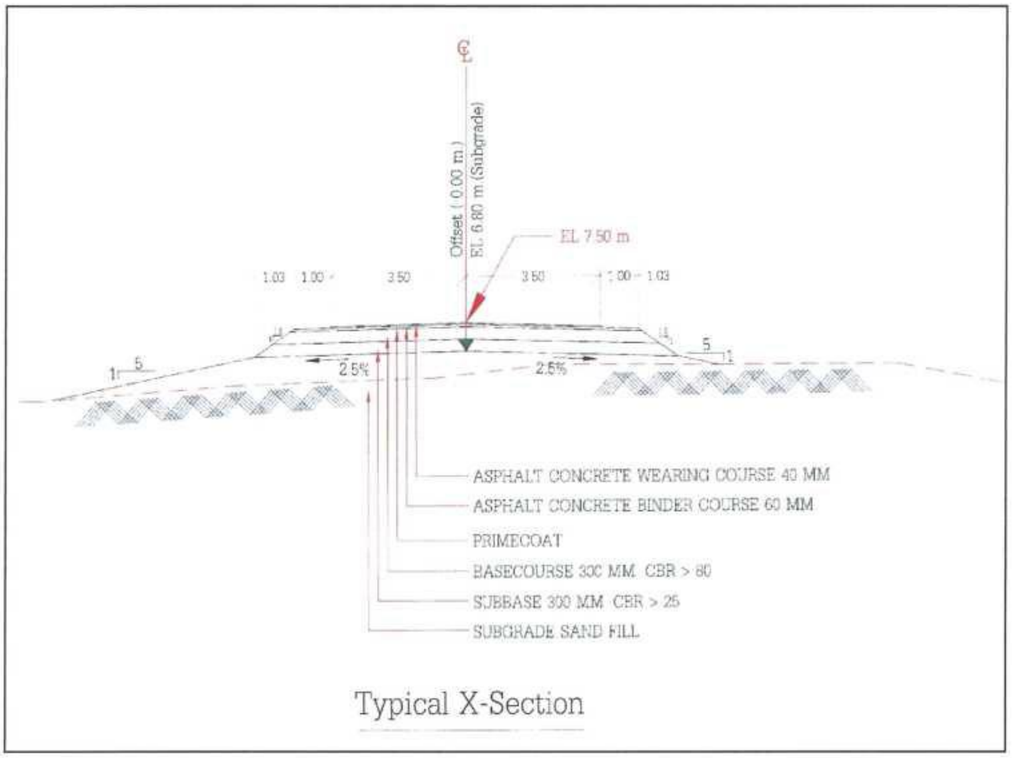


FIGURE 4.4-1 : LAYOUT OF THE PROJECT COASTAL ROAD

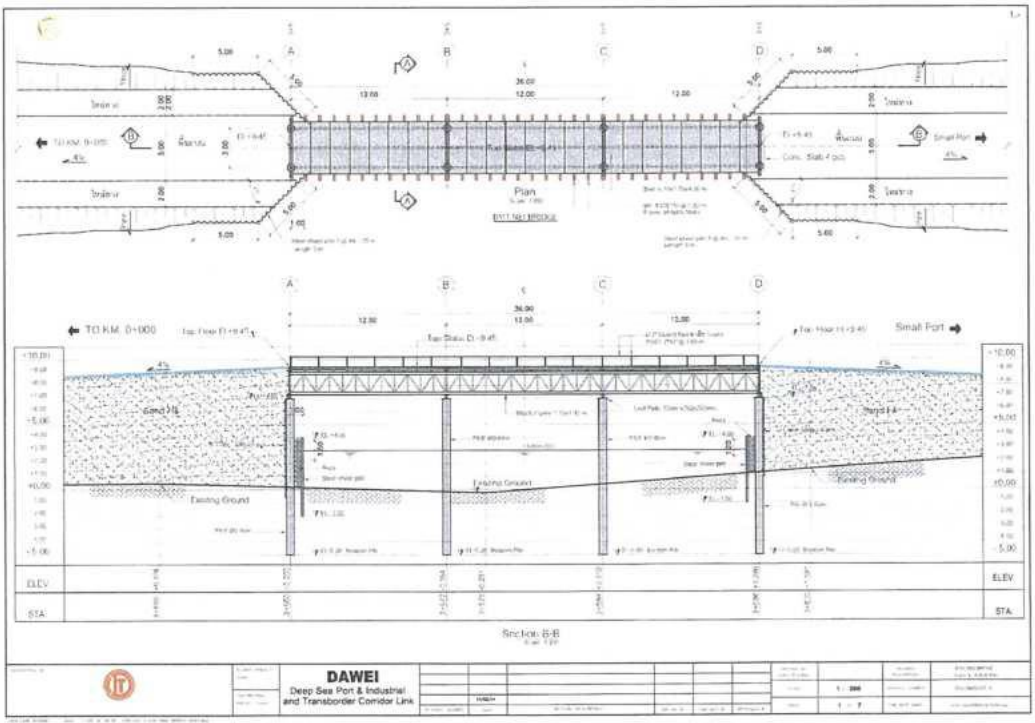


FIGURE 4.4-2 : LAYOUT OF BRIDGE

4.4.2 Project Designs

4.4.2.1 Design Codes, Standards and Guidelines

The design of Project facilities will comply with the following design codes and standards and guidelines as applicable:

- BS EN 1990: Basis of Structural Design.
- BS EN 1991: Actions on Structure.
- BS EN 1992: Design of Concrete Structures.
- BS EN 1993: Design of Steel Structures.
- BS EN 1994: Design of Composite Steel and Concrete Structures.
- BS EN 1997: Geotechnical Design.
- BS EN 1998: Design of Structures for Earthquake Resistance.
- BS 6349 – Maritime structures:

  Part 1 – General criteria.

  Part 2 – Design of quay walls, jetties and dolphins.

  Part 4 – Code of Practice for designing fendering and mooring systems.

  Part 7 – Maritime structures Guide to the design and construction of breakwaters.
- BS 6031:2009 Code of practice for earthworks
- PIANC guidelines, amongst others:
  - Guidelines for the design of fender systems, 2002.
  - Criteria for moored ships in harbours, 1995.
- OCIMF – Mooring equipment guidelines.
- Liquefaction resistance of soils: Summary report from the 1996 NCEER and 1998
- NCEER/NSF workshops on evaluation of liquefaction resistance of soils.
- PIANC WG34 Seismic Design Guidelines for Port Structures, 2001.
- PIANC WG116 Safety aspects affecting the Berthing Operations of Tankers to Oil and
- Gas Terminals, 2012.
- PIANC WG121 Harbour Approach Channels Design Guidelines, 2014.
- CIRIA C683, 2007: The Rock Manual, The use of rock in hydraulic engineering.
- EurOtop 2007; Wave Overtopping of Sea Defences and Related Structures: Assessment Manual (www.overtopping-manual.com)

4.4.3 Pre-Construction Phase

During the pre-construction phase, project activities related to site preparation will have environmental implications. Major tasks include land acquisition, land clearing, and land filling and compaction. These tasks are briefly discussed in this section.

4.4.3.1 Land Acquisition and Compensation

The construction of the project coastal road will necessitate relocation of about 12 houses in Nga Pitat Village with full compensation for land, houses and properties in accordance with the resettlement action plan to be prepared.

4.4.3.2 Land Clearing

(a) Small Port

The entire 100 acres of the Project site will have to be clear of vegetation, thus generating a sizeable amount of biomass which will have to be disposed. Due to 91.24 acre of beach forest, degraded and fertile mangrove, and swamp will be cleared for project site, The amount of biomass from the land clearing is roughly estimated at about 6,839.90 tons using the unit mass of biomass/ha and the area of each category of land in ***Table 4.4-2***.

TABLE 4.4-2

ESTIMATES OF BIOMASS GENERATED BY LAND CLEARING FOR SMALL PORT

Types	Area		Biomass	Total
	(acres)	(ha) a/	(tons/ha)	(tons)
Beach Forest b/	2.46	1.00	70.00	70.00
Degraded Mangrove c/	64.8	26.22	159.13	4,172.39
Fertile Mangrove c/	16.2	6.56	319.55	2,096.25
Swamp (Part of Britney Creek) d/	7.78	3.15	159.13	501.26
Total	**91.24** 1/	**36.93**		**6,839.90**

a/ 1 ha = 2.471 acres

b/ Biomass rate for beach forest-use data for open forest, Cambodia, FAO, Biomass Density Estimates for Developing Countries Based on Existing Inventories.

c/ Biomass rates for degraded and fertile mangrove-the figures are combined above ground and below-ground biomass, Biodiversity and Biomass of a Natural and Degraded Mangrove Forest of Peninsular Malaysia.

d/ For swamp, use the rate of degraded mangrove.

1/ Results of types and area of forest that found in proposed small port area, January 2015.

(b) The project coastal road

The entire 46.39 acres of the project coastal road with 20 m.ROW will have to be clear of vegetation, thus generating a sizeable amount of biomass which will have to be disposed. Due to 13.84 acre of beach forest will be cleared for project site, The amount of biomass from the land clearing is roughly estimated at about 392 tons using the unit mass of biomass/ha and the area of beach forest land in ***Table 4.4-3***.

TABLE 4.4-3

ESTIMATES OF BIOMASS GENERATED BY LAND CLEARING FOR COASTAL ROAD

Types	Area		Biomass (tons/ha)	Total (tons)
	(acres)	(ha) a/		
Beach Forest b/	13.84 1/	5.60	70.00	392

a/ 1 ha = 2.471 acres

b/ Biomass rate for beach forest-use data for open forest, Cambodia, FAO, Biomass Density Estimates for Developing Countries Based on Existing Inventories.

1/ Results of beach forest area that found in proposed project coastal road (with 20 m. ROW), January 2015.

It should be noted that the estimated amount of biomass is intended to serve as a gauge of the magnitude of biomass removal works for the EIA purpose. The actual amount will be different from the estimated amount. However, the difference will not be so large that the approach to biomass waste management proposed in this EIA report will be invalid.

4.4.3.3 Land Filling and Compaction

(a) Small Port

The approx. 100 acres of Small Port Project site will be filled and compacted to raise its level to about 7.00 m above mean sea level compared to the elevation of about 7.5 m above mean sea level of the project coastal road after upgrading-existing level 6.8 m. The filling depth in the Project site would be on average not more than 2 m. Therefore, the site filling depth would be about 3 m. This will require about 1.22 million m^3 of fill materials (=100 acres[2] x 4047 m^2 x 3 m.).

(b) The Project Coastal Road

The project coastal road will be filled and compacted to raise level from existing level (6.8 m.) to 7.5 m. Project site would be on average not more than 2 m. Therefore, the site filling depth would be about 3 m. This will require about 174,300 m^3 of fill materials (= 8,300 m x 7 m x 3 m).

[2] 1 Acre = 4,047 m^2

The total volume of material for site filling on small port and project coastal road approximated 1.4 million m^3

Materials from the dredging of access channel will be used for site filling. The dredged materials would be transported by the dredgers or barges to near the shoreline of the Project site. The materials will then be transported to the site by trucks or by conveyors. The method of land filling will be determined by the EPC Contractor.

If the dredged material is not adequate for the site filling, filling materials will be sought from local laterite sources. The volume of dredged material is estimated at 5.2 million m^3 (see ***Section 4.4.5.1***). Therefore, the volume of dredged material is enough for land filling in both small port and the project coastal road. The remained dredged material will be collected in small port site and used for land filling in other DSEZ Project.

4.4.3.4 Site Preparation Period

The site preparation works involve land clearance, filling and compaction of the site will be completed in about 4-5 months.

4.4.4 Construction of Onshore Facilities

4.4.4.1 Support and Temporary Facilities and Utilities

(a) Support Buildings and Facilities

The following support buildings and facilities will be constructed:

- Green area in small port site
- Perimeter fences for the small port
- Parking and vehicle shed
- Drainage system for small port site
- Office
- Storage Area
- Warehouse

(b) Temporary Facilities for Construction

Construction lay down and work areas will be prepared at the Project Site for construction work. The contractor for the project will be required to provide the following temporary facilities:

- Perimeter fences and guard house needed to guarantee the security of the project site during construction.
- Offices for the Project Proponent, Contractor, and consultants, including communications.
- Power supply for construction using diesel generators.
- Water supply for construction
- Sewage disposal system for the pre-construction and construction period
- Drainage system to control the effluent especially during the wet season
- Roads based on the final layout
- Worker camps (at ITD Camp Site)

4.4.4.2 Scope of Construction

(a) Onshore Structure of Small Port

The construction of storage yards will consist of the following activities; (i) foundation works including piling; (ii) construction of reinforced concrete floors; and (iii) construction of drainage facilities and support utilities such as lighting.

(b) Construction of the project coastal road

The construction of the project coastal road will essentially be civil works, involving clearing the road alignment corridor, grading, compacting, sub-base construction, surfacing, and construction of drainage systems and stream crossing along the road.

4.4.4.3 Construction Materials

Basic construction materials such as sand and aggregate will be sourced from quarries near DSEZ and from the dredged materials, if suitable. Cement, steel and other materials will be procured from sources in Thailand or Myanmar whichever will be more cost-effective. Large stones for construction of the breakwater will be sourced from a local quarry.

4.4.4.4 Manpower

The project construction for small port (both onshore and offshore facilities) and the project coastal road is expected to require 273 man powers which 60% is local manpower whereas 40% is foreign man power (see ***Table 4.4-4***).

TABLE 4.4-4

ESTIMATED NUMBER OF WORKERS REQUIRED FOR PROJECT CONSTRUCTION

Item	Description	QTY	Unit
1	Project Manager	1	ps
2	Project Engineer	1	ps
3	Engineer	7	ps
4	Accountant	1	ps
5	Surveyor	26	ps
6	Store	10	ps
7	Office	12	ps
8	Earth Worker	35	ps
9	Operator	26	ps
10	Mechanic, Electrical and Oiler	19	ps
11	Driver	26	ps
12	Welder	12	ps
13	General Worker	45	ps
14	Asphaltic Worker	12	ps
15	Marine Worker	35	ps
16	Safety	5	ps
	TOTAL	**273**	

Source: ITD, 2015

4.4.4.5 Construction Equipment

Various types of heavy equipment, land based and floating, will be used in the construction. Typical land based equipment will be tipping trucks, bulldozer, pile driver hydraulic excavators, and crawler crane. Typical floating equipment for offshore works will be hopper barges and floating cranes. ***Table 4.4-5*** described types and number of equipments will be used during construction phase.

TABLE 4.4-5

LIST OF EQUIPMENT AND VEHICLE FOR CONSTRUCTION PHASE

No.	Name of machinery and equipment	Model No.	HS Code	Status (New or Used)	Quantity
1	**PORT CONSTRUCTION NO.1 & NO.2**				
1.1	**DREDGING & RECLAMATION**				
1.2	**PILING BARGE**				
1.3	**BREAKWATER**				
1.3.1	**LAND EQUIPMENT**				
	Hydraulic Excavator	HITASHI EX 800 (3.5 M3)		Used	2
	Hydraulic Excavator	HITASHI ZX 850-3 LONG BOOM		Used	2
	Wheel Loader	VOLVO L150 G		Used	2
	Bull Dozer	CAT D8L		Used	2
	Crawler Crane 120 - 150 TONS	KOBELCO OR HITACHI		Used	2
	Dump Truck, 10 W	ISUZU OR HINO		Used	8
	Water Tank Truck, 10 W (12,000 LTS)	ISUZU OR HINO		Used	1
	Mechanic & Oiler Truck,6W (6,000 LTS)	ISUZU OR HINO		Used	1
	Passenger Truck, 6 W	ISUZU OR HINO		Used	2
	Pick - Up, 4WD	ISUZU OR TOYOTA		Used	4
	Generator,125 KVA	TG 315 M		Used	2
1.3.2	**MARINE EQUIPMENT**				
	Loading (Rock) Barge	1,500 - 3,000 Tons		Used	2
	Loading (Working) Barge	800 - 1,000 Tons		Used	2
	Tug Boat	800 - 1,000 HP		Used	1
	Survey Boat	150 - 200 HP		Used	1
	Service Boat	200 - 300 HP		Used	1
2	**COASTAL ROAD**				
2.1	**LAND EQUIPMENT**				
	Hydraulic Excavator	PC 200 OR VOLVO E 210		Used	4
	Bull Dozer	CAT D6H		Used	2
	Motot Grader	G 960		Used	1
	Wheel Loader	VOLVO L 150 G		Used	1
	Vibrating Compactor	SD 100 (10 TONS)		Used	2
	Dump Truck, 10 W	ISUZU OR HINO		Used	12
	Water Tank Truck, 10 W (12,000 LTS)	ISUZU OR HINO		Used	1
	Passenger Truck, 6 W	ISUZU OR HINO		Used	2
	Pick - Up, 4 WD	ISUZU OR TOYOTA		Used	3
	Generator, 50 KVA	P 60		Used	2
3	**STORAGE YARD**				
	Hydraulic Excavator	PC 200 OR VOLVO E 210		Used	2
	Bull Dozer	CAT D6H		Used	1
	Wheel Loader	VOLVO L 150 G		Used	1
	Motor Grader	G 960		Used	1
	Vibrating Compactor	SD 100 (10 TONS)		Used	1
	Dump Truck, 10 W	ISUZU OR HINO		Used	6
	Passenger Truck,6 W	ISUZU OR HINO		Used	1
	Pick - Up, 4 WD	ISUZU OR TOYOTA		Used	2
	Generator, 50 KVA	P 60		Used	1

Source: ITD, 2015

4.4.4.6 Contractual Arrangements

The project construction will be carried out by a single engineering, procurement, and construction (EPC) contract. The EPC contractor may nominate subcontractors for individual project components.

4.4.4.7 Construction Period

As indicated in ***Figure 4.3-1***, the construction period of onshore facilities and the project coastal road would be about 10 months. Including the site preparation period of 4 months, the onshore facilities and project coastal road would be completed in 15 months.

4.4.5 Construction of Offshore Facilities

4.4.5.1 Scope of Construction

The construction of offshore facilities will be mostly civil works including capital dredging, construction of the 1.6 km of breakwater, revetment construction, and jetty platform. The mechanical and electrical works will include installation of the unloading equipment.

(a) Capital Dredging

The construction of small port will necessitate dredging of the sea bed to create the approach channel, ship turning area, and ship berths. The dredging method have 6 steps as show in ***Figure 4.4-3*** with include:

Step 1 => Construction Cofferdam and Bund around storage yard area of Small Port

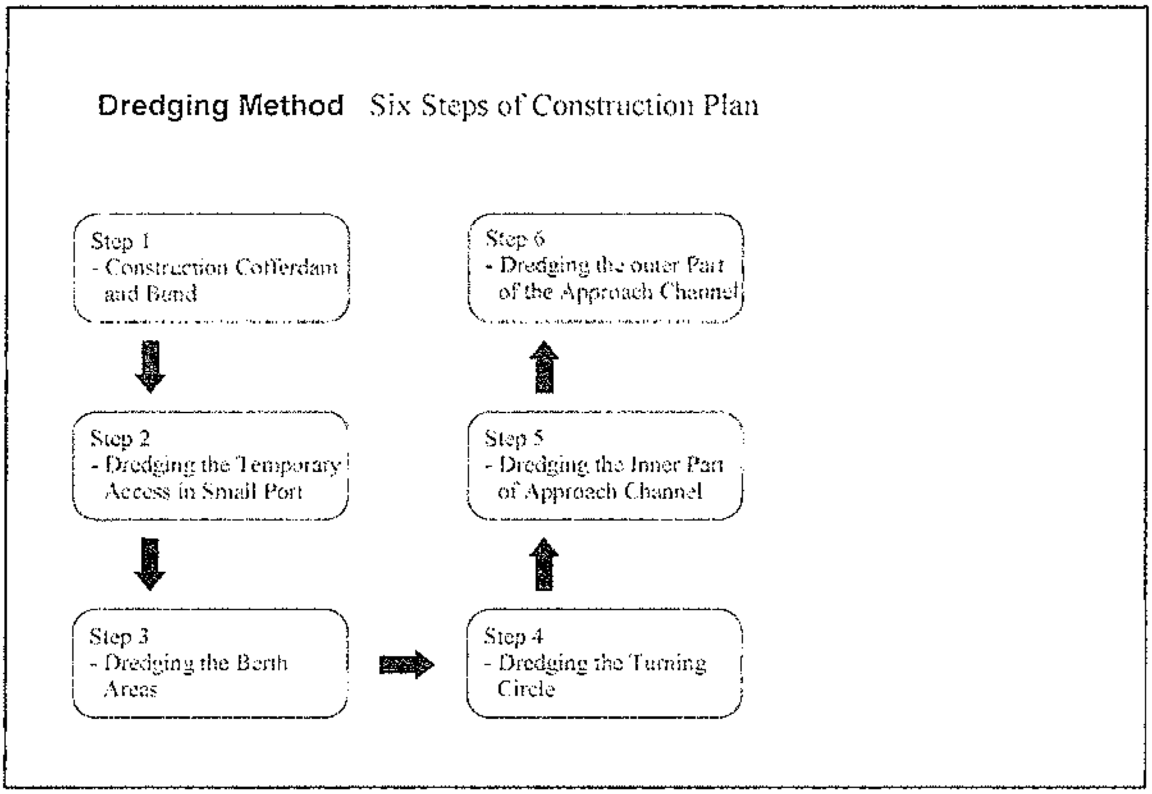
Step 2 => Dredging the Temporary Access in Small Port area

Step 3 => Dredging the Berth Areas

Step 4 => Dredging the Turning Circle

Step 5 => Dredging the Inner Part of Approach Channel

Step 6 => Dredging the outer Part of the Approach Channel



Source : ITD, 2015

FIGURE 4.4-3 : DREDGING STEP FOR THE PROJECT

Main marine equipment for dredging activities include 1 of Hopper Dredger (HD) and 1 of Cutter Suction Dredger (CSD)

The total volume of dredged material approximate 5,200,000 m^3. None of dredged material are not disposed in both offshore and onshore areas. All of 5,200,000 m^3 of dredged material will be used for reclamation of stockyard area and land filling in other DSEZ projects.

(b) Breakwater Construction

One rock breakwater will be constructed-the breakwater about 1.6 km long. The method of construction is briefly described below:

The breakwater have been planned as rubble mound breakwaters. A typical cross-section of such a breakwater is shown in ***Figure 4.4-4***. It consists of a mound of coarse stone, also known as a core, covered or protected by blankets or layers of heavier stones. The construction requires the use of both land-based and floating heavy equipment. Typical land-based equipment used are crawler cranes, hydraulic excavators, bulldozers, and tipper trucks. Floating equipment commonly used is floating crane and hopper barges. Tugboats are used for moving the floating equipment.

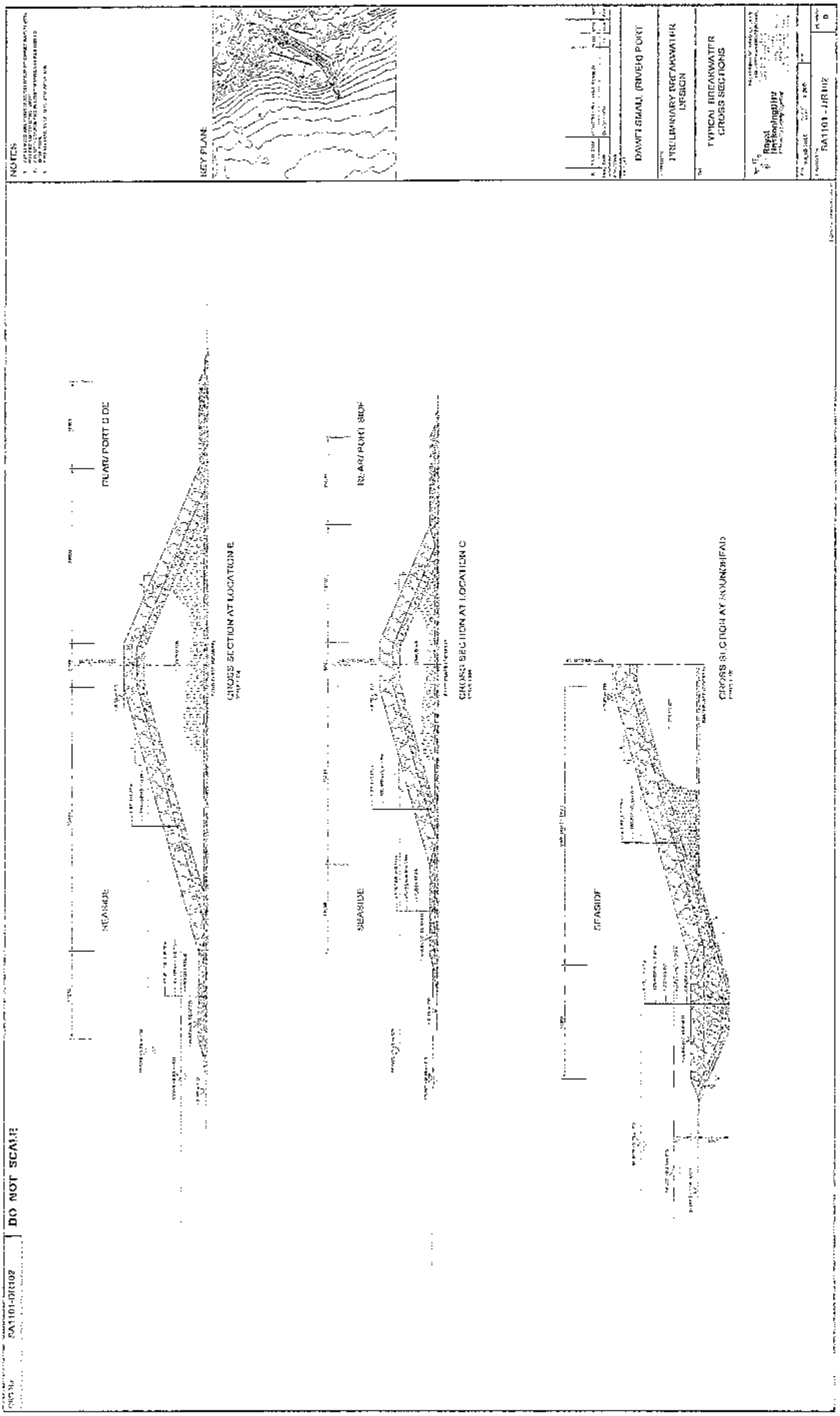


FIGURE 4.4-4 : TYPICAL SECTION OF BREAKWATER

Source : ITD 2016

The core of a breakwater typically consists of stone weighing between 1 kg and 250 kg, without the fine particles (dust and sand) dumped in a heap out into the sea by a dump truck. The core is gradually built up over the entire length of the breakwater using dump trucks and bulldozers to the designed slope, height, and top width.

The core is protected from being washed away by two layers of stone-the underlayer and the armour layer.

The under-layer of stone is to protect the core from being washed away by wave actions. The weight of a single piece of stone to be used varies from 100 kg to 600 kg. The stones are usually laid in a minimum of two layers at a slope which is generally shallower than that of the core; 2/1 on the outer slope and 1.5/1 on the inner slope. The first layer of stone may be placed by a hydraulic excavator or a crane. This task needs to be completed as quickly as possible without leaving too much core rubble exposed to wave action.

The armour layer, as its name implies, is to protect the breakwater against wave attack. The stone sizes, for the cross-section in the shallow water, should be in the range of 1 tonne to 3 tonnes. The stone placement is normally done using a crawler crane or tracked crane. As with the first underlayer, two layers of armour stones are required to complete the main armour layer. The end or head of the breakwater is the most delicate part of the breakwater and requires extra care. The outer slope of 2.5/1 should be increased to 3/1 to improve its stability.

(c) Offshore Structure

The construction of the jetty and ship berths will consist of the following activities: (i) piling; (ii) construction of support foundations; and (iii) construction of reinforced concrete decks and platforms.

4.4.5.2 Construction Materials

Rock for the construction of breakwaters will be sourced from local quarries. The one breakwaters would require approximate 380,000 m^3 of rock of various sizes. The EPC Contractor will prepare a detailed plan for sources of rock supply and methods of transporting the rock from the quarry site to the construction site.

4.4.5.3 Construction Period

As indicated in ***Figure 4.3-1***, the construction period of offshore facilities would be about 10 months. The construction will be carried out in parallel with the capital dredging which will require about 8 months.

4.4.6 Operations and Maintenance of the Small Port and the Project Coastal Road

During the operational phase, operation and maintenance activities will be routine. Major activities for each project component are briefly described below:

(a) Small Port

Port Operation: The Small Port shall basically serve the General Cargo ship in the initial stage and then gradually convert to Container ship in the future, subject to the demand growth. The number of vessel to mooring at small port is approx. 1 vessel/hour.

Following are the list of service/operation we provided to the end user.

1. Cargo operations such as; (note that some services will provide in the future according to the demand)
   - Loading,
   - Discharging /Unloading,
   - Shifting/ Movement,
   - Storage,
   - Stevedoring,
   - Stow, Restow,
   - Stuffing, Un stuffing,
   - Monitoring of refrigerated containers,
   - Cleaning container,
   - Fitting and removing of tarpaulins,
   - Shipping documents processing
2. Ship operation such as:
   - Pilotage service,
   - Berthing service,
   - Provision of tug and line boat services
3. Provide (with fees applicable) the buildings, facilities and equipment within the terminal area/ port limit.

Maintenance Dredging: Maintenance dredging of the approach channel would need to be carried out one time per two years depending on the rate of sedimentation and monsoon. The frequency and the extent of maintenance dredging will be determined by the design engineers.

Beach Erosion Rehabilitation: The wave breaker could create beach erosion on one side and beach accretion on the other side. Sand from the accretion side will be removed to fill up the eroded beach.

Port Waste Management: Wastes from ships will need to be collected and treated in facilities to be provided before disposal at the selected sites.

(b) The Project Coastal Road

Conditions of the project coastal road will be routinely examined and repair and maintenance will be carried out to ensure good conditions of the traffic surface and road safety.

The annual maintenance period of coastal road is approximate 1 time per year.

(c) Organization and Manpower

The Project Proponent will set up an organization for operations and maintenance of all the project components. Total staff approximate 20 persons consist of port administration, technical section (approx. 50%), and local employee (approx. 50%) in the terminal such as container dry bulk, cargo, etc.

4.4.7 Decommissioning of the Small Port and the Project Coastal Road

None of decommission phase because if concessionaire decide to stay until end of concession period (50 years plus 25 years extension) then concessionaire has transfer assets to be authority.

4.5 PROJECT ALTERNATIVES

There are two alternative sites for the small port.

Alternative Site 1: The proposed small port will be located inside the estuary reach of Pan Din In River, about 1 km from Alternative Site 2. Alternative Site 1 is shown in ***Figure 4.5-1.***

Alternative Site 2: This site is in the coastal water outside the Pan Din In River estuary. Alternative Site 2 is shown in ***Figure 4.5-2.***

The two alternative sites for small port are compared based on consideration of potential impacts of the two alternative sites on the following:

1) Marine Ecology
2) Navigation
3) Coastal water quality

FIGURE 4.5-1 : PROPOSED ALTERNATIVE 1 OF SMALL PORT

FIGURE 4.5-2 : PROPOSED ALTERNATIVE 2 OF SMALL PORT

4.6 COMPARISON AND SELECTION OF PROJECT ALTERNATIVES

Potential impacts of Alternative Site 1 relative to Alternative 2 will be as follows:

(1) Marine Ecology

The construction on Alternative Site 1 will disturb marine ecology in case of dredging activities. Alternative 2 will disturb and damaged marine ecology in case of dredging and underwater blasting activities due to geology condition at Alternative 2 is rock condition.

(2) Navigation

Construction activities on Alternative Site 1 may obstruct navigation of fishing boats from Sakhanthit and Pan Din In Villages during dredging activities and breakwater construction. However, Alternative 2 may also obstruct navigation of fishing boats during dredging activities, breakwater construction and underwater blasting. Based on interviewing some villagers in these two villages in the socio-economic surveys, about 200 fishing boats would daily navigate in and out of the Pan Din In River to Sakhanthit beach for unloading fish catches and purchasing ice for fish preservation.

(3) Coastal Water Quality

The rock blasting and dredging activities at Alternative Site 2 would have more impacts on water quality than at Alternative Site 1 due to alternative 1 only dredging activities cause of coastal water contamination.

Table 4.6-1 shows the comparison of the two alternative sites with scoring results. Based on the scores, Alternative Site 1 is the most preferred alternative.

TABLE 4.6-1

COMPARISON OF TWO ALTERNATIVE SITES FOR SMALL PORT

Topic	Alternative 1	Score	Alternative 2	Score
Marine Ecology	Disturb marine ecology in case of dredging activities	1	Disturb and damaged marine ecology in case of dredging and underwater blasting activities	0
Navigation	Obstruct navigation of fishing boats during dredging activities and breakwater construction	1	Obstruct navigation of fishing boats during dredging activities, breakwater construction and underwater blasting	0
Coastal Water Quality	Contamination due to rock blasting and dredging activities	1	Contamination only dredging activities	0
Total Score	3		0	
Rank	1		2	

Remark : 0 = Worst, 1 = Medium, 2 = Good

CHAPTER 5

DESCRIPTION OF THE ENVIRONMENT

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DESCRIPTION OF THE ENVIRONMENT

5.1 SETTING THE STUDY LIMITS

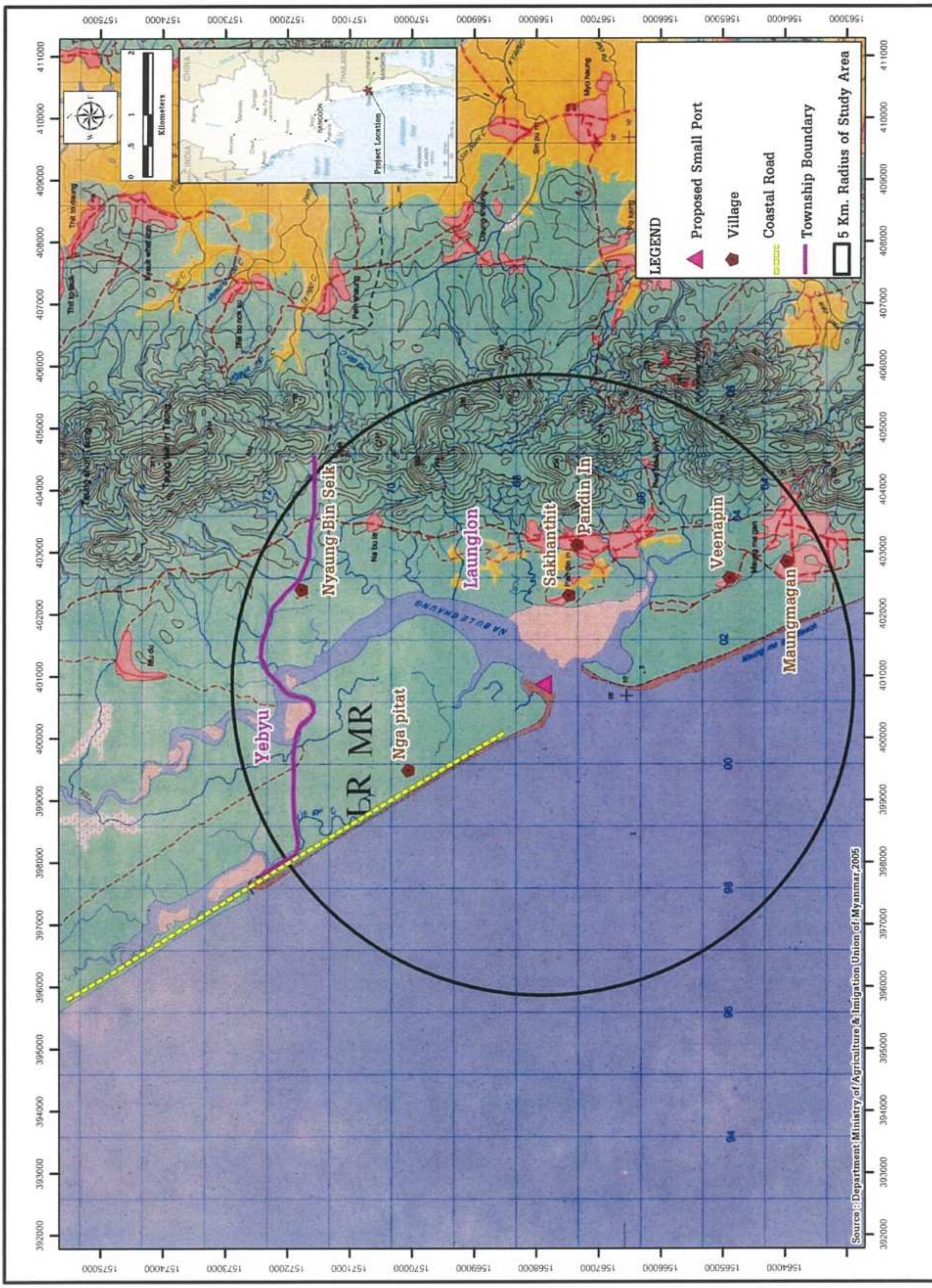
In the ESIA study, it is necessary to establish baseline information on the environmental and socio-economic settings of an area which could receive directly and indirectly impacts from the Project construction and operation. The baseline information serves two purposes. Firstly, it is used, in conjunction 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***. This area is referred to in subsequent sections of this Report as "the study area". Information on some environmental components are available at the regional level, such as meteorological conditions.

As the project site is on the coastal area, the study area covers coastal waters and land 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. Similarly, the study of environmental impacts of the proposed 8.3-km project coastal road will need to cover at least 200 m from both sides of the right of way of the proposed road.



10P3153/Tanawit.P/09-09-58/Village-Mxd

FIGURE 5.1-1: THE STUDY 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
- Fishery

(3) Socio-economic Components
- Social Profile
- 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(cultural aspect)
- Key Institutions and Organizations

(5) Visual Components

- Scenic Areas and Locations
- Landscape

TABLE 5.1-1

SCOPE OF THE STUDY AND SOURCES OF DATA COLLECTION USED IN THE PROJECT STUDY

Environmental Conditions	Activities and Methodology
Physical Components	
Meteorological Conditions	- Literature review on meteorological record from Dawei meteorological monitoring stations, from the Meteorological and Hydrological Department, Myanmar - Collect meteorological record from ITD Camp Site that locate near project site. - Conducted wind speed and wind direction at 2 sampling stations continuously, 3 days/station during 18-21 October 2014 for wet season and during 25-28 January 2015 for dry season. The sampling and analysis methods are following those recommended by U.S.EPA.
Topography	- Literature review on topography of Dawei, from relevant documents and information that provided by SEATEC - Collecting the secondary data from topography map scale 1:250,000, provided by Army Crops of Engineers, US Army (2011) and Google Earth Map
Geology	- Literature review on geology, and seismology of Myanmar and Dawei from related documents
Earthquake	- Collecting the secondary data of seismology of Myanmar and Dawei from related documents
Soil	- Collecting secondary data from present land use map, diagram of proposed land use and any maps, scale of 1:50,000 or 1:250,000 from related agency such as US. Army
Oceanographic Condition	- Collecting secondary data from the U.S. National Oceanographic and Atmosphere Administration (NOAA) and Ocean Weather, Inc. (OWI) - Conducted coastal condition surveys by Halcrow-Aurecon during the period of 12 August – 2 September 2011

TABLE 5.1-1

SCOPE OF THE STUDY AND SOURCES OF DATA COLLECTION USED IN THE PROJECT STUDY (CONT'D)

Environmental Conditions	Activities and Methodology
Air Quality	- Conducted air quality measurement at 2 sampling stations continuously, 3 days/station during 18-21 October 2014 for wet season and during 25-28 January 2015 for dry season. The sampling and analysis methods are following those recommended by U.S.EPA.
Noise/Vibration	- Conducted noise and vibration measurement at 2 sampling station same as air quality stations continuously, 3 days/station during 18-21 October 2014 for wet season and during 25-28 January 2015 for dry season. The sampling and analysis methods for noise level are following those recommended by ISO 1996 and IEC 61672. The sampling and analysis methods for vibration are following those recommended by DIN4150.
Groundwater	- Conducted field survey on groundwater quality at 2 stations nearby the project area, during 18 October 2014 for wet season and 23 January 2015 for dry season. The sampling and analysis methods are following those recommended by American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WEF).
Coastal Water	- Conducted field survey on coastal water quality at 4 sampling stations around project area during 19 October 2014 for wet season and 22 January 2015 for dry season. The sampling and analysis methods are following those recommended by American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WEF).
Sediment	- Conducted sediment samplings at 4 stations same as for coastal water quality on 19 October 2014 for wet season and 22 January 2015 for dry season.
Biological Components	
Marine Ecology	- Review secondary data from relevant documents and information on marine ecology - Conducted the field survey on marine ecology at four stations same as for coastal water quality on 19 October 2014 for wet season and 22 January 2015 for dry season. - Review secondary data on coral reef from site survey report by ITD, July 2012 and site observation at 4 stations same as for coastal water quality - Review secondary data from relevant documents and information and interview with villager along coastal line about sea turtle nesting area.

TABLE 5.1-1

SCOPE OF THE STUDY AND SOURCES OF DATA COLLECTION USED IN THE PROJECT STUDY (CONT'D)

Environmental Conditions	Activities and Methodology
Fisheries	- Interview with villagers at Nga Pitat, Sakhanthit, Nyaung Binsiek, Pan Din In, and Muangmagan. - Collect the types of fish in the market
Terrestrial Ecology	- Conducted the field survey on terrestrial ecology at 20 plots within the small port and 17 plots within coastal road during 18-21 October 2014 for wet season and 24-26 January 2015 for dry season. These plots were represented the areas of natural reserve, forestry area, mangrove forests and land use occupied by rice paddy fields, rubber plantation, etc.
	- Field observation and record the data on 5 km radius of study area during 18-21 October 2014 for wet season and 24-26 January 2015 for dry season.
Socio-Economic Components	
Socio economic	- Collecting secondary data from the Loung Lone Township Administrations and Dawei District Office.
	- Interview and collect information with affected villages include Nga Pitat, Sakhanthit, Nyaung Binsiek, Pan Din In, Veenapin and Muangmagan on January-February 2015.
Land use	- Field observation and record type and area of land use in study area during 24-26 January 2015
Public health	- Conducted field survey and data collection on the health condition at the Dawei Port Project area in January, 2015.
Transportation/Navigation	- Recorded navigation and traffic volume at the existing small port during 23-24 January 2015 - Recorded traffic volume at the Nga Pitat during 25-26 January 2015
Water supply	- Conducted field observation within project area and vicinities in order to identify the existing water supply
Infrastructure	- Collecting secondary data on the infrastructure information and also conducted the field observations at the project area
Cultural Components	
Cultural heritage	- Field observation and record locations of cultural heritage, during site visit
Visual Components	- Collecting secondary data from website of the Ministry of Hotel and Tourism of Myanmar - Interviewed with merchant at Muangmagan beach about tourist information on 3 February 2015 - Field observation on the condition of surrounding area around project site during January-February 2015

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***). A brief regional profile is presented below:

Capital	Dawei
Number of districts	3
Number of townships	10
Number of wards	83
Number of village tracts	264
Number of villages	1,250
Total population (Est.2012)	1,713,447
Area	43,328 km^2
	There are many islands off the coast, the large Mergui Archipelago in the southern and central coastal areas and the smaller Moscos Islands off the northern shores
Borders	
• North:	Mon State
• East	Thailand
• West	Andaman Sea
• South	Ranong Province, Thailand
Latitude	14° 5' 2.98"N
Longitude	98° 12' E 5.67"E
Ethnicities	Bamar, Rakhine, Mon, Shan, Karen, Salone, Malay (Bashu)
Main economic activities	Fishing, forestry, mining, agriculture

Source : Tanintharyi Region Profile, updated June 2014, UNHCR, South-East Myanmar Information Management Unit (*data.unhcr.org/thailand/download.php?id=221*)

The districts and townships of the Region are shown in ***Figure 5.2-1***. The Region is sparsely populated as indicated by its overall population density of 39.6 persons/km^2.

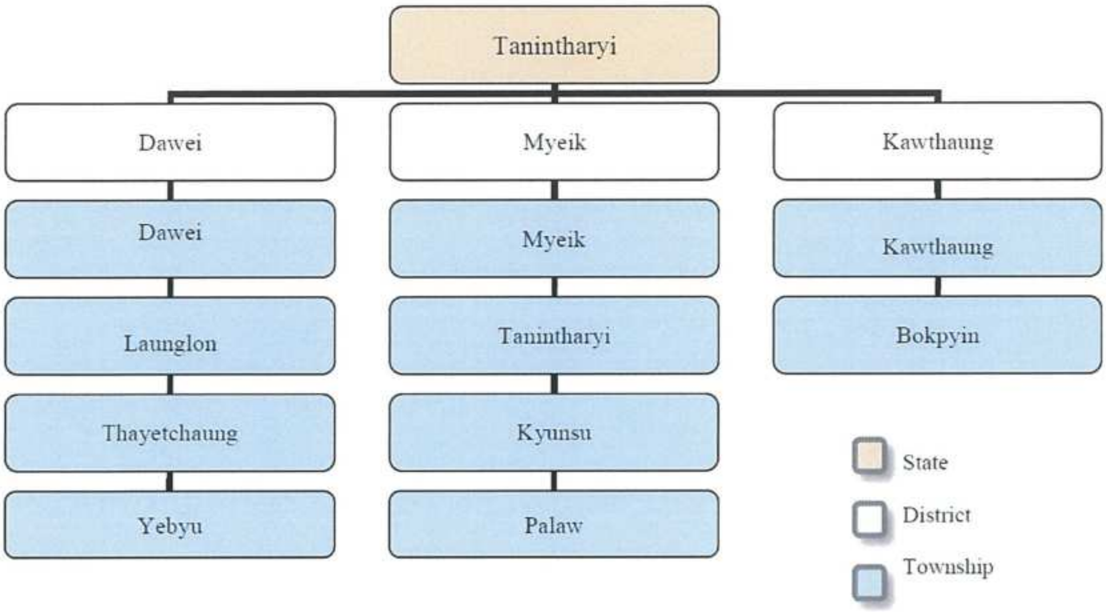


FIGURE 5.2-1 : DISTRICTS AND TOWNSHIPS OF TANINTHARYI REGION

The DSEZ is in Dawei District which has four townships. The total population of Dawei District[1] was estimated at 492,277 in 2014, consisting of 146,271 in Dawei Township, 118,301 in Launglon Township, 105,599 in Thayetchaung Township, and 122,106 in Yebyu Township.

On most social development indicators, Tanintharyi Region fares comparably to the national average, but access to basic services in remote islands is noted as a concern. Although the Region has significant reserves of natural resources (mainly natural gas and metals), poverty incidence (at 33 percent) is higher than the national average (26 per cent).

B. The Study Area

The study area as defined in **Section 5.1** has a total area of about 19,407.09 acres, of which about 9,289.13 acres is the seawater area, and the remaining 10,117.96 acres covers six villages in one townships; namely Launglon (6 villages) as shown in ***Figure 5.1-1***. ***Table 5.2-1*** 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: www.citypopulation.de/php/myanmar-admin.php?adm1id=0601

TABLE 5.2-1

VILLAGES IN THE STUDY AREA

Township	Village	Approx. Distance from the Project Site (km)
Launglon	Nga Pitat	2.64
	Nyaung Bin Seik	4.18
	Sakhanthit	1.51
	Pan Din In	2.30
	Veenapin	3.44
	Muangmagan	4.38
Total 1 townships	6 villages	

5.2.2 Meteorological Conditions

(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 ITD Meteorological Station in DSEZ for 2013 and 2014. The data include temperature, air pressure, relative humidity, and wind speeds and directions.

The monthly data from the two sources are shown in ***Table 5.2-2***, and ***Table 5.2-3***, 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***. 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

AVERAGE MONTHLY RAINFALL DATA 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 5.2-3
METEOROLOGICAL DATA AT ITD STATION 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 Degree (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 Speed (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

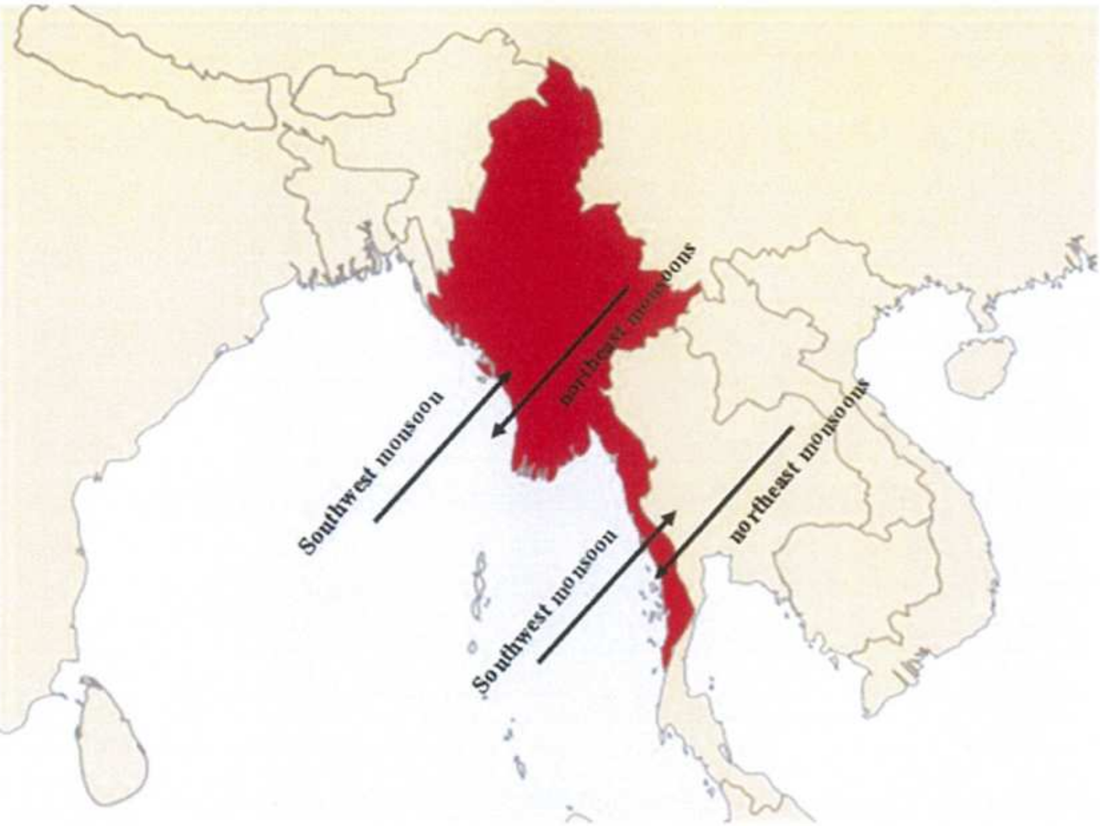


FIGURE 5.2-2 : MONSOON WIND DIRECTION PASSING THROUGH MYANMAR

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 speed and wind direction were conducted during 18-21 October 2014, in the wet season. The existing wind speed and wind direction was measured at the 2 sampling stations in Nga Pitat and Sakhanthit villages as they are the nearest and downwind communities. Their coordinated locations are:

1) Station 1: Nga Pitat Village (399344 E, 1569815 N)

2) Station 2: Sakhanthit Village (402275 E, 1567348 N)

Photo 5.2-1 shown the example of instrument for measuring wind speed and wind direction during wet season.

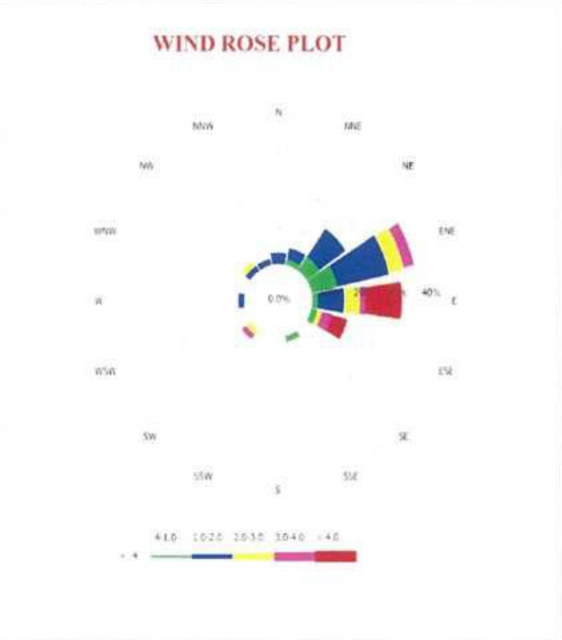
Station 1 : Nga Pitat Village	
Station 2: Sakhanthit Village	

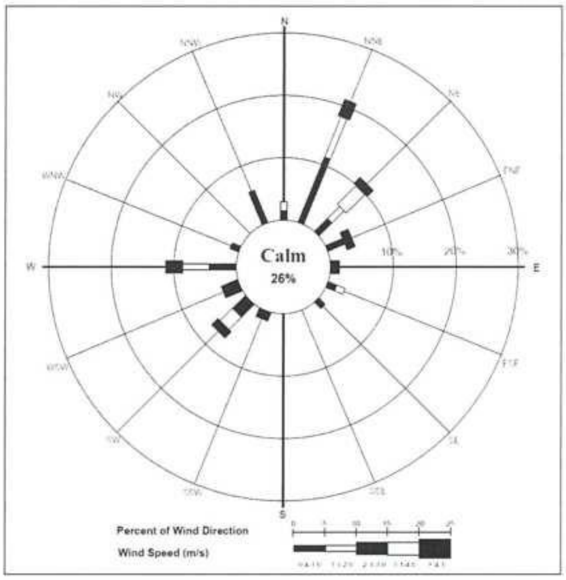
PHOTO 5.2-1 : EXAMPLE OF INSTRUMENT FOR MEASURING WIND SPEED AND WIND DIRECTION DURING WET SEASON

The condition of air quality at these two stations, measured during 18-21 October 2014 can be described as follows:

Station 1: The major wind direction at this station is East-Northeast (ENE) (***Figure 5.2-3***). The range of wind speed is between 0.5-5.5 m/s. (***Table 5.2-4***).

Station 2: The major wind direction at this station is North-Northeast (NNE) (***Figure 5.2-3***).The range of wind speed is between <0.4-5.4 m/s. (***Table 5.2-4***).





WIND DIRECTION AT THE NGA PITAT VILLAGE (STATION 1) DURING WET SEASON	WIND DIRECTION AT THE SAKHANTHIT VILLAGE (STATION 2) DURING WET SEASON

FIGURE 5.2-3 : RESULT OF WIND DIRECTION DURING WET SEASON

TABLE 5.2-4

RESULTS OF THE WIND SPEED AND WIND DIRECTION DURING WET SEASON

Measured Station	Wind Speed (m/s)	Major Wind Direction
ST1: Nga Pitat Village	0.5-5.5	ENE (East-Northeast)
ST2: Sakhanthit Village	<0.4-5.4	NNE (North-Northeast)

The wind speed and wind direction were conducted during 21-24 January 2015 for Nga Pitat village and 25-28 January 2015 in Sakhanthit village, in the dry season. In addition, the existing small port were measure on the wind speed and wind direction to check the existing condition of project site. The wind speed and wind direction in existing small port were conducted same period for Sakhanthit village (25-28 January 2015).

Photo 5.2-2 shown the example of instrument for measuring wind speed and wind direction during dry season. Their coordinated locations for existing small port are:

1) Station 3: Existing Small Port (400846 E, 1567838 N)

The condition of air quality at these three stations, measured on January 2015 can be described as follows:

Station 1: The major wind direction at this station is Northeast (NE) (***Figure 5.2-4***). The range of wind speed is between 0.8-4.5 m/s. (***Table 5.2-5***).

Station 2: The major wind direction at this station is calm (***Figure 5.2-4***). The range of wind speed is between <0.4-4.0 m/s. (***Table 5.2-5***).

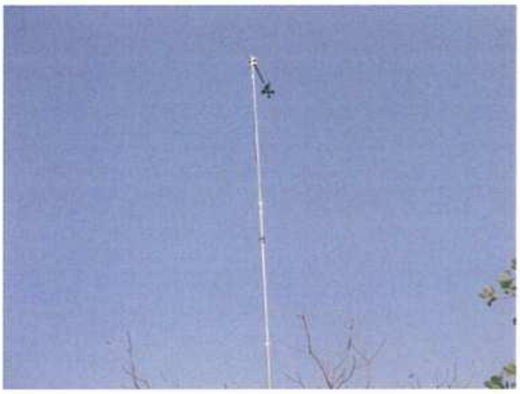
Station 3: The major wind direction at this station is North-Northeast (NNE) (***Figure 5.2-4***). The range of wind speed is between 0.5-5.4 m/s. (***Table 5.2-5***).

TABLE 5.2-5

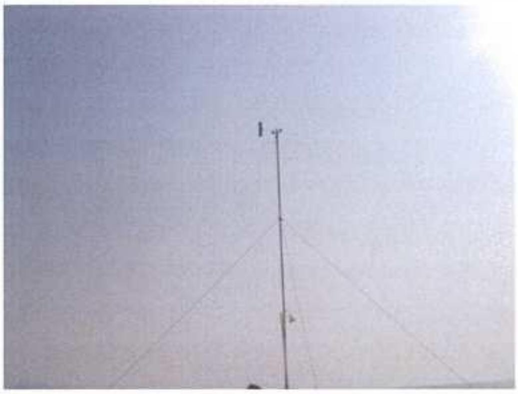
RESULTS OF THE WIND SPEED AND WIND DIRECTION DURING DRY SEASON

Measured Station	Wind Speed (m/s)	Major Wind Direction
ST1: Nga Pitat Village	0.8-4.5	NE (Northeast)
ST2: Sakhanthit Village	<0.4-4.0	Calm
ST3: Existing Small Port	0.5-5.4	NNE (North-Northeast)

Station 1 : Nga Pitat Village

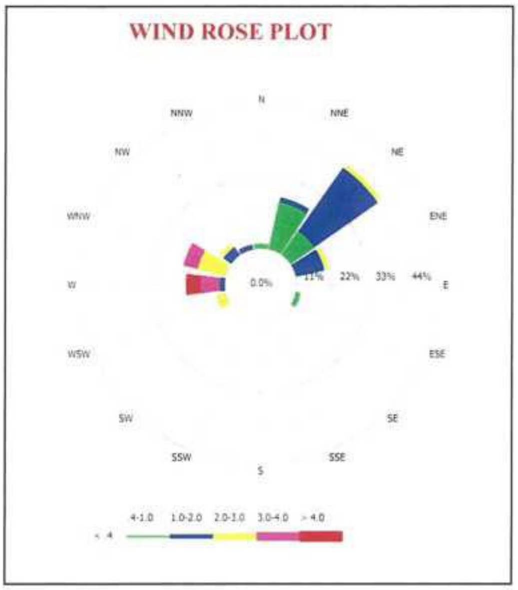


Station 2: Sakhanthit Village

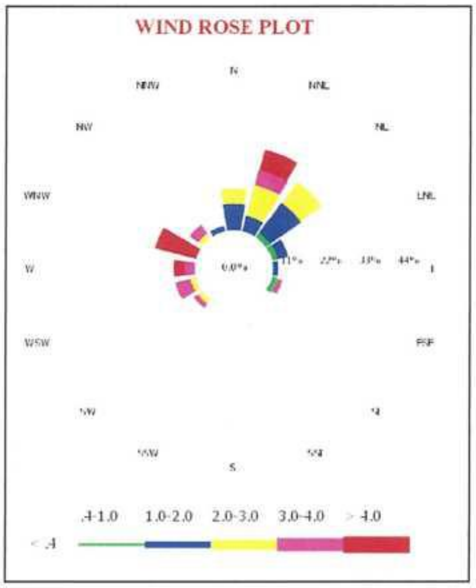


Station 3: Existing Small Port

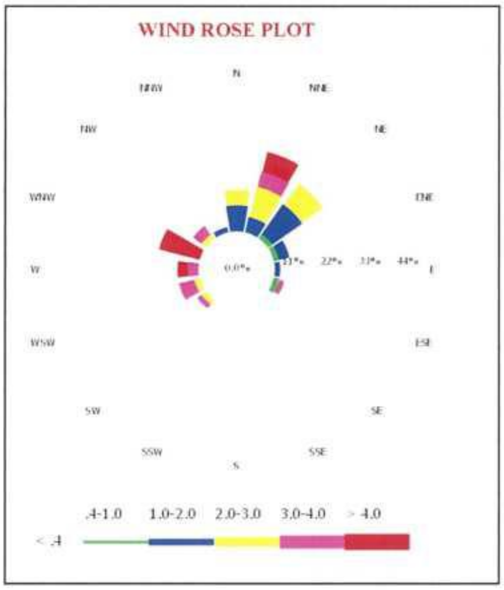
PHOTO 5.2-2 : EXAMPLE OF INSTRUMENT FOR MEASURING WIND SPEED AND WIND DIRECTION DURING DRY SEASON



WIND DIRECTION AT THE NAG PITAT VILLAGE (STATION 1)



WIND DIRECTION AT THE SAKHANTHIT VILLAGE (STATION 2)



WIND DIRECTION AT EXISTING SMALL PORT (STATION 3)

FIGURE 5.2-4 : WIND DIRECTION RESULTS DURING DRY SEASON

5.2.3 Topography

(1) Small Port

In general, the project locate both offshore and onshore area. The small port is located inside Pan Din In Estuary (approx. 400 m. with 4 m depth). The onshore of study area is relatively flat with range of elevation between 1-4 m above mean sea level (+1 - +4 m MSL), whereas, the eastern part is varied with mangrove forest, sand dune, Pan Din In River and mountain ranges (with height ranges of 100-300 m above MSL, extends from the north to south direction).

The western part of study area is surrounded by the Andaman Sea (see ***Figure 5.2-5***). The Pan Din In River, is a major, naturally runs pass through, from the northern part to the south. Its topography can be mainly characterized into 6 categories (***Photo 5.2-3***), 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 sand beach and back swamps, scattering along the coastline, approximately 10 km.

C. River

There is the Pan Din In 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 Pan Din In 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 Pan Din In Basin, where the river periodically overflows (semi-diurnal), as a result of flood plains around the Pan Din In Basin. These plains are appropriate for agricultural activities, such as cashew nut and coconut plantations.

E. Sand Dune

This area locate in Pan Din In Estuary (east and south of proposed project site) and will be found during ebb tide. This area is major on fishing grounding activities such as collect clam, crab, and sand worm.

F. 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.

Sea water Area (Andaman Sea)	**Coastal Zone**
River (Pan Din In River)	**Flood Plain (at Sakhanthit Village)**
Estuary	**Sand Dune**
Back Swamp	**Mountain Range**

PHOTO 5.2-3: LANDFORMS IN THE STUDY AREA

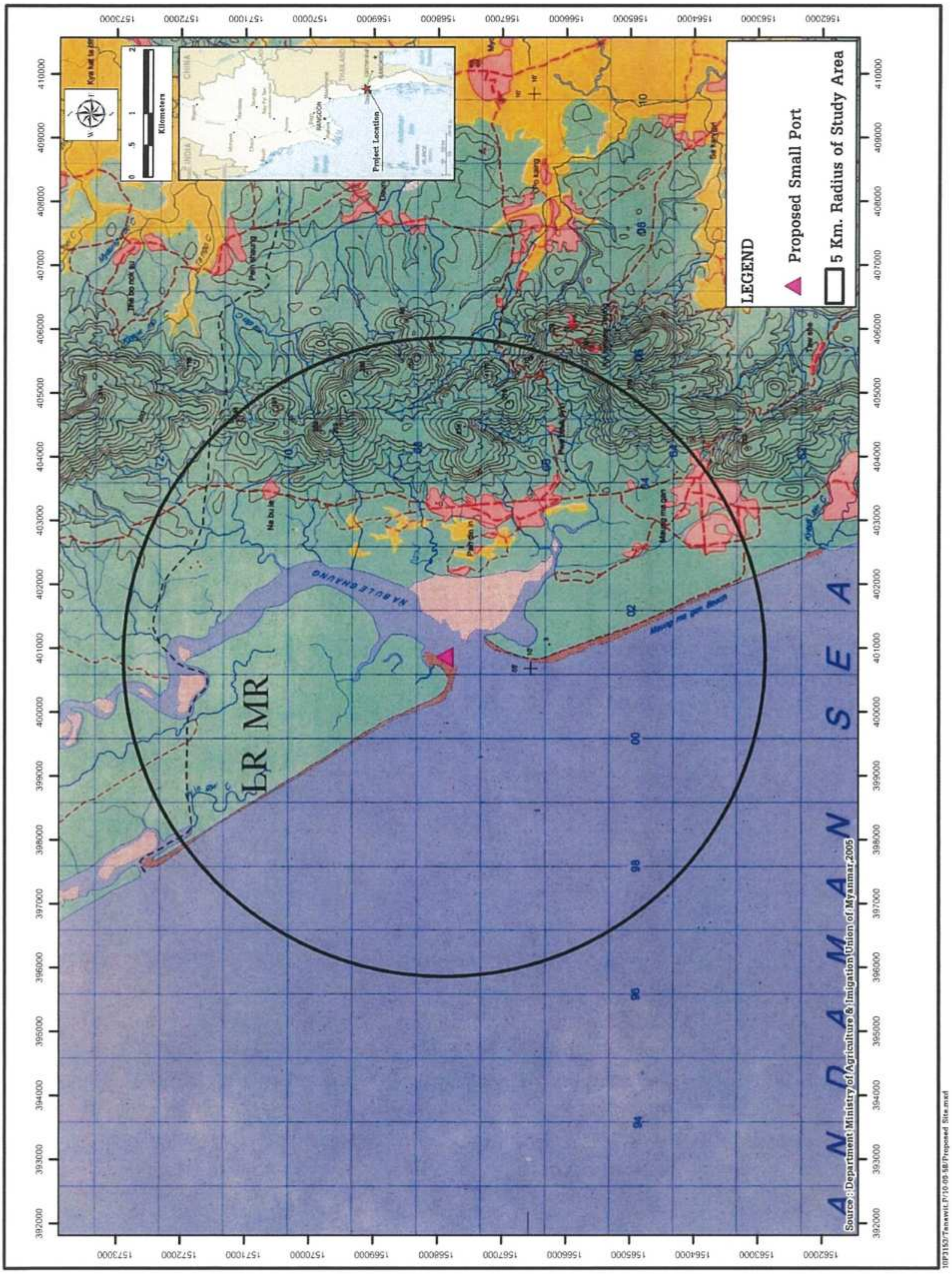


FIGURE 5.2-5 : TOPOGRAPHIC CONDITION OF SMALL PORT AREA

Project Coastal Road Corridor

The proposed coastal road is relatively flat along the coastal area with an range level between 1- 2 m above mean sea level (+1-+2 m MSL). The western part is surrounded by the Andaman Sea and coastal zone. The eastern part is varied with swamp and flat area, and water source (***Figure 5.2-6***). Its topography can be mainly characterized into 4 categories (***Photo 5.2-4***), as follows:

A. Sea Water Area

On the western part of study area, there is the Andaman Sea. The detail are same as described on small port part.

B. Coastal Zone

On the western part of study area, the detail are same as described on small port part.

C. Swamps and Flat Area

Swamps: This area locate in the east from km 8 to km 7 of proposed coastal road. The detail are same as described on small port part.

Flat Area: This area is major found in the east along proposed coastal road. The range of elevation between 2-6 m. above mean sea level (+2 - +6 m MSL). The land use in this area comprise mangrove forest and agricultural activities such as cashew nut and coconut plantations.

D. Water source

The one of water source that locate near the project coastal road is Britney Creek. This water source located between km 3- km 4 on the east of proposed coastal road. In addition, ship from Nga Pitat Village have docked in this area.

Sea water Area (Andaman Sea)

Coastal Zone

Back Swamp

Flat Area

Water Source (Britney Creek)

PHOTO 5.2-4 : LANDFORMS IN THE PROJECT COASTAL ROAD

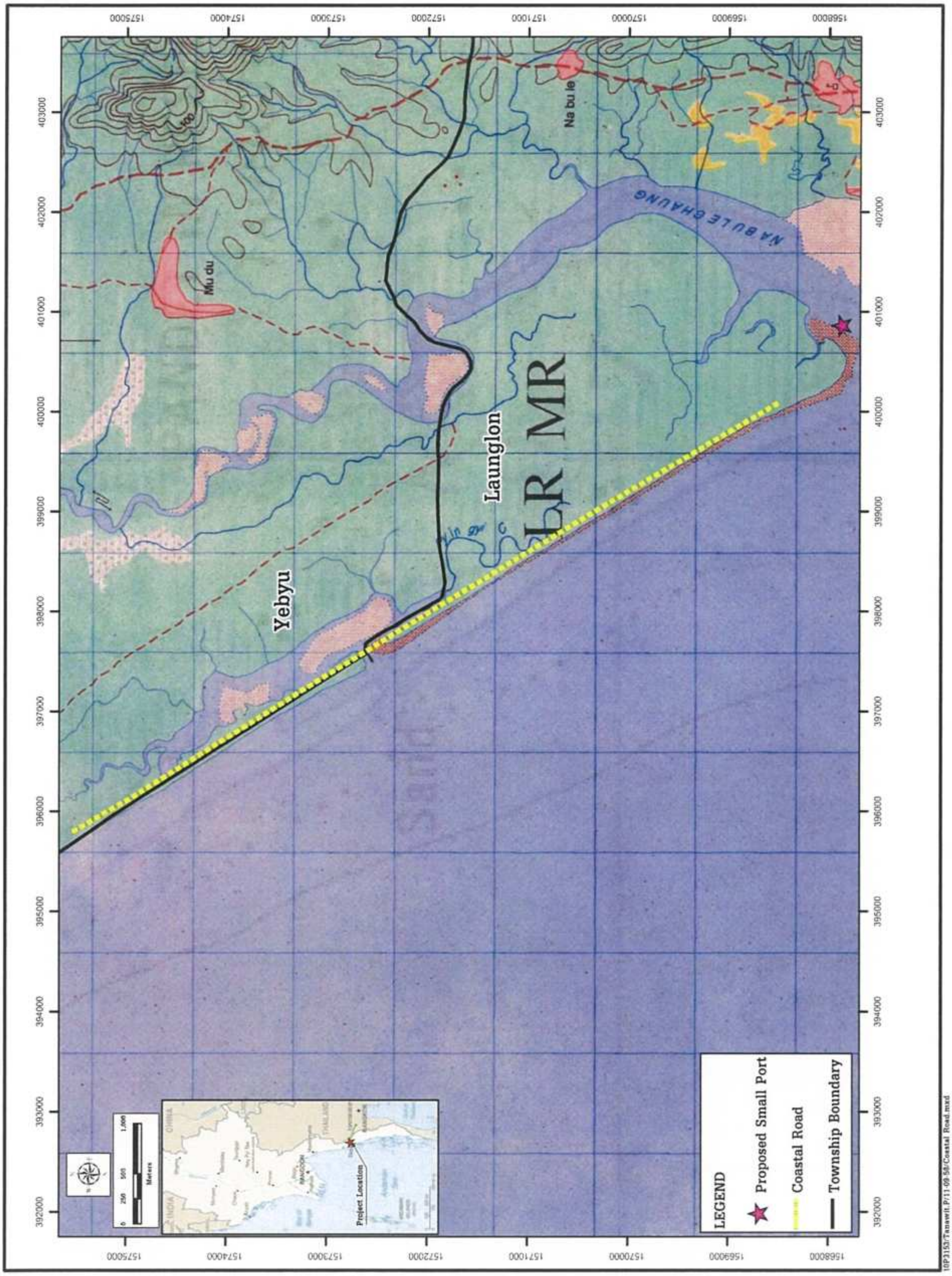


FIGURE 5.2-6: TOPOGRAPHIC CONDITION OF PROJECT COASTAL ROAD

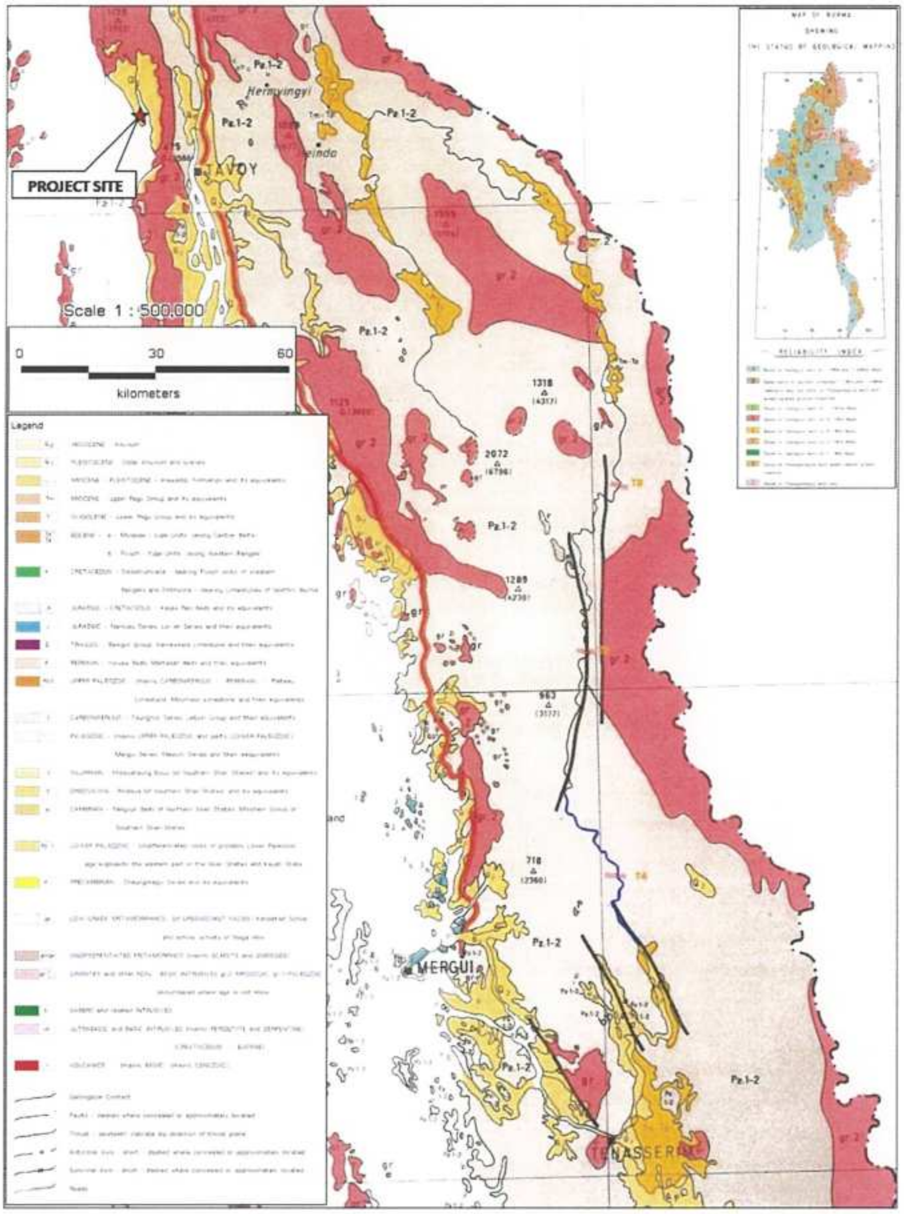
5.2.4 Geology

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 1:1,000,000 by National Stratigraphic Committee for IGCP, 1977) and map of Burma Rock Types (published in 1990 by Army Geospatial Center, US Army Corps of Engineers and US Geological Survey) (***Figure** 5.2-7*). During the Carboniferous Period – Upper Paleozoic Era, it was formed as the basement, composing of thick sequence of folded argillite, greywacke and slate, with lesser amount of limestone, quartzite, agglomerate and conglomerate.

The name Mergui Series was given by T. Oldhem in 1856 to the unfossilliferous strata, composing of crushed shale, agglomerate, limestone and quartzite, which are found widely in the Region. The Mergui Series is pre-Carboniferous in age and underlies the Moulmein limestone. This Mergui series should be equivalent to Kaeng Krachan Group in Thailand and is interpreted to be a turbidite deposit on the continental shelf.

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

The next major rock type is dark grey or almost black "greywacke" which has weathered to an ashy brown color. This rock lacks bedding and is composed of sub angular fragments of fine-grained rock in matrix identical to the argillites.



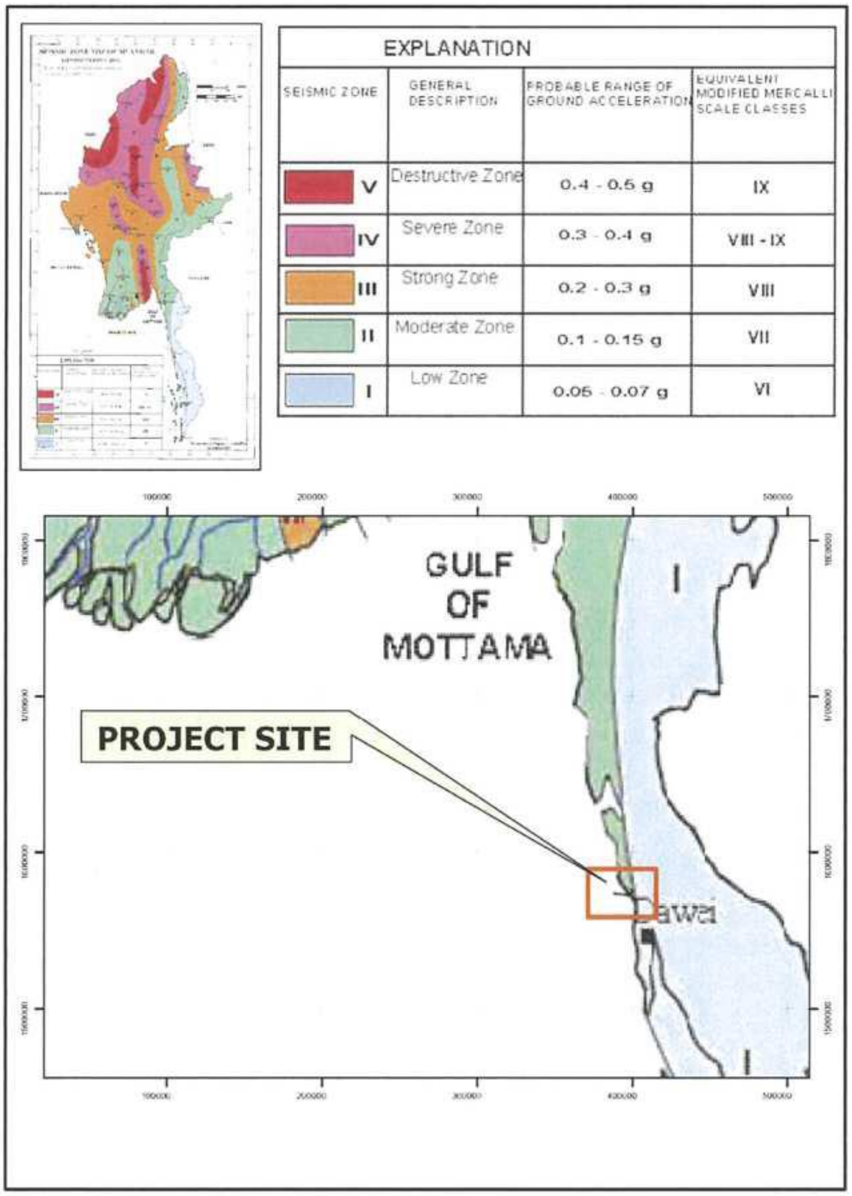
Source : Army Geospatial Center, US Army Corps of Engineers and US Geological Survey (1990)

FIGURE 5.2-7 : GEOLOGICAL MAP OF THE PROPOSED PROJECT AREA

5.2.5 Seismology

The seismic zone map of Myanmar is presented in ***Figure 5.2-8***. The five seismic zones are demarcated and named (from low to high). A probable maximum range of ground acceleration in g values and equivalent Modified Mercalli Scale classes are given for each zone.

The seismic map indicates that Tanintharyi Region is located in the lowest seismic hazard zone in Myanmar. No major earthquakes have been recorded in this Region. The Project site is located in the moderate zone II with a probable maximum range of ground acceleration from 0.1-0.15 g (***Figure 5.2-8***).

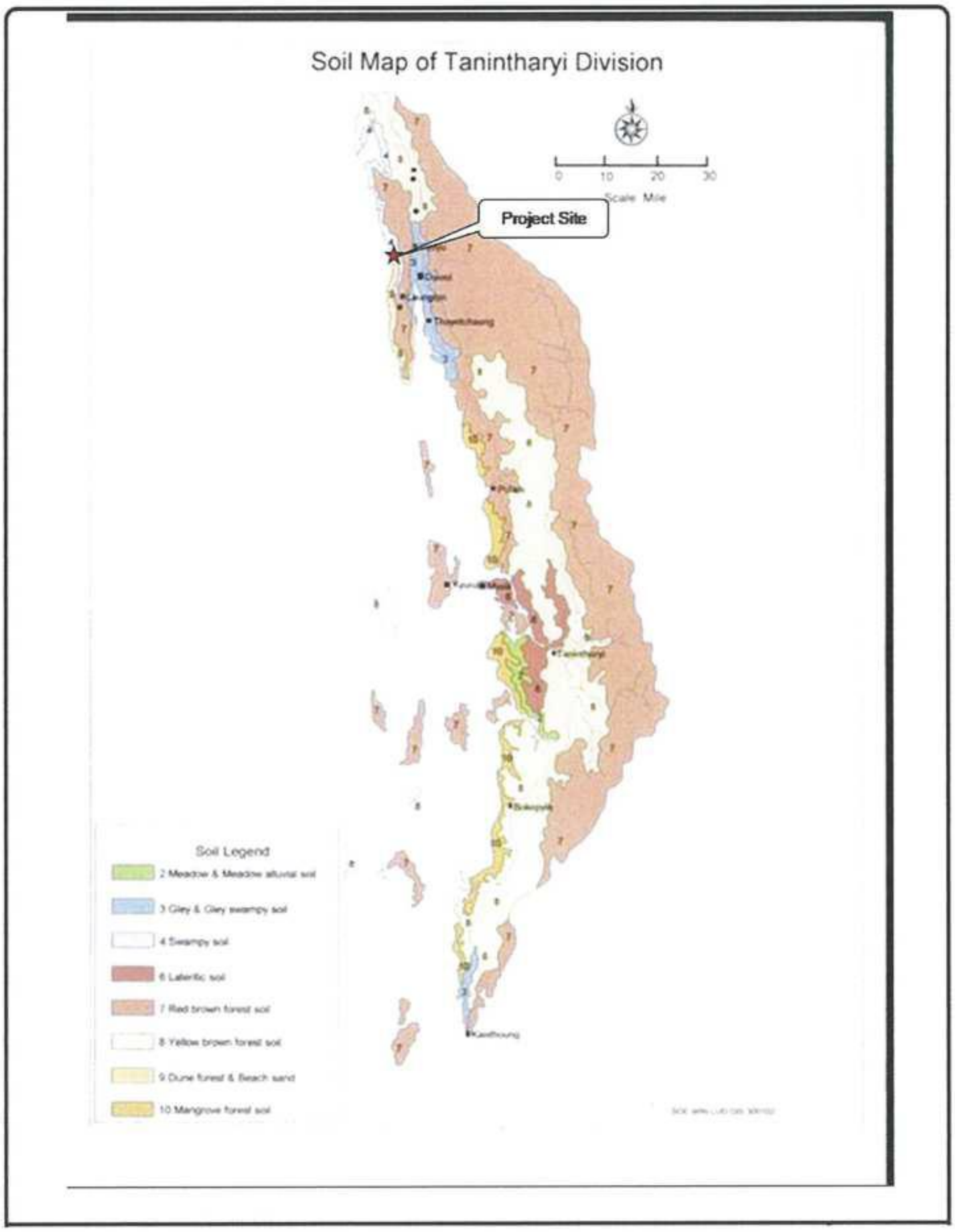


Source : Meteorological and Hydrological Department, Yangon, Myanmar.

FIGURE 5.2-8 : SEISMIC HAZARD MAP OF PROPOSED PROJECT AREA

5.2.6 Soil

According to soil map of Taninthayi Division as shown in ***Figure 5.2-9***, 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 sea water where salinity limits its use for plantation.



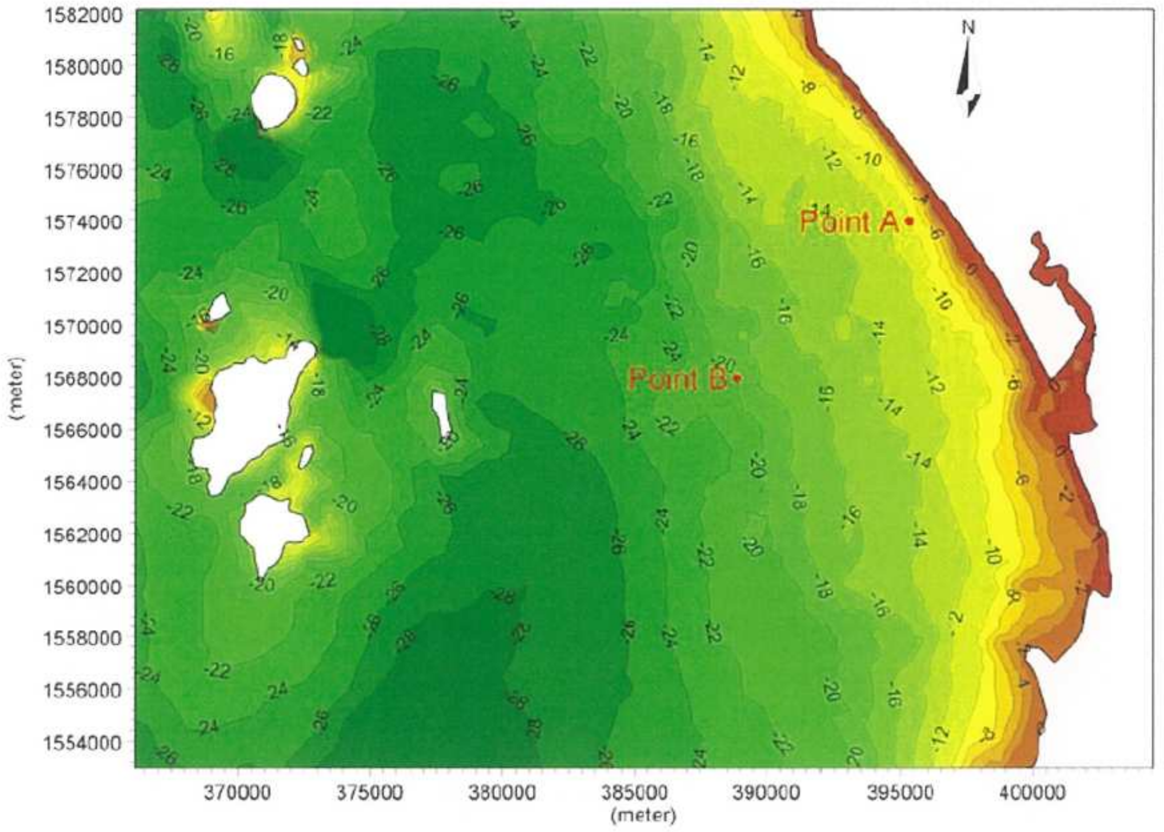
Source : http://www.apipnm.org/swlwpnr/reports/y_ta/z_mm/mmmp222.htm#s06: Access on February 2015

FIGURE 5.2-9 : SOIL MAP OF TANINTHAYI REGION

5.2.7 Oceanographic Conditions

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 5.2-10*** 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.



Source : Halcrow-Aurecon 2011

FIGURE 5.2-10 : LOCATIONS OF DEPLOYED TIDE GAUGES

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

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).

Bathymetry

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.

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. The passages between the islands in general show water depths in excess of 25 m (***Figure 5.2-11***).

FIGURE 5.2-11 : BATHYMETRY OF ANDAMAN SEA NEAR PROPOSED PROJECT SITE

Wave Directions and Current Velocities

In designing the small port, the break waters, and the previous LNG terminal, ITD conducted measurements of wave directions and current velocities at the three designated construction sites from 11 May to 13 June 2014. The results of measurements are summarized as follows:

Parameter	Small Port Site	Break Water Site	Previous LNG Terminal Site
Tidal force			
- average velocity, m/s	0.465	0.533	0.389
- maximum velocity, m/s	1.013	1.52	0.898
- average wave direction	43°	33°	39°
Earth tide			
- average velocity, m/s	0.459	0.590	0.387
- maximum velocity, m/s	0.919	1.503	0.619
- average wave direction, m/s	222°	215°	215°

Source : ITD 2014

Water Levels

Measurements of water levels were carried out by ITD at the existing small port over a 20 month period from January 2013 until September 2014. The monthly data is given in ***Table 5.2-6.*** The data indicate that the water levels did not vary significantly over the months. The maximum water level range varied between 3 to 4 m.

TABLE 5.2-6

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

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 : ITD, 2014

5.2.8 Air Quality

Survey Periods and Stations

Air quality surveys were carried out during the wet season and the dry season at the same stations that the wind data was collected. The wet season surveys covered the period 18-21 October 2014 at Nga Pitat Village and Sakhanthit Village. The dry season surveys covered the period 21-24 January 2015 at Nga Pitat Village, and the period 25-28 January 2015 at Sakhanthit Village and the existing small port. ***Figure 5.2-12*** show the locations of the air quality sampling stations.

Brief information on the three sampling stations are as follows:

Station 1-Nga Pitat Village: The village is located at about 2.45 km to the north of the proposed project site. ***Photo 5.2-5*** shows some surrounding views of this sampling station. The station is surrounded by Nga Pitat Communy to the north, mangrove area to the east, mangrove area and the proposed project site to the south, and the Andaman Sea to the west.

Station 2-Sakhanthit Village: The village is located at about 1.51 km to the southeast of the proposed project site. ***Photo 5.2-6*** shows some surrounding views of this sampling station. The surroundings are Scan Tae Community and the proposed project site (sand dredging area and the small port) to the north, flat and mountainous areas to the east and the south, and mangrove area and paddy field to the west.

Station 3-The Existing Small Port: The existing small port is near the proposed site for the small port. ***Photo 5.2-7*** shows some surrounding views of this station. To the north lies the proposed project site, to the east mangrove area and mountains, to the south the Pan Din In River estuary and Sakhanthit Village, and to the west the Andaman Sea.

Sampling and Analytical Methods

The air quality surveys covered TSP (Total Suspended Particle), SO_2, NO_2, and PM-10. The sampling and analytical methods used were those recommended by U.S.EPA as shown below:

Parameters	Sampling Method	Analytical Method	Sampling Period
TSP	High-Volume Air Sampler	Gravimetric	72-hours
PM-10	High-Volume Air Sampler	Gravimetric	72-hours
SO_x	Gas Impinger	Pararosaniline	72-hours
NO_x	Gas Impinger	Soduim Arsenite	72-hours

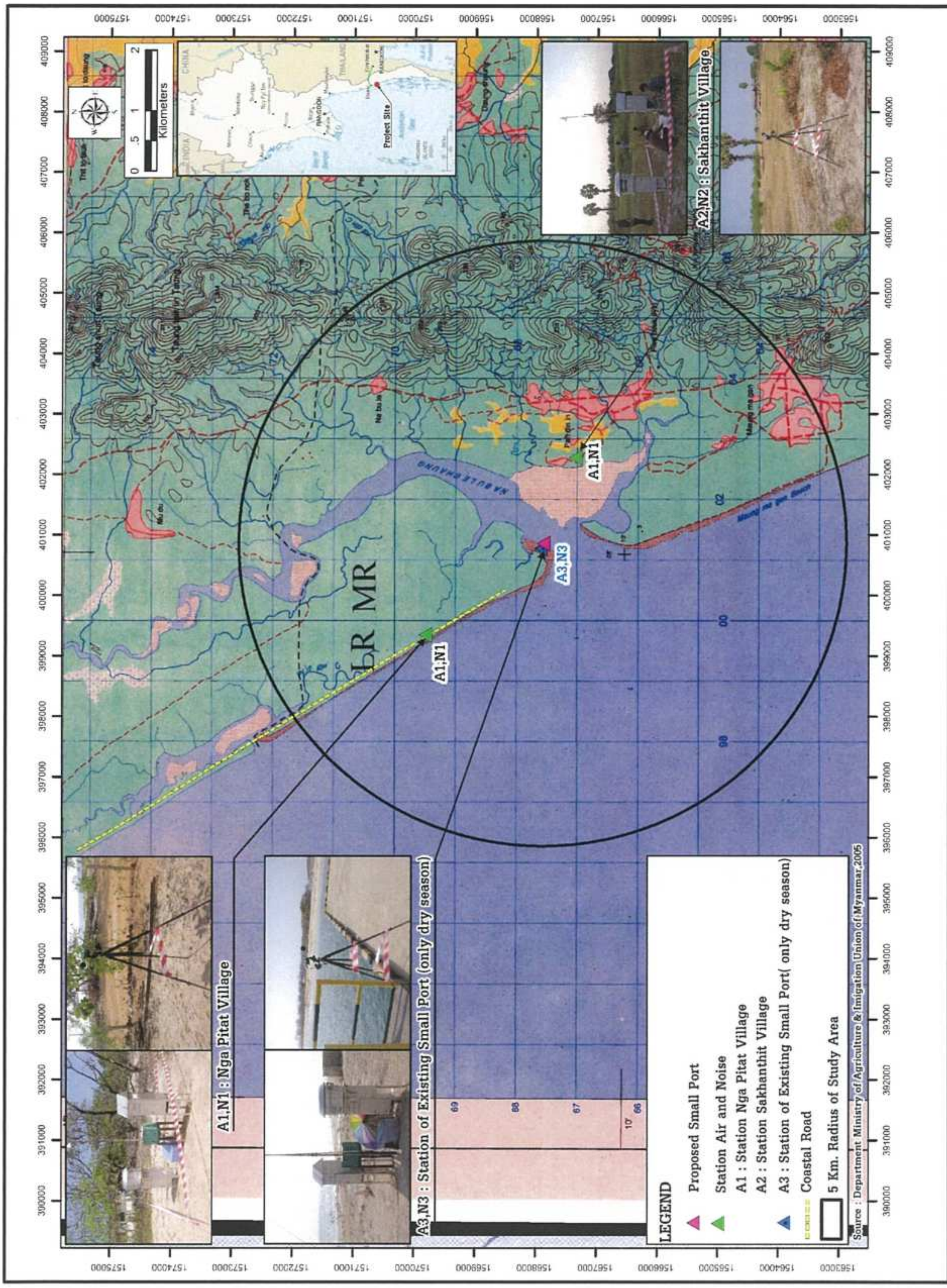


FIGURE 5.2-12 : AIR QUALITY, NOISE, AND VIBRATION SAMPLING STATIONS

A house at Nga Pitat village near the sampling station, north of the Station	**The Andaman Sea to the west of the station (medium rains in the afternoon of 19/10/2014)**	**Mangrove area to the east and south of the station**

PHOTO 5.2-5 : SURROUNDINGS OF THE NGA PITAT SAMPLING STATION

A house at Sakhanthit village (near the sampling station) to the north of the station	**Flat land and mountains to the east and south of the Station**	**Mangrove area and paddy field to the west of the station**

PHOTO 5.2-6: SURROUNDINGS OF THE SAKHANTHIT SAMPLING STATION

Proposed Project Site	**Mangrove area and distant mountain**	**Mouth of the Pan Din In River estuary and Sakhanthit village**	**Andaman Sea**

PHOTO 5.2-7: SURROUNDINGS OF THE EXISTING SMALL PORT

Summary of Survey Results

Table 5.2-7 presents a summary of the air quality survey results compared with the air quality standards of IFC / World Bank and Myanmar Standard. The following conclusions may be drawn:

- In overall, the ambient air quality at all three stations was good as all pollutant concentrations were much below the maximum permissible concentrations prescribed in the standards.
- The concentrations of TSP and the related PM-10 at all stations in the wet season were much lower than the concentrations in the dry season. This would be expected as the project site was quite dusty during the dry season. Fugitive dust during the dry season is high as the open areas become less vegetated, thus exposing to wind, and the main road and the village roads are not paved.
- The concentrations of NO_2 and SO_2 were low as no industrial activities in the area and low vehicle movements.

TABLE 5.2-7
SUMMARY OF AIR QUALITY SURVEY RESULTS

Sampling Station	TSP Average 24 hour (μg/m³)	PM-10 Average 24 hours (μg/m³)	NO_2 Average 24 hours (μg/m³)	SO_2 Average 24 hours (μg/m³)
Wet Season 1/				
A1 Nga Pitat Village	38.17-53.68	15.74-27.49	<18	<50
A2 Sakhanthit Tae Village	26.95-39.50	7.29-20.86	<18	<50
Dry Season 2/				
A1 Nga Pitat Village	93.55-102.58	33.94-40.82	<18	<50
A2 Sakhanthit Tae Village	68.41-79.28	26.80-32.50	<18	<50
A3 Existing Small Port	52.61-59.90	22.91-29.06	<18	<50
IFC and World Bank Std.				
- 1998 version 3/	***230***	***150***	***150***	***150***
- 2007 version 4/	-	***150***	-	***125***
National Ambient, Air Quality Standard, Myanmar, 2015	-	50	-	20

Remarks : 1/ Clear weathers were experienced over the survey period.

2/ Slight rains at night on 18 October 2014 and moderate rains in the afternoon during 18-20 October 2014.

3/ Pollution Prevention and Abatement Handbook WORLD BANK GROUP Effective July, 1998.

4/ 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).

5.2.9 Noise

Noise measurements were carried out during the wet season and the dry season concurrently with the air quality sampling at the same stations. The noise levels were measured and recorded continuously for 72 hours in terms of L_{eq} 1 (day time and nighttime), Ldn, L_{eq}24, L_{max}, L_{dn}, and L_{90}, using the methods recommended by ISO 1996 and IEC 61672.

Table 5.2-8 presents a summary of noise measurement results at all stations for the wet and dry period compared with the U.S. EPA standard, IFC / World Bank, and Myanmar Standard. The following conclusions may be drawn:

TABLE 5.2-8

SUMMARY OF NOISE MEASUREMENT RESULTS

Station	L_{eq} 1 hr. (daytime) dB(A)	L_{eq} 1 hr. (nighttime) dB(A)	Ldn dB(A)	L_{eq} (24 hrs) dB(A)	L_{90} dB(A)	Lmax dB(A)
Wet Season [1/]						
N1 : Nga Pitat Village	48.2-65.9	49.0-53.8	57.1-59.3	51.5-55.1	45.7-48.0	87.8-94.5
N2 : Sakhanthit Village	48.5-71.3	54.1-67.1	66.9-70.1	60.4-63.7	54.9-60.6	83.8-88.9
Dry Season [2/]						
N1 : Nga Pitat Village	50.8-60.9	50.5-60.5	60.9-61.5	55.5-55.7	49.1-51.0	86.8-90.7
N2 : Sakhanthit Village	41.5-71.4	46.6-69.8	61.0-69.5	56.8-64.9	47.5-49.0	88.8-93.7
N3 : Existing Small Port	47.6-78.9	44.8-53.1	66.7-69.3	64.6-69.0	50.9-54.9	91.4-95.1
U.S. EPA Standard	-	-	-	70	-	115
IFC / World Bank Guideline 2007, Myanmar Standard [3/]	55	45	-	-	-	-

Notes : [1/] Slight rains at night on 18 October 2014 and moderate rains in the afternoon during 18-20 October 2014.

[2/] Clear weathers were experienced over the survey period.

[3/] For residential, institutional and educational area during daytime (7am-10 pm)
For residential, institutional and educational area during nighttime (10 pm-7 am)

- In general, the noise levels at the two stations were still below the U.S. EPA standard. However, the noise level at the existing small port was higher than the levels at the two villages. This would be due to noise from winds and waves at the port. The two villages had no industrial noise sources apart from small vehicle.

- The background noise level expressed in LAeq-1 hr. exceeded the limit set by the IFC / World Bank and Myanmar Standards for residential, institutional and educational areas during both daytime and nighttime in all three sampling stations both wet and dry seasons .

- The noise level at Nga Pitat Village in the wet season was slightly lower than that in the dry season but the reverse was true at Sakhanthit Village. The effect of season on the noise level may depend on activities specific to each village.

5.2.10 Vibration

The background vibration measurement was carried out in parallel with the noise level measurement at the same locations in the two villages. 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 in the wet season at the two villages were conducted during 18-21 October, 2014. The measurements in the dry season was conducted during 21-24 January 2015 at Nga Pitat Village, and during 25-28 January 2015 at Sakhanthit Village. Primary vibration sources in the two villages were vehicles such as motorcycles, farm trucks, and pick-up trucks. Results of the vibration measurements are summarized in ***Table 5.2-9***.

TABLE 5.2-9

SUMMARY OF VIBRATION MEASUREMENT RESULTS

Station	Peak Particle Velocity (mm/s)	Peak Particle Velocity (in/sec)	Frequency (Hz)
Wet Season[1/]			
Nga Pitat Village	< 0.25-0.87	<0.01-0.034	0-73
Sakhanthit Village	<0.25-0.87	<0.01-0.034	0-85
Dry Season[2/]			
Nga Pitat Village	< 0.25-0.83	<0.01-0.033	0-85
Sakhanthit Village	<0.25-0.86	<0.01-0.034	0-73

Notes: [1/] Slight rains at night on 18 October 2014 and moderate rains in the afternoon during 18-20 October 2014.

[2/] Clear weathers were experienced over the survey period.

When comparing the results of vibration measurements with guidelines on maximum peak particle velocity for various kinds of buildings (DIN 4150 (1986)) in ***Table 5.2-10***, it is clean clear that the background vibration levels at the two villages were very low with no effects on buildings. In addition, the results of vibration measurements comparing with vibration study by Wiss, 1974 in ***Table 5.2-11*** indicated that the background vibration levels at the two villages were less than barely perceptible to human response.

TABLE 5.2-10

PEAK PARTICLE VELOCITY OF STEADY STATE VIBRATION

	Type of Structure	Peak Particle Velocity (mm/s) of Steady State Vibration	
		Horizontal Vibration of Structure	Vibration of Building Components (e.g. Floor)
1	Building use for industrial purposes, industrial building and building of similar design	5	10
2	Dwelling and building of similar design and/or use	5	10
3	Structure that, because of their particular sensitivity to vibration, do not correspond to those listed in row 1 and 2 and are of great intrinsic value (e.g. building that are under a preservation order)	Not data available, consider on a case-by-case basis	Not data available, consider on a case-by-case basis

Source: DIN 4150, 1986

TABLE 5.2-11

HUMAN RESPONSE TO TRANSIENT VIBRATION

PPV (in/sec)	Human Response
2.0	Severe
0.9	Strongly Perceptible
0.24	Distinctly Perceptible
0.035	Barely Perceptible

Source: Wiss, 1974

5.2.11 Groundwater

A field survey of groundwater quality was conducted by the Consultant at Nga Pi Tat Village and Sakhanthit Village on 18 October 2014 for the wet season and on 23 January 2015 for the dry season. In each village, one groundwater well was selected for taking samples (***Table 5.2-12, Figure 5.2-13, and Photo 5.2-8***). The methods for sample collection and treatment follow the QA/QC of ISO/IEC 17025:2005 accreditation for laboratory to ensure that the water samples are free from contamination. Details of the analytical methods and detection limits for each parameter are shown in ***Table 5.2-13***.

The analytical results for the samples collected in the wet season were presented in ***Table 5.2-14***. The water quality data was interpreted based on WHO Guidelines for Drinking-Water. The data clearly showed that most of the concerned parameters met WHO standard. All heavy metal parameters in both samples met such standard. From the results indicated that the condition of groundwater in Nga Pitat Village is good quality and able to consume and drinkable.

It is noted that water from GW2 shows low acidity with pH value of 5.69 which is not correlated with desirable value. That mean the condition of groundwater in Sakhanthit village is not good for drinking, but still applicable for domestic uses.

The analytical results for the samples collected in the wet season were presented in ***Table 5.2-15***. The water quality data was interpreted based on WHO Guidelines for Drinking-water. The data clearly show that most of the concerned parameters meet WHO standard. All heavy metal parameter in both sample were comply with such standard.

It is noted that water from GW2 show low acidity with pH value of 5.40 which is not correlated with desirable value. That mean the condition of groundwater in Sakhanthit village is not good for drinking, but still applicable for domestic uses.

TABLE 5.2-12

GROUNDWATER QUALITY SAMPLING STATIONS

Date	Village	Station	Position (UTM : 47P)		Water table
			N	E	
18-Oct-14 for wet season 23-Jan-15 for dry season	Nga Pitat	GW1	1570060	399479	6.3 m below the ground level
	Sakhanthit	GW2	1567475	402296	5.0 m below the ground level

Source: TEAM Consulting Engineering and Management Co., Ltd., 18 October 2014 and 23 January 2015.

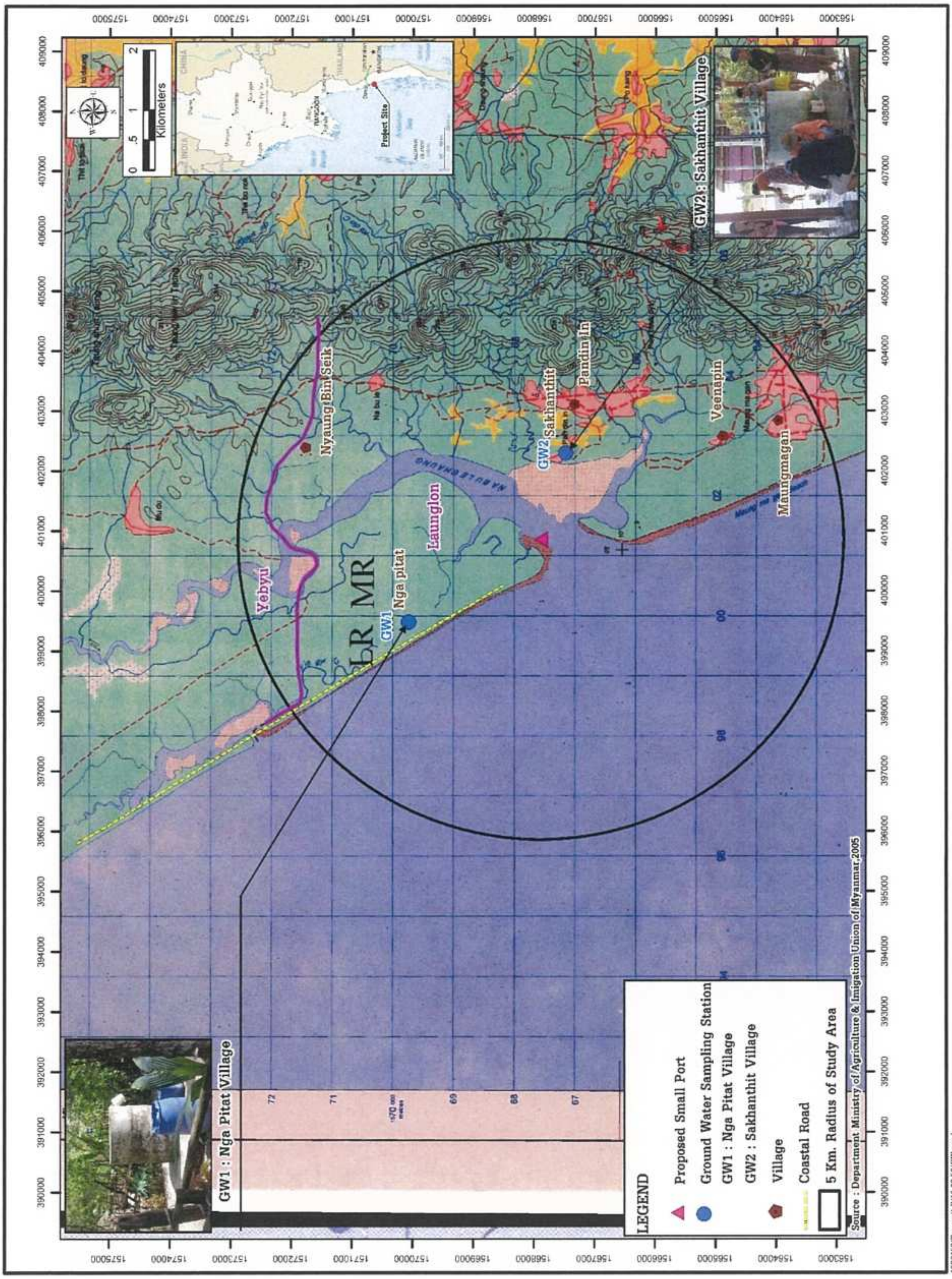


FIGURE 5.2-13 : GROUNDWATER SAMPLING STATIONS

10P3153/Tanawit.P/16-09-58/GW.mxd

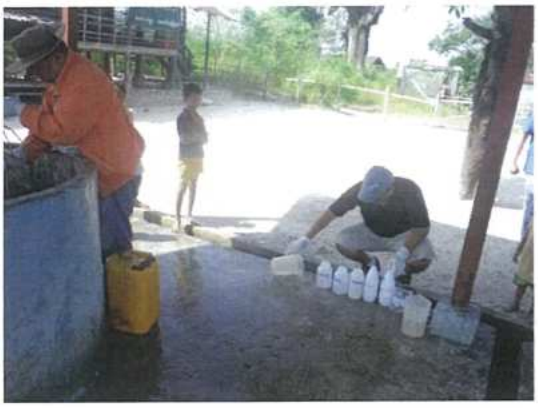
	
Nga Pitat Village (GW1)	**Sakhanthit Village (GW2)**
Groundwater Sampling During Wet Season (18-Oct-14)	
Nga Pitat Village (GW1)	**Sakhanthit Village (GW2)**
Groundwater Sampling During Dry Season (23-Jan-15)	

PHOTO 5.2-8 : GROUNDWATER SAMPLING AT EACH STATION

TABLE 5.2-13

PARAMETER CONCERNED AND ANALYTICAL METHOD FOR GROUNDWATER QUALITY

Parameter	Unit	Analysis Method [1/]
Odour	- -	Observation Method
Depth	m.	
Conductivity	µS/cm.	*In situ*/ Electrical Conductivity Method
pH	- -	*In situ*/Electrometric Method
Water Temperature	°c	*In situ*/ Thermometer
Salinity	Psu	*In situ*/ Salinometer
Total Hardness	mg/l $CaCO_3$	EDTA Titrimetric Method
Suspended Solids	mg/l	
Total Dissolved Solids	mg/l	Dried at 180°C
Sulphate	mg/l	Gravimetric methods
Bicarbonate-Alkalinity	mg/l	
Carbonate-Alkalinity	mg/l	
Nitrate-Nitrogen	mg/l	UV Spectrophotometric Screening Method
Nitrite-Nitrogen	mg/l	Colorimetric Method
Cadmium	mg/l	ICP Method
Lead	mg/l	ICP Method
Arsenic	mg/l	Hydride Generation AAS Method
Manganese	mg/l	Flame AAS Method
Total Iron	mg/l	ICP Method
Copper	mg/l	ICP Method
Zinc	mg/l	ICP Method
Calcium	mg/l	ICP Method
Mercury	mg/l	Cold Vapor AAS Method
Cyanide	mg/l	Distillation, Colorimetric Method

Remark: [1/] American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WEF). 2005. Standard Methods for the Examination of Water and Wastewater. 21st Edition. Washington, DC: American Public Health Association.

TABLE 5.2-14

RESULTS OF ANALYSIS OF GROUNDWATER SAMPLES COLLECTED ON 18 OCTOBER 2014

Characteristic	Parameter	Unit	GW1 Nga Pitat Village	GW2 Sakhanthit Village	WHO Drinking Water Standard[1]
1. Physical	Odour	-	None	None	-
	Depth	M	6.3	5.0	-
	Water Temperature	°c	27.2	28.2	-
	Conductivity	µS/cm	428.8	209.2	-
2. Chemical	pH at 25°c	-	6.60	5.69 *	6.5 – 8.5[2]
	Salinity	ppt	0.2	0.1	-
	SS	mg/l	<5.0	<5.0	-
	TDS	mg/l	278.3	106.1	-
	Total Hardness	mg/l	72.3	44.2	-
	Sulfate	mg/l	22.3	15.9	-
	Bicarbonate-Alkalinity	mg/l	110.0	12.0	-
	Carbonate-Alkalinity	mg/l	0.0	0.0	-
	Nitrate-Nitrogen	mg/l	3.6	1.7	11
	Nitrite-Nitrogen	mg/l	<0.01	<0.01	0.9
	Calcium	mg/l	40.6	5.57	-
	Cyanide	mg/l	<0.003	<0.003	-
	Cadmium	mg/l	<0.003	<0.003	0.003
	Lead	mg/l	<0.005	<0.005	0.01
	Arsenic	mg/l	0.0010	0.0008	0.01
	Manganese	mg/l	0.058	0.038	-
	Total Iron	mg/l	0.05	0.03	-
	Copper	mg/l	<0.003	0.003	2
	Zinc	mg/l	0.011	<0.001	-
	Mercury	mg/l	<0.0005	<0.0005	0.006

Source: TEAM Consulting Engineering and Management Co., Ltd., 18 October 2014

Remark: [1] WHO Guidelines for drinking-water quality-4th Edition

[2] Desirable

* = Not complied with the WHO Drinking Water Standard (desirable)

TABLE 5.2-15

RESULTS OF ANALYSIS OF GROUNDWATER SAMPLES COLLECTED ON 22 JANUARY 2015

Characteristic	Parameter	Unit	GW1	GW2	WHO Drinking Water Standard[1]
1. Physical	Odour	-	None	None	-
	Depth	m	6.3	5.0	-
	Water Temperature	°c	26.2	27.9	-
	Conductivity	µS/cm	368.0	2.934 mS	-
2. Chemical	pH at 25°c	-	6.60	5.40 *	6.5 – 8.5[2]
	Salinity	ppt	0.2	1.4	-
	SS	mg/l	<5.0	<5.0	-
	TDS	mg/l	225.6	1636.4	-
	Total Hardness	mg/l	98.0	254.9	-
	Sulfate	mg/l	30.1	127.0	-
	Bicarbonate-Alkalinity	mg/l	90.0	23.0	-
	Carbonate-Alkalinity	mg/l	0.0	0.0	-
	Nitrate-Nitrogen	mg/l	3.3	<0.06	11
	Nitrite-Nitrogen	mg/l	<0.03	<0.03	0.9
	Calcium	mg/l	33.4	32.5	-
	Cyanide	mg/l	<0.002	<0.002	-
	Cadmium	mg/l	0.0003	0.0002	0.003
	Lead	mg/l	0.0005	0.0007	0.01
	Arsenic	mg/l	0.002	0.0006	0.01
	Manganese	mg/l	0.02	0.14	-
	Total Iron	mg/l	0.10	4.37	-
	Copper	mg/l	0.0005	0.003	2
	Zinc	mg/l	0.02	0.06	-
	Mercury	mg/l	<0.0001	<0.0001	0.006

Source: TEAM Consulting Engineering and Management Co., Ltd., 23 January 2015

Remark: [1] WHO Guidelines for drinking-water quality-4th Edition

[2] Desirable

* = Not complied with the WHO Drinking Water Standard (desirable)

5.2.12 Coastal Water

Two coastal water quality surveys were carried out, one 19 October 2014 for the wet season and another on 22 January 2015 for the dry season. In each survey, sea water samples were collected at four stations located within 5 km from the project site as indicated in a map in ***Figure 5.2-14*** and ***Photo 5.2-9***. Brief information on these four stations is given in ***Table 5.2-16.*** They were selected as water quality, particularly turbidity, at these stations could be affected by the offshore construction activities.

The methods for sample collection and treatment follow the QA/QC of ISO/IEC 17025:2005 accreditation for laboratory to ensure that the water samples are free from contamination. Details of the analytical methods for each parameter are shown in ***Table 5.2-17.***

TABLE 5.2-16

COASTAL WATER SAMPLING STATIONS

Date	Station	Position (UTM : 47P)		Sampling time	Distance from Small Port (km.)	Significant of Location
		N	E			
19 Oct 2014 for wet season and 22 Jan 2015 for dry season	SW1	1568691	401988	01.30 PM	1.38	Close to the nearest community and mangrove area
	SW2	1567039	401272	12.50 PM	0.95	Close to coastal community (Sakhanthit Village)
	SW3	1566603	400514	10.40 AM	1.33	Close to coastal community (Sakhanthit Village)
	SW4	1564086	401000	09.30 AM	3.81	Close to tourism site (Muangmagan)

Source: TEAM Consulting Engineering and Management Co., Ltd., 19 October 2014 and 23 January 2015.

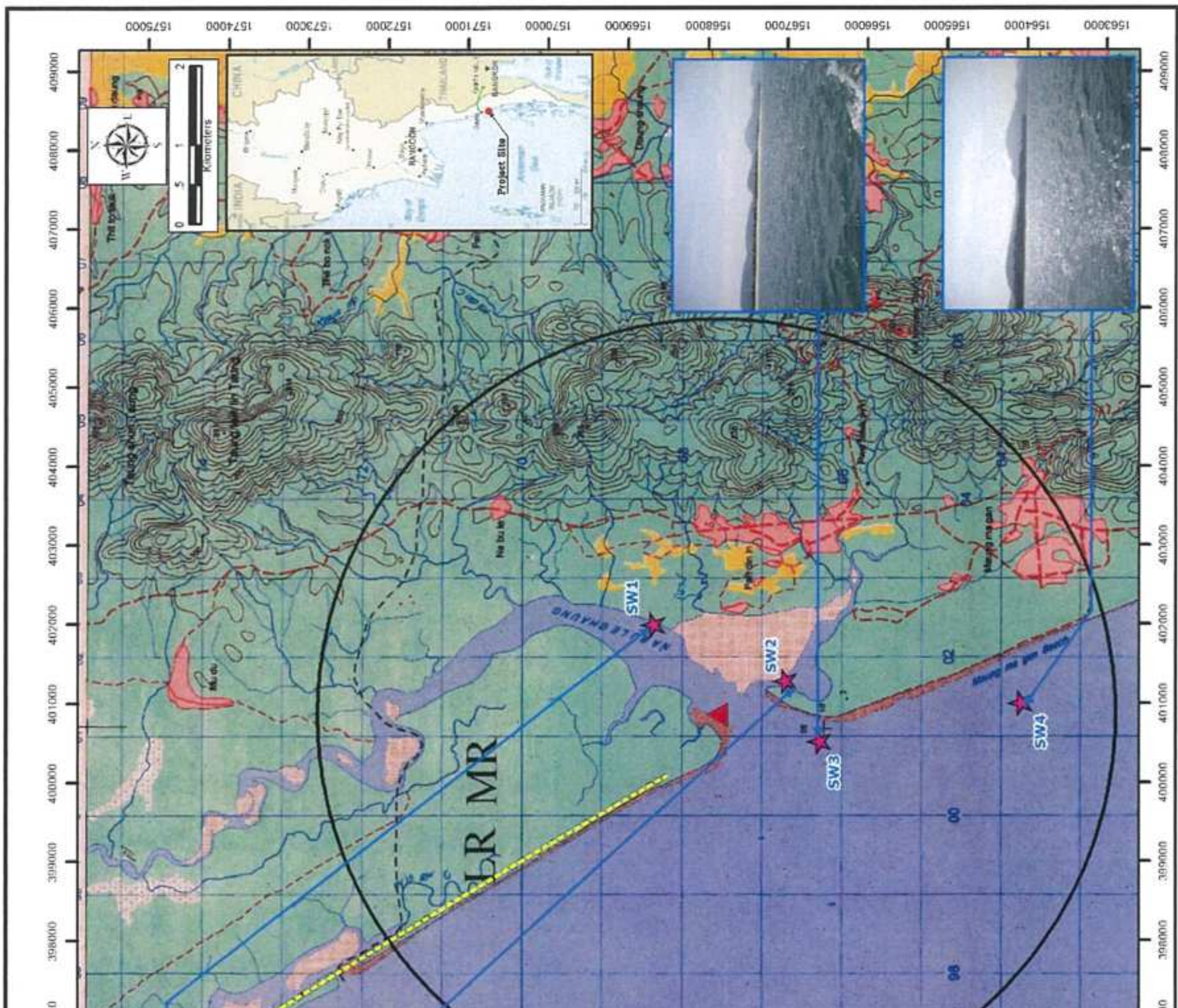


FIGURE 5.2-14 : COASTAL WATER SAMPLING STATIONS

Sampling of Coastal Water during Wet Season (19-Oct-14)

Sampling of Coastal Water during Dry Season (22-Jan-15)

PHOTO 5.2-9 : SAMPLINGS OF COASTAL WATER AROUND SMALL PORT AREA

TABLE 5.2-17

SUMMARY OF ANALYTICAL METHODS FOR COASTAL WATER SAMPLES

Parameter	Unit	Analysis Method [1/]
Depth	m.	*In situ*/ Portable depth sounder
Temperature	°c	*In situ*/ Thermometer
Transparency	m.	*In situ*/ Secchi disc
Conductivity	µmho/cm.	*In situ*/ Electrical Conductivity Method
pH	- -	*In situ*/Electrometric Method
Dissolved oxygen	mg/l	*In situ*/ Membrane Electrode Method (DO Meter)
Salinity	m.	*In situ*/ Salinometer
Turbidity	NTU	Nephelometric Method
Suspended Solids	mg/l	Dried at 103-105°C
COD	mg/l	Azide Modification Method
Residual Chlorine	mg/l	DPD Colorimetric Method
Nitrate-Nitrogen	µg/l	Cadmium Reduction Method
Phosphate-Phosphorus	µg/l	Ascorbic Acid Method & calculate
Potassium	µg/l	Inductively Couple Plasma Method
Lead	µg/l	Inductively Couple Plasma Method
Cadmium	µg/l	Inductively Couple Plasma Method
Mercury	µg/l	Pre-concentration, Cold vapour AAS Method
Total Organic Carbon	mg/l	High-temperature combustion method
Total Coliform Bacteria	MPN/100 ml	Standard Total Coliform Fermentation Technique

Remark: [1/] American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WEF). 2005. Standard Methods for the Examination of Water and Wastewater. 21st Edition. Washington, DC: American Public Health Association

Results of the wet season survey conducted on 19 October 2014 are summarized and compared with the Marine Water Quality Criteria for the ASEAN Region in ***Table 5.2-18***. It is clear that the coastal water at all four stations was of good quality with high level of dissolved oxygen and very low concentrations of heavy metals and organic pollutants. It was observed during the sampling that grease and oil were not visible on the water surface. It could be concluded that the quality of coastal water in this area was suitable for supporting the marine ecosystem.

Results of the dry season survey conducted on 22 January 2015 are summarized and compared with the Marine Water Quality Criteria for the ASEAN Region in ***Table 5.2-19***. It is clear that the coastal water at all four stations was of good quality with high level of dissolved oxygen and very low concentrations of heavy metals and organic pollutants. It was observed during the sampling that grease and oil were not visible on the water surface. It could be concluded that the quality of coastal water in this area was suitable for supporting the marine ecosystem.

TABLE 5.2-18

RESULTS OF ANALYSIS OF COASTAL WATER SAMPLES COLLECTED ON 19 OCTOBER 2014 (WET SEASON)

Characteristic	Parameter	Unit	SW1	SW2	SW3	SW4	Standard[1]
1. Physical	Depth	m.	2.00	1.20	2.20	2.40	-
	Water Temperature	°C	31.6	32.2	29.9	30.9	-[2]
	Transparency	m.	1.50	0.50	2.00	2.10	-
	Conductivity	µs/cm	32,890	30,950	44,680	44,980	-
2. Chemical	pH	-	7.91	7.81	8.01	7.96	
	DO	mg/l	5.98	5.96	6.08	6.75	≥ 4.0
	Salinity	Ppt	17.9	16.6	25.9	26.0	-
	Turbidity	NTU	0.6	6.2	2.9	2.0	-
	Suspended Solids	mg/l	<5.0	<5.0	<5.0	<5.0	-
	COD	mg/l	72	72	91	72	-
	Residual Chlorine	mg/l	<0.25	<0.25	<0.25	<0.25	-
	Nitrate-Nitrogen	µg/l	4.4	6.6	6.1	6.4	60
	Phosphate-Phosphorus	µg/l	<0.1	<0.1	<0.1	<0.1	15 (coastal) 45 (estuary)
	Potassium	µg/l	17,983	16,857	19,993	19,635	-
	Lead	µg/l	<5	<5	<5	<5	8.5
	Cadmium	µg/l	<3	<3	<3	<3	10
	Mercury	µg/l	<0.05	<0.05	<0.05	<0.05	0.16
	Total Organic Carbon	mg/l	8.6	10	8.6	7.6	-
3.Biological	Total Coliform Bacteria	MPN / 100 ml	<1.8	<1.8	<1.8	<1.8	-

Remark: [1] Marine water quality criteria for the ASEAN Region for aquatic life protection accessed from www.aseansec.org on 22 November 2011

[2] increase not more than 2° C above the maximum ambient temperature

Source: TEAM Consulting Engineering and Management Co., Ltd., 19 October 2014.

TABLE 5.2-19

RESULTS OF ANALYSIS OF COASTAL WATER SAMPLES COLLECTED ON 22 JANUARY 2015 (DRY SEASON)

Characteristic	Parameter	Unit	SW1	SW2	SW3	SW4	Standard[1]
1. Physical	Depth	m.	4.00	2.70	4.10	5.20	-
	Water Temperature	°C	27.2	27.0	26.9	27.2	-[2]
	Transparency	m.	1.90	1.50	2.40	3.50	-
	Conductivity	mS/cm	49.00	48.79	48.88	48,84	-
2. Chemical	pH	-	8.05	8.12	8.13	8.18	-
	DO	mg/l	6.74	7.14	6.89	6.91	≥ 4.0
	Salinity	ppt	30.6	30.5	30.5	30.5	-
	Turbidity	NTU	1.8	2.1	1.4	1.2	-
	Suspended Solids	mg/l	<5.0	<5.0	<5.0	<5.0	-
	COD	mg/l	65	57	65	57	-
	Residual Chlorine	mg/l	<0.10	<0.10	<0.10	<0.10	-
	Nitrate-Nitrogen	mg/l	<0.02	<0.02	<0.02	<0.02	60
	Phosphate-Phosphorus	mg/l	<0.20	<0.20	<0.20	<0.20	15 (coastal) 45 (estuary)
	Potassium	mg/l	416	414	416	419	-
	Lead	mg/l	<0.001	<0.001	<0.001	<0.001	8.5
	Cadmium	mg/l	<0.0009	<0.0009	<0.0009	<0.0009	10
	Mercury	mg/l	<0.00005	<0.00005	<0.00005	<0.00005	0.16
	Total Organic Carbon	mg/l	2.47	1.64	2.90	3.66	-
3. Biological	Total Coliform Bacteria	MPN / 100 ml	4.5	49.0	4.5	<1.8	-

Remark: [1] Marine water quality criteria for the ASEAN Region for aquatic life protection accessed from www.aseansec.org on 22 November 2011

[2] increase not more than 2° C above the maximum ambient temperature

Source: TEAM Consulting Engineering and Management Co., Ltd., 22 January 2015.

5.2.13 Sediment

The study of sediment quality was conducted on 19 October 2014 for the wet season and 22 January 2015 for the dry season at the same station as coastal water quality (***Figure 5.2-10***). Collection of sediment samples was carried out along with sampling of coastal water using grab samplers as shown in ***Photo 5.2-10***. 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

Details of the analytical methods for each parameter are shown in ***Table 5.2-20***.

The sediment quality data for wet season was presented and compared with the NOAA standard in ***Table 5.2-21***. Based on the analysis results, the major composition of sediment in all collected samples was medium sand and fine sand which accounted for 1.33-83.01% and 8.39-88.74%, respectively. The chemical parameters of sediment quality including metal, total organic carbon and PAHs in all samples are within NOAA standard. Petroleum hydrocarbon was detected at very low concentration in all samples. These data indicated good quality of bottom sediments at the four sampling stations. They are suitable to support the marine ecosystem.

The sediment quality data for dry season was presented and compared with the NOAA standard in ***Table 5.2-22***. Base on the analysis results, the major composition of sediment in all collected samples was sand which accounted for 96.0-97.1%. The chemical parameters of sediment quality including metal, total organic carbon and PAHs in all samples are within NOAA standard. Petroleum hydrocarbon was detected at very low concentration in all samples. These data indicated good quality of bottom sediments at the four sampling stations. They are suitable to support the marine ecosystem.

Collection of Sediment during Wet Season (19-Oct-14)	
Collection of Sediment during Dry Season (22-Jan-15)	

PHOTO 5.2-10 : COLLECTION OF SEDIMENT IN THE STUDY AREA

TABLE 5.2-20

PARAMETER CONCERNED AND ANALYTICAL METHOD FOR BOTTOM SEDIMENT SAMPLES

Parameter	Unit	Analysis Method [1/]
Total Chromium	mg./kg.	ICP Method
Total Iron	mg./kg.	ICP Method
Total Arsenic	mg./kg.	ICP Method
Total Lead	mg./kg.	ICP Method
Total Nickel	mg./kg.	ICP Method
Total Zinc	mg./kg.	ICP Method
Total Copper	mg./kg.	ICP Method
Total Mercury	mg./kg.	Cold Vapour AAS Method
Grease & Oil	mg./kg.	Soxhlet-Gravimetric Method
Total Organic Carbon	mg./kg.	High-Temperature Combustion Method
Petroleum Hydrocarbon(c10-c36)		
- Decane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Undecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Dodecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Tridecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Tetradecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Pentadecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Hexadecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Heptadecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Octadecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Nonadecane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Eicosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Heneicosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Docosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Tricosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Tetracosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Pentacosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Hexacosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Heptacosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Octacosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Nonacosane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Triacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Hentriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Dotriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method

TABLE 5.2-20

PARAMETER CONCERNED AND ANALYTICAL METHOD FOR BOTTOM SEDIMENT SAMPLES (CONT'D)

Parameter	Unit	Analysis Method [1/]
- Tritriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Tetratriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Pentatriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Hexatriacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- triacontane	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
PAHs		
- Naphthalene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Acenaphthylene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Acenaphthene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Fluorene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Phenanthrene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Anthracene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Fluoranthene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Pyrene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Benzene (a) Anthracene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Chrysene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Benzene (b) Fluoranthene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Benzene (k) Fluoranthene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Benzene (a) Pyrene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Indeno (1,2,3-cd) Pyrene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Dibenzo (a,h) Anthracene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method
- Benzo (ghi) Perylene	mg./kg.	Soxhlet Extraction, GC/ Mass Spectrophotometric Method

Remark: [1/] American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WEF). 2005. Standard Methods for the Examination of Water and Wastewater. 21st Edition. Washington, DC: American Public Health Association.

TABLE 5.2-21

ANALYTICAL RESULTS OF SEDIMENT SAMPLES COLLECTED ON 19 OCTOBER 2014 (WET SEASON)

Parameter	Unit	Station				NOAA*	
		SW1	SW2	SW3	SW4	ERL[1]	ERM[2]
Particle size							
- Fine gravel	%	0	0.03	0	0		
- Course sand	%	0.07	0.43	0.18	0		
- Medium sand	%	83.01	54.76	91.36	1.33		
- Fine Sand	%	16.62	44.51	8.39	88.74		
- Silt or Clay	%	0.30	0.27	0.08	11.19		
Chemical parameter							
Total Chromium	mg./kg.	8.2	7.2	1.8	7.1	81	370
Total Iron	mg./kg.	1,691	1,258	648	4,342	-	-
Total Arsenic	mg./kg.	2.8	0.41	0.80	1.3	8.2	70
Total Lead	mg./kg.	2.4	1.9	1.1	5.0	46.7	218
Total Nickel	mg./kg.	0.7	0.8	0.3	2.0	20.9	51.6
Total Zinc	mg./kg.	0.4	0.2	0.3	5.0	150	410
Total Copper	mg./kg.	0.6	0.7	0.3	0.4	34	270
Total Mercury	mg./kg.	0.10	<0.05	<0.05	0.07	0.15	0.71
Grease & Oil	mg./kg.	<2	<2	<2	<2	-	-
Total Organic Carbon	mg./kg.	44	48	29	88	-	-
Petroleum Hydrocarbon(c10-c36)							
- Decane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Undecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Dodecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tridecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tetradecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Pentadecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Hexadecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Heptadecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Octadecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Nonadecane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Eicosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Heneicosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Docosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tricosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tetracosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-

TABLE 5.2-21
ANALYTICAL RESULTS OF SEDIMENT SAMPLES COLLECTED ON 19 OCTOBER 2014 (WET SEASON) (CONT'D)

Parameter	Unit	Station				NOAA*	
		SW1	SW2	SW3	SW4	ERL[1]	ERM[2]
- Pentacosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Hexacosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Heptacosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Octacosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Nonacosane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Triacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Hentriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Dotriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tritriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Tetratriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Pentatriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- Hexatriacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
- triacontane	mg./kg.	<0.06	<0.06	<0.06	<0.06	-	-
PAHs							
- Naphthalene	mg./kg.	<0.1	<0.1	<0.1	<0.1	160	2,100
- Acenaphthylene	mg./kg.	<0.1	<0.1	<0.1	<0.1	44	640
- Acenaphthene	mg./kg.	<0.1	<0.1	<0.1	<0.1	16	500
- Fluorene	mg./kg.	<0.1	<0.1	<0.1	<0.1	19	540
- Phenanthrene	mg./kg.	<0.1	<0.1	<0.1	<0.1	240	1,500
- Anthracene	mg./kg.	<0.1	<0.1	<0.1	<0.1	85.3	1,100
- Fluoranthene	mg./kg.	<0.1	<0.1	<0.1	<0.1	600	5,100
- Pyrene	mg./kg.	<0.1	<0.1	<0.1	<0.1	665	2,600
- Benzene (a) Anthracene	mg./kg.	<0.1	<0.1	<0.1	<0.1	261	1,600
- Chrysene	mg./kg.	<0.1	<0.1	<0.1	<0.1	384	2,800
- Benzene (b) Fluoranthene	mg./kg.	<0.1	<0.1	<0.1	<0.1	-	-
- Benzene (k) Fluoranthene	mg./kg.	<0.1	<0.1	<0.1	<0.1	-	-
- Benzene (a) Pyrene	mg./kg.	<0.1	<0.1	<0.1	<0.1	430	1,600
- Indeno (1,2,3-cd) Pyrene	mg./kg.	<0.1	<0.1	<0.1	<0.1	-	-
- Dibenzo (a,h) Anthracene	mg./kg.	<0.1	<0.1	<0.1	<0.1	63.4	260
- Benzo (ghi) Perylene	mg./kg.	<0.1	<0.1	<0.1	<0.1	-	-

Source: TEAM Consulting Engineering and Management Co., Ltd., 19 October 2014

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

[1]: Effect Range Low, [2] : Effect Range Median

TABLE 5.2-22

ANALYTICAL RESULTS OF SEDIMENT SAMPLES COLLECTED ON 22 JANUARY 2015 (DRY SEASON)

Parameter	Unit	Station				NOAA*	
		sw1	sw2	sw3	sw4	ERL[1]	ERM[2]
Physical parameters							
- Sand	%	96.3	96.0	97.1	97.1	-	-
- Silt		2.7	2.9	0.8	0.8	-	-
- Clay	%	2.0	2.1	2.1	2.1	-	-
- Soil texture		Sand	Sand	Sand	Sand	-	-
- Moisture	%	20.1	22.5	20.3	17.4	-	-
Chemical parameters							
Total Chromium	mg./kg.	1.97	3.35	<1.00	1.97	81	370
Total Iron	mg./kg.	1,699	2,459	436	1,394	-	-
Total Arsenic	mg./kg.	1.57	1.66	0.73	1.98	8.2	70
Total Lead	mg./kg.	<1.00	1.36	<1.00	<1.00	46.7	218
Total Nickel	mg./kg.	<1.00	1.14	<1.00	<1.00	20.9	51.6
Total Zinc	mg./kg.	11.0	7.37	3.21	3.37	150	410
Total Copper	mg./kg.	1.09	<1.00	<1.00	<1.00	34	270
Total Mercury	mg./kg.	<0.10	<0.10	<0.10	<0.10	0.15	0.71
Grease & Oil	mg./kg.	888	1,418	394	826	-	-
Total Organic Carbon	%	<0.10	<0.10	<0.10	<0.10	-	-
Petroleum Hydrocarbons							
- C10-C14	mg./kg.	<5	<5	<5	<5	-	-
- C15-C28	mg./kg.	<10	<10	<10	<10	-	-
- C29-C36	mg./kg.	<10	<10	<10	<10	-	-
- C6-C9	mg./kg.	<5	<5	<5	<5	-	-

TABLE 5.2-22

ANALYTICAL RESULTS OF SEDIMENT SAMPLES COLLECTED ON 22 JANUARY 2015 (DRY SEASON) (CONT'D)

Parameter	Unit	Station				NOAA*	
		SW1	SW2	SW3	SW4	ERL[1]	ERM[2]
PAHs							
- Acenaphthene	mg./kg.	<0.05	<0.05	<0.05	<0.05	16	500
- Acenaphthylene	mg./kg.	<0.05	<0.05	<0.05	<0.05	44	640
- Anthracene	mg./kg.	<0.05	<0.05	<0.05	<0.05	85.3	1,100
- Benzo (a) Anthracene	mg./kg.	<0.05	<0.05	<0.05	<0.05	261	1,600
- Benzo (a) Pyrene	mg./kg.	<0.05	<0.05	<0.05	<0.05	430	1,600
- Benzo (b) Fluoranthene	mg./kg.	<0.05	<0.05	<0.05	<0.05	-	-
- Benzo (g,h,i) Perylene	mg./kg.	<0.05	<0.05	<0.05	<0.05	-	-
- Benzo (k) Fluoranthene	mg./kg.	<0.05	<0.05	<0.05	<0.05	-	-
- Chrysene	mg./kg.	<0.05	<0.05	<0.05	<0.05	384	2,800
- Fluoranthene	mg./kg.	<0.05	<0.05	<0.05	<0.05	600	5,100
- Fluorene	mg./kg.	<0.05	<0.05	<0.05	<0.05	19	540
- Indeno (1,2,3-cd) Pyrene	mg./kg.	<0.05	<0.05	<0.05	<0.05	-	-
- Naphthalene	mg./kg.	<0.05	<0.05	<0.05	<0.05	160	2,100
- Phenanthrene	mg./kg.	<0.05	<0.05	<0.05	<0.05	240	1,500
- Pyrene	mg./kg.	<0.05	<0.05	<0.05	<0.05	665	2,600
- 2-Methylnapthalene	mg./kg.	<0.05	<0.05	<0.05	<0.05	-	-
- Dibenzo (a,h) Anthracene	mg./kg.	<0.05	<0.05	<0.05	<0.05	63.4	260

Source: TEAM Consulting Engineering and Management Co., Ltd., 22January2015

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

[1]: Effect Range Low, [2] : Effect Range Median

5.3 BIOLOGICAL COMPONENTS

5.3.1 Marine Ecology

A. 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 coastal waters near the project site; and (iii) interviewing some villagers in five coastal 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.

The marine ecological surveys were conducted at the same four stations where coastal water samples were collected. The surveys were conducted on two occasions-the first occasion was on 19 October 2014 in the wet season, and the second occasion on 22 January 2015 in the dry season (***Figure 5.2-14***). The following tasks were carried out in each survey: (i) recording of sea and weather conditions; (ii) collection of plankton and benthos samples; (iii) visual observations of the existence of coral reef; and (iv) analyses of the samples in a laboratory in Bangkok.

B. Plankton and Benthos

Information on plankton and benthos was obtained from the field surveys.

B1. Sampling Methods

Plankton and benthos samples were collected concurrently with the collection of sea water samples as shown in ***Photo 5.3-1.*** 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 a 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 faunas were kept in a plastic bottle and preserved in 5% formalin-seawater solution. All samples were sent to laboratory at Kasetsart University (Thailand) for identification.

Collection of Plankton and Benthos During Wet Season (19-10-14)

Collection of Plankton and Benthos During Dry Season (22-1-15)

PHOTO 5.3-1: COLLECTION OF PLANKTON AND BENTHOS SAMPLES IN THE FIRST SURVEYS

B2. Plankton Classification

(1) Phytoplankton

Wet Season

In total, 35 species of phytoplankton from 4 Classes; namely Cyanophyceae (Blue-Green Algae), Bacillariophyceae (Diatom), Coscinodiscophyceae (Centric diatom) and Class Dinophyceae (Dinoflagellates) were identified. Phytoplankton densities were found to vary from 69,300 to 629,100 cells/cu.m. The dominant species found was *Coscinodiscus* sp. as it was most abundant at all sampling stations with densities ranging from 33,600 to 561,600 cell/cu.m.

Dry Season

In total, 28 species of phytoplankton from 4 Classes; namely Cyanophyceae (Blue-Green Algae), Bacillariophyceae (Diatom), Coscinodiscophyceae (Centric diatom) and Class Dinophyceae (Dinoflagellates) were identified. Phytoplankton density were found to vary from 94,250 to 140,400 natural units/cu.m. The dominance species of this study was *Coscinodiscus* sp. as it was most abundant at all sampling stations with densities ranging from 6,600-46,800 natural units/cu.m.

(2) Zooplankton

Wet Season

In total, 13 taxa of zooplankton were identified. They belong to 3 phylum: Phylum Arthropoda, Phylum Protozoa and Phylum Mollusca. The zooplankton densities were found to range from 105,000 cell/cu.m. at Station SW4 to 634,500 cell/cu.m. at Station SW2. The most abundant zooplankton are Copepod naupleii and Cyclopoid copepod. Their densities varied from 75,600 to 477,900 cell/cu.m and 18,900-126,900 cell/cu.m., respectively.

The diversity index of planktons showed a minimum value of 1.37 at Stations SW1 and SW2 and a maximum value of 1.93, at station SW4. The overall average diversity index of all four stations was 1.56.

The values of the diversity indexes of phytoplankton and zooplankton indicate that the water was moderately suitable for aquatic organisms and resources.

Dry Season

A total zooplankton of 16 taxa were identified. They belong to 4 phylum: Phylum Arthropoda, Phylum Protozoa, Phylum Mollusca and Phylum Chordata. The zooplankton densities were found to range from 68,250 cell/cu.m. in SW1 to 159,750 cell/cu.m. in SW3. The most abundant zooplankton is Copepod naupleii. Their densities varied from 24,200 – 69,750 cell/cu.m.

The diversity index of planktons showed a minimum value of 2.36 at Stations SW3 and a maximum value of 2.84, at station SW4. The overall average diversity index of all four stations was 2.55.

The values of the diversity indexes of phytoplankton and zooplankton indicate that the water was moderately suitable for aquatic organisms and resources.

Details on the results of plankton identification for this study are presented in ***Appendix 5A***.

B3. Macrobenthos

Wet Season

The surveys identified 7 species of benthic animals in the sediment samples collected at all four sampling stations. They belong to Phylum Annelida, Phylum Mollusca and Phylum Mollusca. Their densities ranged from 22 to 242 number/m^2. The largest population was at Station SW4 while the lowest population was at Station SW2.

The benthos species found at Station SW4 consisted of polychaete in Family Nereididae and amphipod in Family Ampithodidae. Each had an equal density of 132 number/m^2. The density and diversity of benthic animals in the samples collected at Stations SW3 and SW4 in the sea were much higher than those at Stations SW1 and SW2 which were located in the estuary area. These findings indicate that the marine ecosystems in the surroundings of Stations SW3 and SW4 were more fertile than those in the surroundings of Stations SW1 and SW2.

Dry Season

The surveys identified 5 species of benthic animal in the sediment samples collected at all four sampling stations. They belong to Phylum Annelida, Phylum Arthropoda and Phylum Mollusca. There were not specimen from Station SW1 and SW4. Density of benthic animal in Station SW2 and SW3 are of 154 and 44 number/sq.m., respectively. Only 1 taxa was identified from station SW3 while there are 4 taxa of benthic fauna were identified from Station SW2.

The largest population of benthos species was insect larvae in Phylum Arthropoda Station SW2 which located in estuary area. In Station SW3 which is located in coastal area, only one taxa of polychaete was collected. This result is different compared with result from wet season's sampling which found that density and diversity of benthic animal collected from coastal area are much higher than estuary area.

Details on the results of benthic animal identification are presented in ***Appendix 5A***.

C. Endangered Marine Species

Marine species of concern are turtles, coral reefs, dolphin, whales, and dugong and seagrass as these are vulnerable to anthropogenic impacts. In the Andaman Sea, Myeik (or Mergui) Archipelago off the coast of Tanintharyi Region is internationally known to be habitats where these marine species exist in abundance and have not significantly perturbed. Myeik Archipelago is about 150 km from the project site. ***Appendix 5B*** presents key information on marine species in Myeik Archipelago.

C1. Coral Reefs

Coral reefs are not known to exist in the coastal waters near the project site. In 2010, the United Nations Environment Programme in collaboration with World Conservation Monitoring Center (UNEP-WCMC) updated the data on global distribution of coral reefs, including coral reef distribution in the Andaman Sea. According to this information, 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.

However, these four islands are at quite a distance from the project site as shown in ***Table 5.3-1*** and a map in ***Figure 5.3-1***. They would be too distant to be effected by development activities under the Project.

Although the four islands are remote from DSEZ, ITD conducted surveys of coral reefs at these four islands on 3 July 2012. The surveys found fringing reefs developed 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.

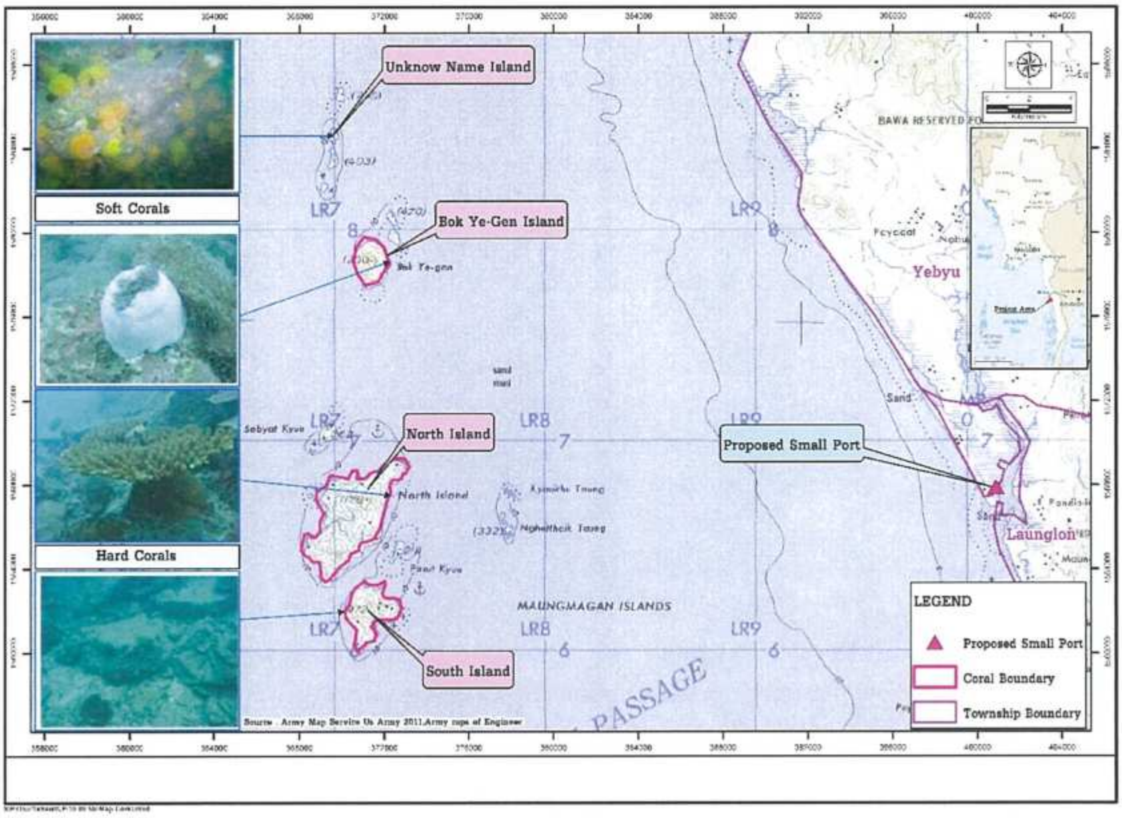
Observations made during the field surveys by the Consultant also found no coral reef areas in coastal waters near the project site.

TABLE 5.3-1

DISTRIBUTION OF CORAL REEF ON ISLANDS AROUND SMALL PORT, DAWEI

Island name		Estimation distance from Proposed Project Site (km)
1.	Bok Ye-Gen	30.6
2.	South	28.6
3.	North	27.8
4.	Unknown name	34.6

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



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

FIGURE 5.3-1 : LOCATIONS OF FOUR ISLANDS WITH CONFIRMED EXISTENCE OF CORAL REEFS

C.2 Sea Turtles

Sea turtles reportedly exist in significant number in other areas of the country. Information on sea turtles in Myanmar is also presented in ***Appendix 5B***.

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 collected by locals for consumption and selling at Muangmagan at between 900-1,000 kyat per one egg. The location of Nga Pitat beach is shown in ***Figure 5.3-2*** and general views of the beach is shown in ***Photo 5.3-2***.

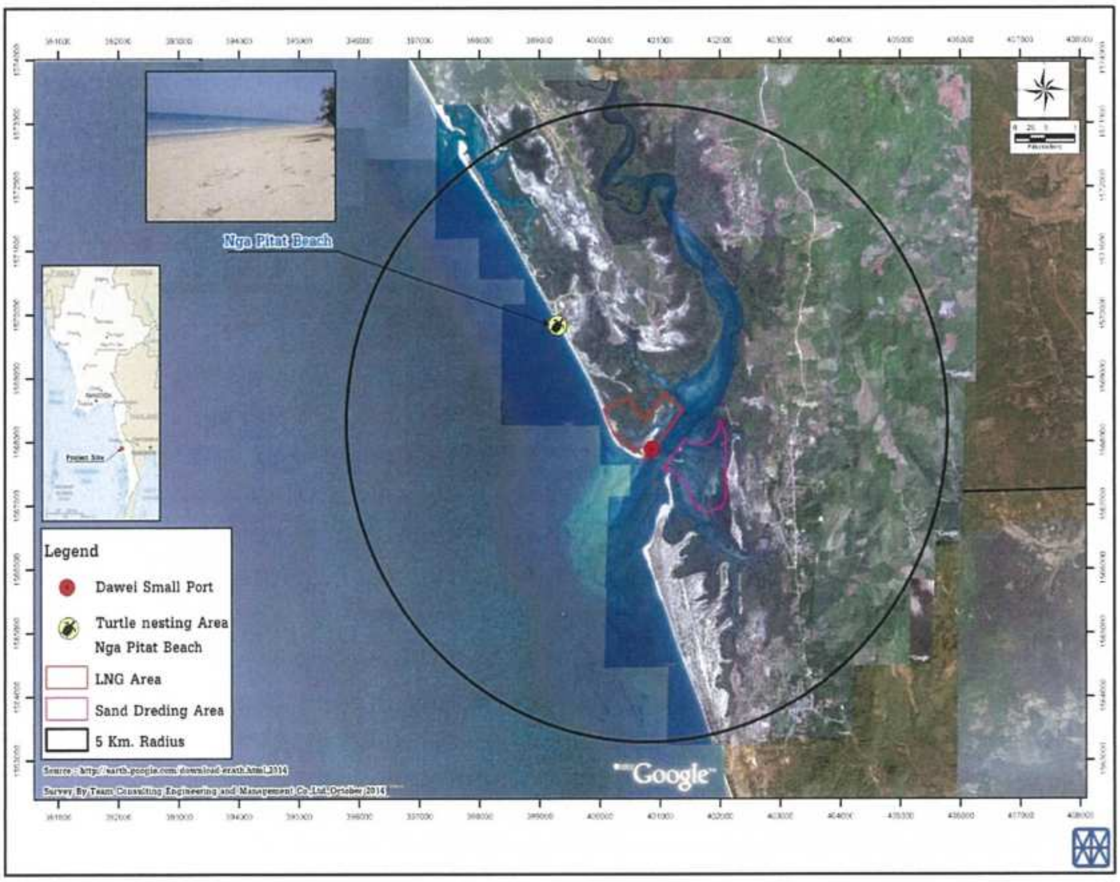


FIGURE 5.3-2 : LOCATION OF LAST SEEN NESTING AREA OF LEATHERBACK TURTLE IN 2014 AT NGA PI THAT BEACH

PHOTO 5.3-2 : BEACH AT NGA PITAT VILLAGE (399300E 1569824N, WGS Zone 84)

The interviewed fishermen also informed that leatherback turtle had not been sighted in this area for quite some time during its nesting season between October to November. This information was again confirmed by some villagers during the dry season visits to the villages.

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 20 km from the project site.

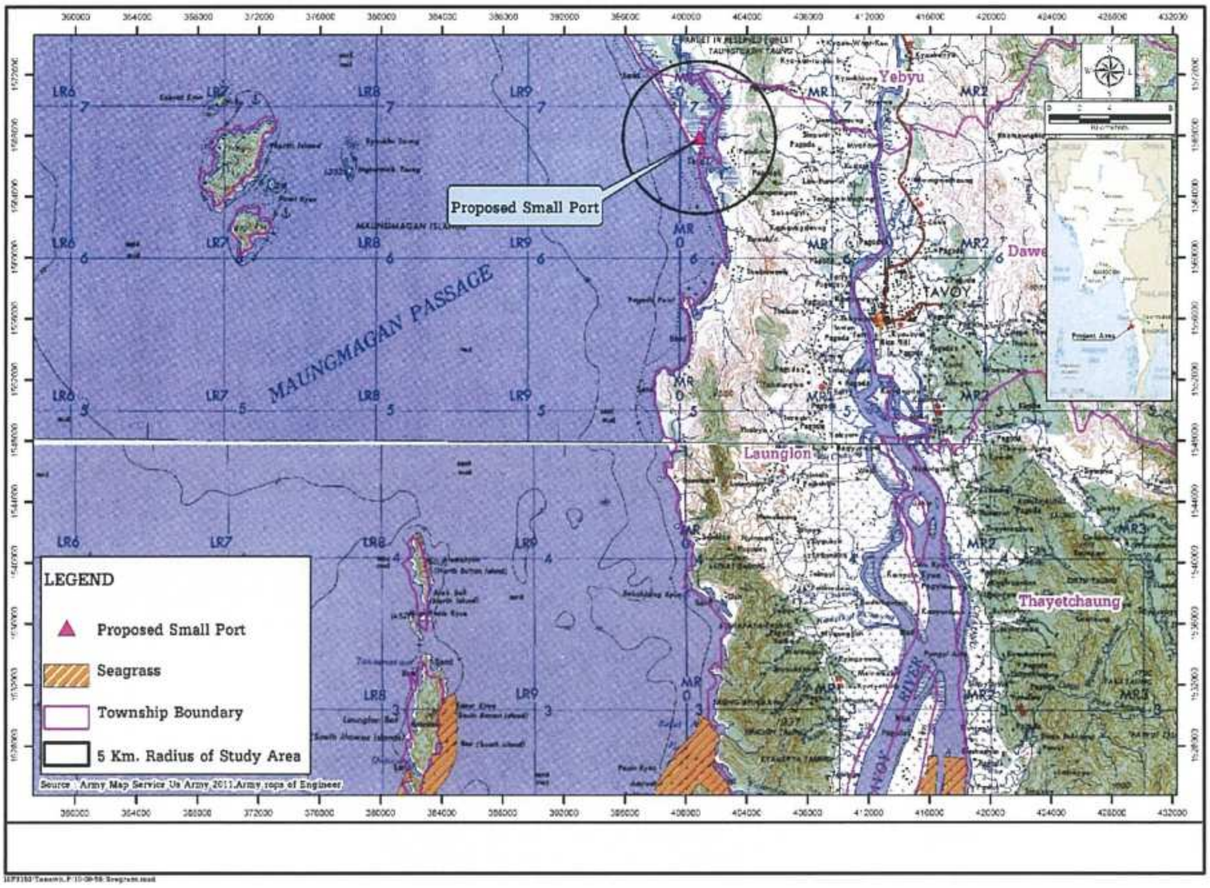
The interviewed fishermen in Sakhanthit, Nyaung Binsiek, Pan Din In, and Muangmagan Villages also confirmed no turtle nesting areas on beaches in their villages.

C3. 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 selected port site. The dominant type of seagrass species is *Halophila decipiens* (see ***Photo 5.3-3***) which was found in seagrass beds in the coastal water at Maungmagun. ***Figure 5.3-3*** shows the locations of seagrass areas.

Source : Seagrasses in Thai waters, 2006

PHOTO 5.3-3: Paddle Seagrass, *Halophila decipiens*



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

FIGURE 5.3-3: LOCATIONS OF SEAGRASS AREAS

5.3.2 Fisheries

The fisheries study was based on information obtained from: (i) secondary sources; (ii) field observations made at local fish market; and (iii) interviewing villagers at Nga Pitat, Sakhanthit, and Pan Din In. The study was conducted in October 2014 for the wet season and in January 2015 for the dry season.

The fishery survey involved interviewing local fishermen, observations of fish sold in the local fish market, and interviewing fish traders in Nga Pitat Village, Pan Din In and Sakhanthit Village, the three villages nearest to the small port 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.

Results of the fisheries study in the wet and dry seasons can described as follows:

Wet Season

A. Fish Species

A total of 53 fish species were identified as listed in ***Table 5.3-2***. Species of economic importance are grouper (Family Serranidae), snapper (*Lutjanus* spp.), emperor (*Lethrinus* spp.), cat fish (*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*).

TABLE 5.3-2

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*	Whitespotted guitarfish
4	Dasyatidae	*Dasyatis kuhlii*	Bluespotted stingray
5	Megalopidae	*Megalops cyprinoides*	Indo-Pacific tarpon
6	Clupeidae	*Anodontostoma chacunda*	Chacunda gizzard shad
7		*Sardinella* spp.	Sardine
8	Pristigasteridae	*Opisthopterus tardoore*	Tardoore
9	Ariidae	*Arius* spp.	Catfish
10		*Arius thalassinus*	Giant catfish
11	Synodontidae	*Saurida* spp.	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*	Largescaled 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* spp.	Ponyfish

TABLE 5.3-2

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

No.	Family	Scientific Name	Common Name
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* spp.	Threadfin bream
36	Lethrinidae	*Lethrinus lentjan*	Pinkear emperor
37		*Lethrinus olivaceus*	Longface emperor
38		*Monotaxis grandoculis*	Humpnosebigeye bream
39	Sciaenidae	*Argyrosomus amoyensis*	Amoy croaker
40		*Nibea* spp.	Croaker
41		*Pennahia* spp.	Croaker
42	Mullidae	*Parupeneus indicus*	Indian goatfish
43	Ephippidae	*Drepane punctate*	Spotted sicklefish
44	Polynemidae	*Eleutheronema tetradactylum*	Fourfinger threadfin
45	Sphyraenidae	*Sphyraena jello*	Pickhandle 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*	Narrowbarred Spanish mackerel
51		*Scomberomorus* spp.	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.

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 (***Figure 5.3-4***).

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 5.3-4 show fishing boats and fishing gears used by local fishermen, and fish vending in Sakhanthit Village.

Most of the fish caught are sold and some are kept for home consumption. The fish sale is either direct selling locally or selling to fish traders in Pan Din In Village.

According to the interviewing with the local fishermen, none of aqua-culture activities have been found in the study and surrounding area. All of fish product come from fishery activities.

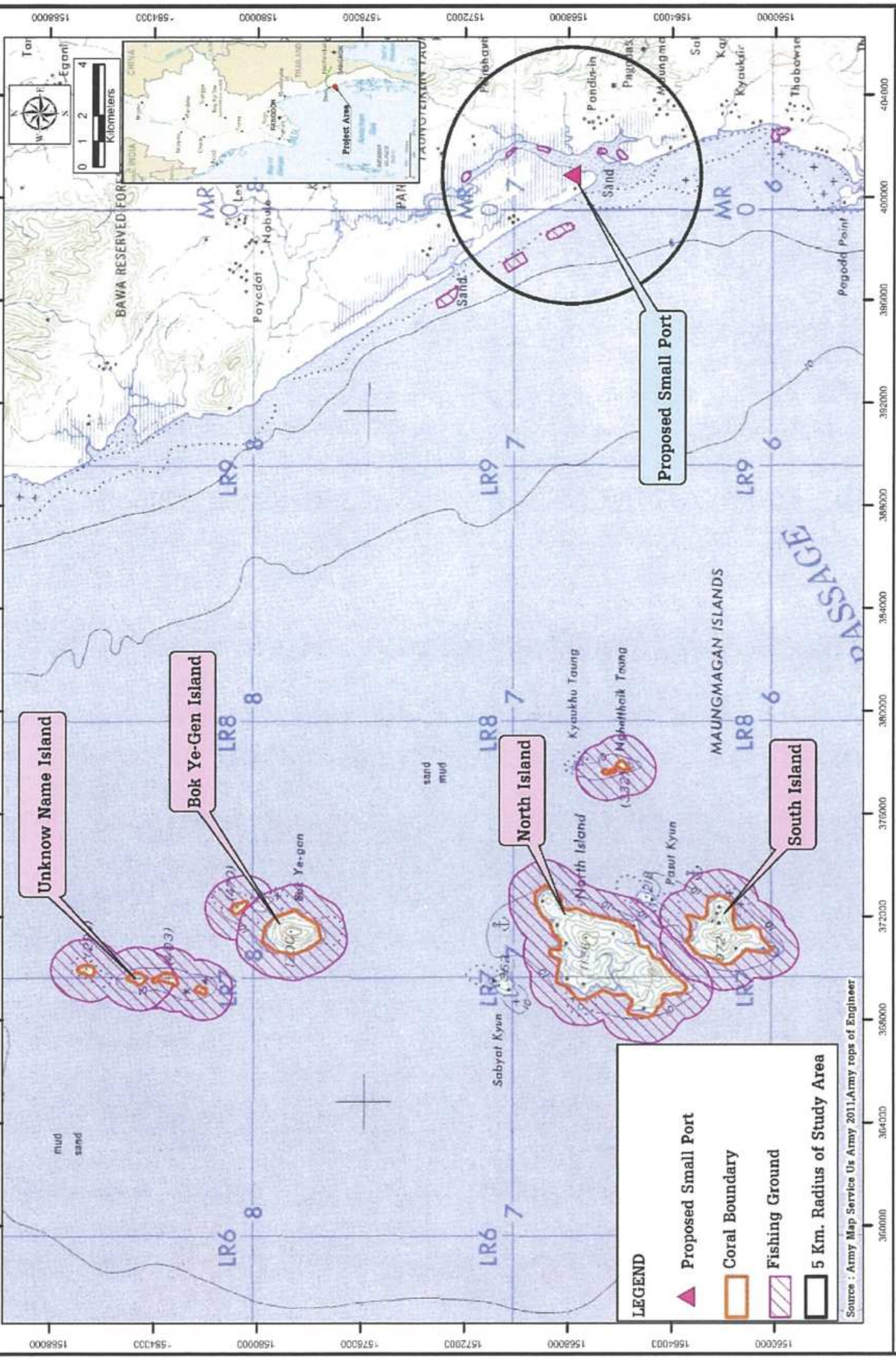
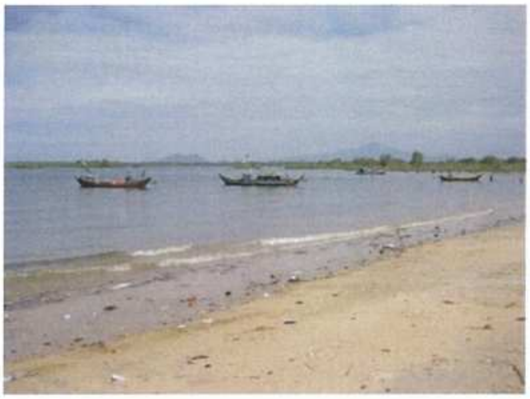


FIGURE 5.3-4 : FISHING GROUND OF FISHERMEN FROM NGA PITAT AND SAKHANTHIT VILLAGES

A. Fishing Boat at Nga Pitat Village



B. Fishing Boat in Sakhanthit Village

C. Set Net at Estuary Area Near Sakhanthit Village

D. Push Net Operated Near the Beach

E. Selling Fish in Sakhanthit Village

F. Fish Traders in Pan Din In Village

PHOTO 5.3-4 : FISHERY RELATED ACTIVITIES

D. Catches

From interviewing the fish traders in Pan Din In Village, an average quantity of fishery resources landed here was in a range of 200-1,000 kg/day. In addition to fish, shrimps and crabs were also caught in commercial quantities. All of the purchased species were for retailing in Dawei. Live lobsters were sold to restaurants in Maungmagan beach, the important tourism site in this area (***Photo 5.3-5***).

Orangespotted grouper, *Epinephelus coioides*	Twospotted red snapper, *Lutjanus bohar*
Talang queenfish, *Scomberoides commersonianus*	Mud spiny lobster *Panulirus polyphagus*

PHOTO 5.3-5 : ECONOMIC-IMPORTANCE SPECIES FOUND DURING THE SURVEY

Dry Season

Fishery survey for dry season was conducted during January, 24 – 28, 2015, the study was performed by interviewing with local fishermen at Nga Pitat and Sakhanthit villages and observation at local fish market and fish trader in Nga Pitat, Pan Din In, Sakhanthit and Muangmagan Villages.

Photo 5.3-6 shown interviewed with local fishermen at Nga Pitat and Sakhanthit villages.

Focus Group Meeting with Fishermen in Nga Pitat Village

Focus Group Meeting with Fishermen in Sakhanthit Village

PHOTO 5.3-6 : FOCUS GROUP MEETING ON FISHERY SURVEY DURING DRY SEASON

The results from fishery survey during dry season were described as follow:

A. Fish Species

A total of 78 fish species w were identified as listed in ***Table 5.3-3***, Species of economic importance are grouper (Family Serranidae) snapper (*Lutjanus* spp.), emperor (*Lethrinus* spp.), cat fish (*Arius* spp.) mackerel and tuna (Family Scombridae) and trevally (Family Carangidae). Others observed fishery resources are mollusk and crustacean. Two important species of crab are mud crab (*Scylla serrata*) and Blue swimming crab (*Portunus pelagicus*) while main species of shrimp including banana prawn (*Penaeus merguiensis*), giant tiger prawn (*Penaeus monodon*) and Lobsters. ***Photo 5.3-7*** shown example types of importance marine species.

TABLE 5.3-3
LIST OF SPECIES OBSERVED IN THIS STUDY (JANUARY 2015)

No.	Family	Scientific Name	Common Name
Fish			
1	Orectolobidae	*Chiloscyllium griseum*	Grey bamboo shark
2	Carcharhinidae	*Carcharhinus melanopterus*	Blacktip reef shark
3	Dasyatidae	*Dasyatis kuhlii*	Bluespotted stingray
4	Elopidae	*Elops hawaiensis*	Tenpounder
5	Megalopidae	*Megalops cyprinoides*	Indo-Pacific tarpon
6	Clupeidae	*Anodontostoma chacunda*	Chacunda gizzard shad
7		*Sardinella* spp.	Sardine
8	Engraulididae	*Stolephorus* spp.	Anchovy
9	Pristigasteridae	*Opisthopterus tardoore*	Tardoore
10	Chirocentridae	*Chirocentrusdorab*	Dorab wolf herring
11	Synodontidae	*Saurida* spp.	Lizardfish
12	Ariidae	*Arius* sp.	Catfish
13		*Arius thalassinus*	Giant catfish
14	Plotosidae	*Plotosus lineatus*	Striped eel catfish
15	Muraenesocidae	*Muraenesox cinereus*	Dogtooth pike conger
16	Belonidae	*Ablennes hians*	Flat needlefish
17	Hemirhamphidae	*Hemirhamphus far*	Blackbarred halfbeak
18	Exocoetidae	*Cypselurus naresii*	Pharao flying fish
19	Platycephalidae	*Thysanophrys arenicola*	Flathead
20	Serranidae	*Epinephelus areolatus*	Areolate grouper
21		*Epinephelus coioides*	Orangespotted grouper
22		*Epinephelus erythrurus*	Cloudy grouper
23		*Epinephelus sexfasciatus*	Sixbar grouper
24	Teraponidae	*Terapon jarbua*	Jarbuaterapon
25		*Terapon theraps*	Largescaledterapon
26	Sillaginidae	*Sillago sihama*	Silver sillago
27	Rachycentridae	*Rachycentron canadum*	Cobia
28	Carangidae	*Alectis indicus*	Indian threadfish
29		*Alepes melanoptera*	Blackfinscad
30		*Atule mate*	Yellow scad
31		*Carangoides armatus*	Longfin trevally
32		*Caranx ignobilis*	Giant trevally
33		*Caranx tille*	Tille trevally
34		*Megalaspis cordyla*	Hardtail scad
35		*Scomberoides commersonianus*	Talang Queenfish
36		*Trachinotus blochii*	Snubnose dart

TABLE 5.3-3

LIST OF SPECIES OBSERVED IN THIS STUDY (JANUARY 2015) (CONT'D)

No.	Family	Scientific Name	Common Name
37	Leiognathidae	*Leiognathus* spp.	Ponyfish
38	Gerreidae	*Gerres abbreviatus*	Deepbody mojarra
39		*Gerres filamentosus*	Flagfin mojarra
40	Lutjanidae	*Lutjanus decussatus*	Checkered snapper
41		*Lutjanus fulviflamma*	Blackspot snapper
42		*Lutjanus leminiscatus*	Yellowstreaked snapper
43		*Lutjanus lutjanus*	Bigeye snapper
44		*Lutjanus vitta*	Brownstriped snapper
45	Caesionidae	*Caesio cunning*	Redbelly yellowtail fusilier
46	Lobotidae	*Lobotes surinamensis*	Tripletail
47	Haemulidae	*Diagramma pictus*	Painted sweetlips
48		*Plectorhinchus gibbosus*	Harry hotlip
49		*Plectorhinchus lessoni*	Sweetlip
50		*Pomadasys maculatum*	Saddle grunt
51	Nemipteridae	*Nemipterus* sp.	Threadfin bream
52		*Scolopsis monogramma*	Monocle bream
53	Lethrinidae	*Lethrinus lentjan*	Pinkear emperor
54		*Lethrinus olivaceus*	Longface emperor
55	Sciaenidae	*Argyrosomus amoyensis*	Amoy croaker
56		*Nibea* spp.	Croaker
57		*Pennahia* spp.	Croaker
58		*Protonebia* spp.	Croaker
59	Ephippidae	*Drepane longimana*	Bandedsicklefish
60		*Drepane punctata*	Spotted sicklefish
61	Mugilidae	*Ellochelon vaigiensis*	Squaretail mullet
62		*Moolgarda* spp.	Mullet
63	Polynemidae	*Eleutheronema tetradactylum*	Fourfinger threadfin
64	Siganidae	*Siganus javus*	Streaked spinefoot
65	Sphyraenidae	*Sphyraena jello*	Pickhandle barracuda
66		*Sphyraena obtusata*	Obtuse barracuda
67	Scombridae	*Euthynnus affinis*	Mackerel tuna
68		*Gymnosarda unicolor*	Dogtooth tuna
69		*Thunnus tonggol*	Longtail tuna
70		*Rastrelliger brachysoma*	Indo-pacific mackerel
71		*Rastrelliger kanagurta*	Indian mackerel
72		*Scomberomorus commerson*	Narrowbarred Spanish mackerel
73		*Scomberomorus guttatus*	Indo-pacific king mackerel

TABLE 5.3-3

LIST OF SPECIES OBSERVED IN THIS STUDY (JANUARY 2015) (CONT'D)

No.	Family	Scientific Name	Common Name
74	Istiophoridae	*Istiophorus platypterus*	Indo-pacific sailfish
75	Bothidae	*Grammatobothuspolyophthalmus*	Manyeyed flounder
76	Cynoglossidae	*Arelia bilineata*	Fourlinedtonguesole
77	Balistidae	*Abalistes stellatus*	Starry triggerfish
78	Tetraodontidae	*Lagocephalus wheeli*	Toadfish
Mollusk			
1	Muricidae	*Chicoreus ramosus*	Rock shell
2	Volutidae	*Melo melo*	Indian volute
3	Veneridae	*Meretrix ovum*	Venus shell
4	Arcidae	*Anadara inaequivalvis*	Arc clam
5	Sepiidae	*Sepia pharaonis*	Pharaoh cuttlefish
Crustaceans			
1	Penaeidae	*Penaeus indicus*	Indian white prawn
2		*Penaeus merguiensis*	Banana shrimp
3		*Penaeus monodon*	Giant tiger prawn
4		*Penaeus semisulcatus*	Green tiger prawm
5	Portunidae	*Portunus pelagicus*	Blue swimming crab
6		*Portunus rubromaginatus*	Red portunid crab
7		*Portunus sanguinolentus*	Threespot swimming crab
8		*Scylla serata*	Serrated mud crab
9		*Charybdis feriatus*	Indo-pacific portunid crab

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

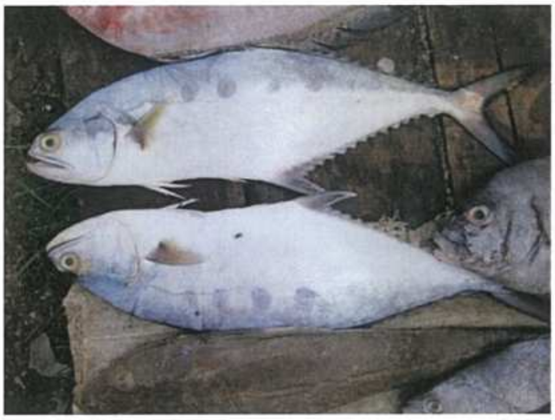
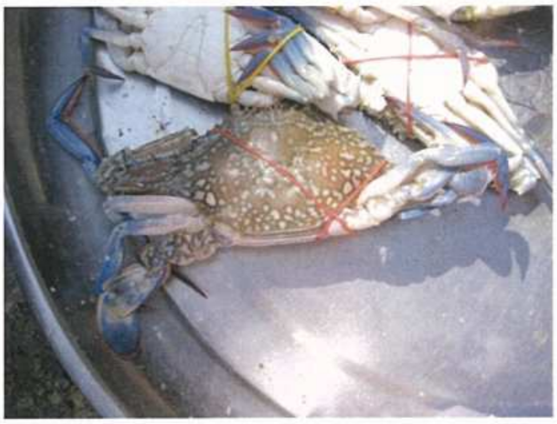
Giant catfish, *Arius thalassinus*	Orangespotted grouper, *Epinephelus coioides*
	
Talangqueenfish, *Scomberoidescommersonianus*	Brownstriped snapper, *Lutjanus vitta*
Long face emperor, *Lethrinus olivaceus*	Dogtooth tuna, *Gymnosarda unicolor*

PHOTO 5.3-7 : ECONOMIC-IMPORTANCE SPECIES FOUND IN THIS SURVEY (JANUARY 2015)

Indian volute, *Melomelo*

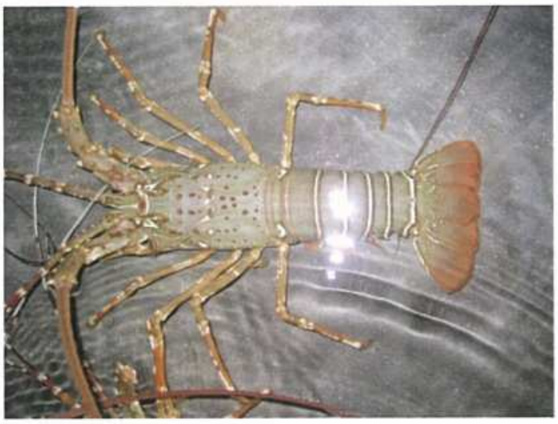
Rock shell, *Chicoreus ramosus*

Pharaoh cuttlefish, *Sepia pharaonis*



Blue swimming crab, *Portunus pelagicus*

Painted spiny lobster, *Panulirus versicolor*



Mud spiny lobster *Panulirus polyphagus*

PHOTO 5.3-7 : ECONOMIC-IMPORTANCE SPECIES FOUND IN THIS SURVEY (JANUARY 2015) (CONT'D)

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 (***Figure 5.3-4***). The results will be same as wet season.

C. Fishing Gears

Result from focus group meeting with fishermen at Nga Pi That village and Sakhanthit village indicated majors fishing gears are including: push net, hook and line, tangling net and trap. Besides, there are small boat with no engine from these villages do fish in mangrove area near their village using trap or hook and line. These boats employed only family labor and most of fished fish are consumed in the family.

In Nga Pitat village, two types of fishing boats are used. Small-sized boats (4-6 m long) there are medium-sized boats (8-10 m long) equipped with 5 – 10 horse-power engine. This boat employed 2-4 crews for each fishing trip. Average duration of fishing trip is 5-6 days but in rainy season fisherman do day trip fishing for lobsters. Average income for each fishing trip is around 2 – 300,000 kyat. Furthermore, woman in this village do crab trap in nearby mangrove forest while man do fishing in the sea.

In Sakhanthit village, there are around 30 - 40 fishing boat operated by member of this village, most of the fishing boat are medium-size boat with engine. This boat employs 3-5 crew for each 5 – 6 days fishing trip. There also large-size fishing boat with length of 10 meters operate by locals of this village, this boat employs at least 8 crews for its 1 month continuous fishing trip. Average fishing trip income of medium-size boat is 3 – 5,000,000 kyat while large-size is 5 – 6,000,000 kyat.

Most of the fish caught are sold and some are kept for home consumption. The fish sale is either direct selling locally or selling to fish traders in Pan Din In Village.

Some of them are sold lively to restaurant in Maungmagan beach such as painted spiny lobster (*Panulirus versicolor*) and mud spiny lobster (*Panulirus polyphagus*).

According to the interviewing with the local fishermen, none of aqua-culture activities have been found in the study and surrounding area. All of fish product come from fishery activities.

Photo 5.3-8 show fishing boats used by local fishermen, and fish vending in Nga Pitat and Sakhanthit Villages.

D. Catches

From interviewing with fish trader in Pan Din In Village, an average quantity of fishery resources landed here is in range of 200 – 1,000 kg/day. In addition to fish, shrimps and crabs were also caught in commercial quantities. All of the purchased species were for retailing in Dawei and export to Thailand.

Fishing Boat at Nga Pitat Village	Fishing Boat at Sakhanthit Village

PHOTO 5.3-8 : EXAMPLE OF FISHING BOAT

5.3.3 Terrestrial Ecology

The study of terrestrial ecology was based on (i) secondary information on terrestrial ecology in the region, and; (ii) results of field surveys conducted in the proposed project site during 18-21 October 2014 for the wet season and 24-26 January 2015 for the dry season.

The field surveys were conducted at two levels. The surveys for flora species at the project site (small port) covered 20 sampling plots during wet season and 17 sampling for coastal road during dry season while the surveys at the study area level were walk through surveys guided by satellite images.

Table 5.3-4 and ***Table 5.3-5*** gives information on the field surveys on period in proposed study area. ***Appendix 5C*** provides details on the collection of fauna and flora and references**.** The terrestrial ecology survey are shown in ***Photo 5.3-9***.

The position of sampling plots and study area were shown in ***Figure 5.3-5*** to *5.3-7*.

At the time of preparing this Scoping Report, results of the surveys conducted during 24-26 January 2015 in the dry season were not ready. Therefore, only results of the surveys in October 2014 in the wet season are discussed.

TABLE 5.3-4
FLORA SURVEYS WITHIN STUDY AREA

Date	Surveyed areas
Wet Season	
18-20 Oct 14	The proposed project site (small port) (20 sampling plots)
20-21 Oct 14	The study area within 5 km radius of the project site
Dry Season	
24-25 Jan 15	The proposed project site (coastal road) (17 sampling plots)

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

TABLE 5.3-5
FAUNA SURVEYS WITHIN STUDY AREA

Date	Surveyed areas
Wet Season	
18-20 Oct 14	The proposed project site
20-21 Oct 14	The study area within 5 km radius of the project site
Dry Season	
24-25 Jan 15	The proposed project site
25-26 Jan 15	The study area within 5 km radius of the project site.

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

Terrestrial Ecology Survey on Project Site (at Small Port) and Study Area
(18-21 Oct 14)

Wildlife Survey on Project Site and Study Area during Wet Season
(18-21 Oct 14)

Terrestrial Ecology Survey on Project Site (at Coastal Road)
(24-25 Jan 15)

Wildlife Survey on Project Site and Study Area during Dry Season
(24-26 Jan 15)

PHOTO 5.3-9 : TERRESTRIAL ECOLOGY AND WILDLIFE SURVEY ON PROJECT SITE AND STUDY AREA

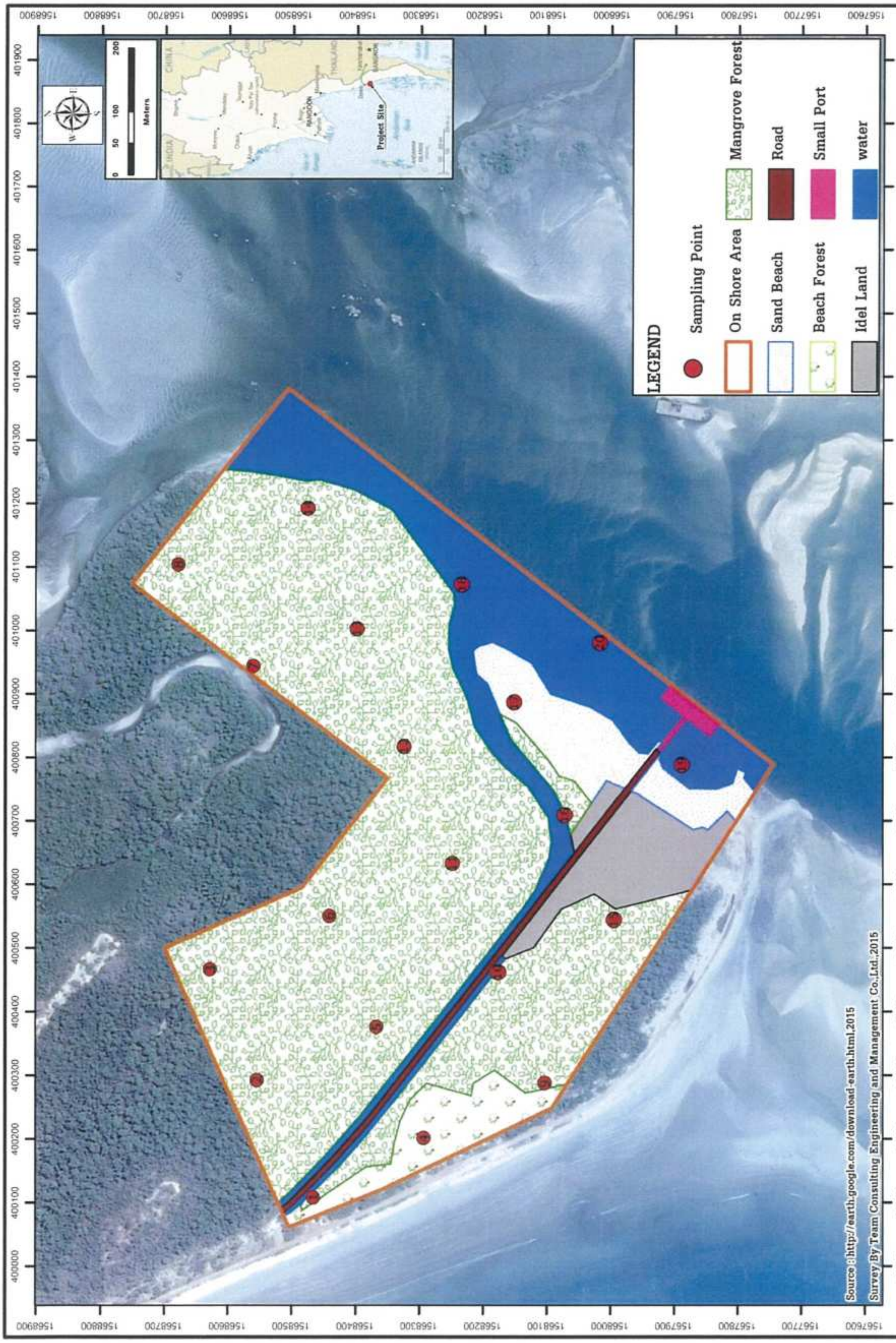


FIGURE 5.3-5 : 20 SAMPLING PLOT AT SMALL PORT SITE

FIGURE 5.3-6 : 17 SAMPLING PLOT AT COASTAL ROAD

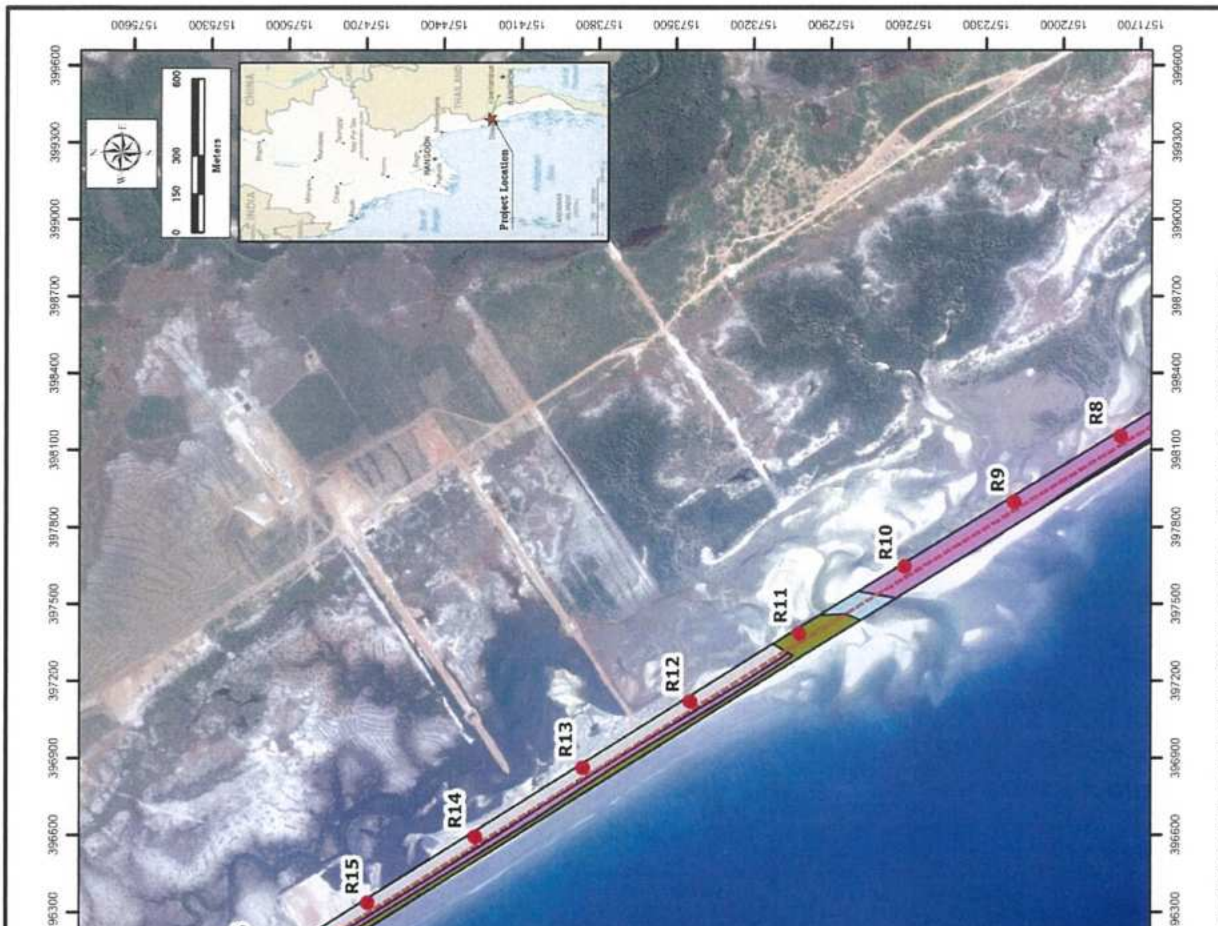


FIGURE 5.3-6 : 17 SAMPLING PLOT AT COASTAL ROAD (CONT'D)

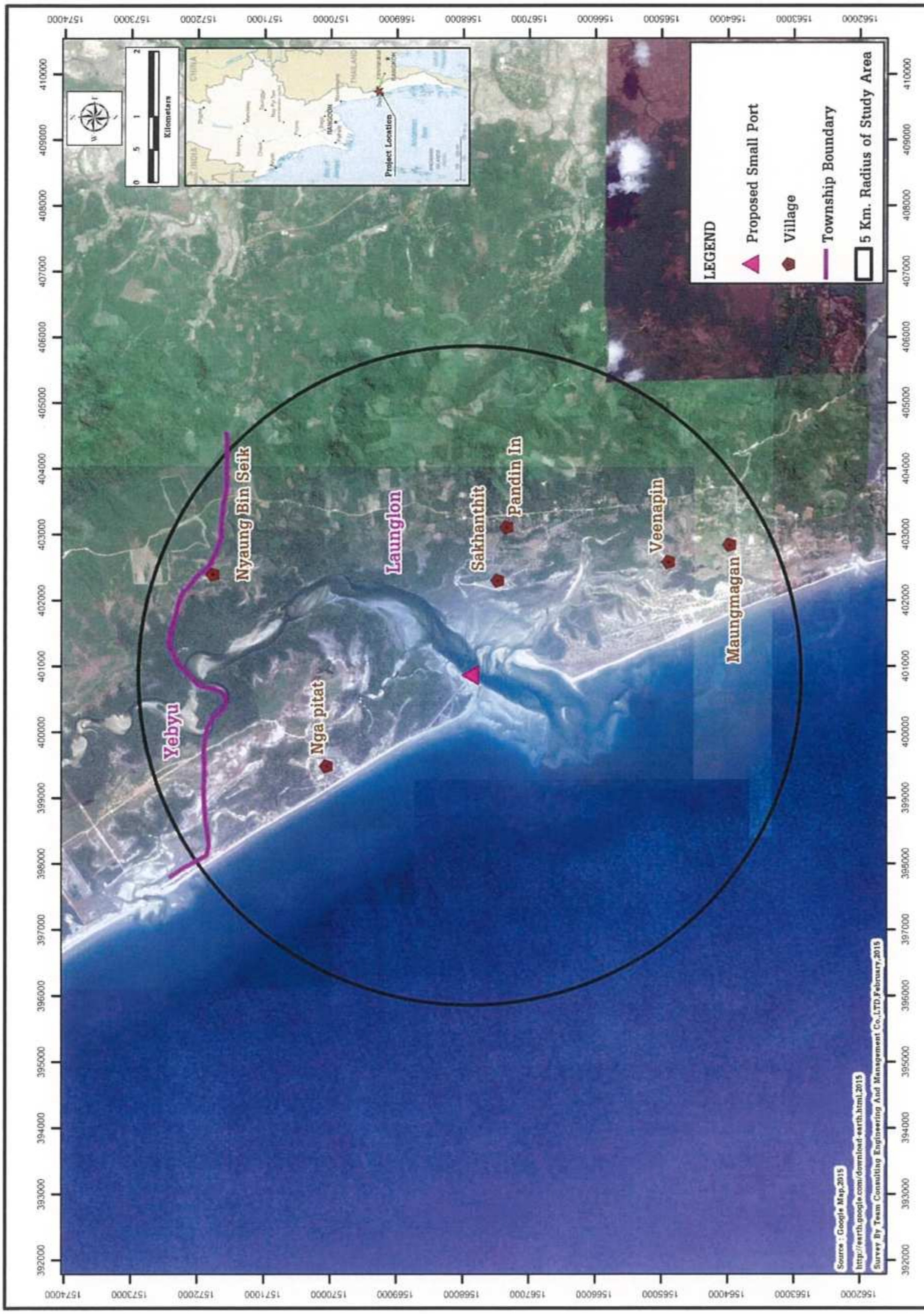


FIGURE 5.3-7 : 5 KM OF STUDY AREA

A. Forests

Four types of forests exist in the study area: mangrove forest, beach forest, dry dipterocarp forest, and mixed deciduous forest. ***Photo 5.3-10*** shows pictures of these four forest types. These forest types are in small patches. Mangrove and beach forests are in the coastal area while dipterocarp and mixed deciduous forests are on land. Almost all of these forests are in degraded conditions. Pan Din In reserve forest is to the east of the project site. The study area covers with this reserve forest. The project site (both small port and coastal road) has only mangrove and beach forests.

Beach Forest in the Project Site	Mangrove Forest in the Project Site
Mangrove Forest in the Study Area	Mixed Deciduous Forest in the Study Area
Dry Dipterocarp Forest in the Study Area	

PHOTO 5.3-10 : EXISTING FORESTS IN THE PROJECT SITE AND STUDY AREA

B. Flora Species

Project Site

Types of forest in Proposed Small Port are Mangrove forest and Beach forest.

The twenty sampling plots gave a total of 75 plant species of which three are classified in the IUCN's Red Lists (2013) as near-threatened species. ***Table 5.3-6*** gives information on these three species. These three plant species are also commonly found in of the country and Southeast Asia region.

The dominant of tree species were *Avicennia officinalis* L., *Avicennia alba* Blume, *Rhizophora apiculata* Blume, *Excoecaria agallocha* L., *Ceriops tagal* (Perr.) C.B. Rob., *Ceriops decandra* (Griff.) Ding Hou, *Bruguiera cylindrica* (L.) Blume, *Sonneratia alba* J.Sm., *Aegialitis rotundifolia* Roxb., and *Heritiera littoralis* Dryand and *Wedelia biflora*.

The dominant of underground tree species were *Finlaysonia maritima* Backer ex K. Heyne, *Derris trifoliata* Lour., *Dalbergia candenatensis* (Dennst.) Prain, *Sesuvium portulacastrum* (L.) L.), *Phoenix paludosa* Roxb., and *Wedelia biflora*.

Example of tree species in Small Port Site are shown in ***Photo 5.3-11***.

The Study Area (5 km radius)

Types of forest in 5 km radius of study area are Mangrove Forest, Beach Forest, Dry Dipterocarp Forest, and Mixed Deciduous Forest.

The study area is habitats of 170 plant species, of which two are vulnerable species and three are near-threatened species. The three near-threatened species were similar to those found in the project site. Information on the two vulnerable species are presented in ***Table 5.3-7***. These two vulnerable species are also found in the country and Southeast Asia region.

The dominant of tree species in mangrove forest were *Rhizophora apiculata* Blume, *Rhizophora mucronata* Poir, *Ceriops tagal* (Perr.) C.B. Rob., *Ceriops decandra* (Griff.) Ding Hou, *Bruguiera cylindrica* (L.) Blume, *Lumnitzera littorea* (Jack) Voigt, *Xylocarpus granatum* Koenig, *Xylocarpus moluccensis* (Lam.) M.Roem., *Sonneratia caseolaris* (L.) Engl., *Nypa fruticans* Wurmb, *Intsia bijuga* (Colebr.) Kuntze, *Cerbera odollam* Gaertn., *Avicennia alba* Blume, and *Avicennia officinalis* L.

TABLE 5.3-6

THREE NEAR-THREATENED PLANT SPECIES

No.	Scientific Name	Common Name	Family Name	Photo
1	*Aegialitis rotundifolia* Roxb.	Bai Pai	Plumbaginaceae	
2	*Ceriops decandra* (Griff.) Ding Hou	Prong Khao	Rhizophoraceae	
3	*Sonneratia ovata* Backer	Lampan	Lythraceae	

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

Avicennia officinalis L.	*Avicennia alba* Blume	*Finlaysonia maritima* Backer ex K. Heyne
Rhizophora apiculata Blume	*Gloriosa superba* L	*Dodonae vicosa* Jacq.
Planchonella obovata Pierre	*Wedelia biflora*	*Excoecaria agallocha* L.
Phyllanthus emblica L.	*Diospyros ferrea* (Willd.) Bakh. var. ferrea	*Bruguiera cylindrica* (L.) Blume

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

PHOTO 5.3-11 : EXAMPLE OF TREE SPECIES IN SMALL PORT AREA

TABLE 5.3-7

VULNERABLE PLANT SPECIES FOUND IN THE STUDY AREA

No.	Scientific Name	Common Name	Family Name	Photo
1	*Hopeaodorata Roxb.*	Tha Kien Thong	Dipterocaraceae	
2	*Intsia bijuga* (Colebr.) Kuntze	LumporThale	Leguminosae	

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

The dominant of tree species in beach forest were *Casuarina equisetifolia* J.R. & G. Forst., *Phyllanthus emblica* L., *Diospyros ferrea* (Willd.) Bakh. var. ferrea, *Memecylon pubescens* (Blume) King, *Anacardium occidentale* L., *Lannea coromandelica* Merr., and *Derris indica* Bennet.

The dominant of tree species in Mixed Deciduous Forest were *Hopea odorata* Roxb., *Streblus asper* Lour., *Cratoxylum cochinchinense* (Lour.) Blume, *Dillenia obovata* (Blume) Hoogland, *Pterospermum diversifolium* Blume, *Morinda coreia* Ham., *Nephelium hypoleucum* Kurz, *Microcos tomentosa* Sm., and *Suregada multiflorum* (A.Juss.) Baill.

The dominant of tree species in Dry Dipterocarp Forest were *Dipterocarpus obtusifolius* Teijsm. ex Miq., *Aporusa villosa* (Wall. ex Lindl.) Baill, *Xylia xylocarpa* (Rxob.) Taub., and *Croton roxburghii* N.P. Balaker.

The dominant of underground tree species in this area were *Hibiscus tiliaceus* L., *Lepisanthes rubiginosa* (Roxb.) Leenh., *Syzygium gratum* (Wight) S.N. Mitra, *Catunaregam tometosa* (Blume ex DC.) Tirveng., *Eurycoma longifolia* Jack, *Mimosa pudica* L.), *Premna obtusifolia* R.Br., *Macroptilium lathyroides* (L.) Urb., *Caesalpinia bonduc* (L.) Roxb., *Flagellaria indica* L., *Acanthus ilicifolius* L., *Gloriosa superba* L., *Abrus precatorius* L., *Clerodendrum inerme* (L.) Gaertn., *Pandanus odoratissimus* L.f., *Finlaysonia maritima* Backer ex K. Heyne, and *Derris trifoliata* Lour.

Example of tree species in 5 km radius of study area are shown in ***Photo 5.3-12***.

Dipterocarpus obtusifolius Teijsm. ex Miq.	*Xylia xylocarpa* (Rxob.) Taub.	*Lannea coromandelica* Merr.
Rhizophora apiculata Blume	*Bruguiera gymnorrhiza*	*Xylocarpus moluccensis* (Lam.) M.Roem.
Ceriops decandra (Griff.) Ding Hou	*Lumnitzera littorea* (Jack) Voigt	*Heritiera littoralis* Dryand.
Syzygium gratum (Wight) S.N. Mitra	*Lpomoea aquatica* Forssk.	*Acanthus ilicifolius* L.

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

PHOTO 5.3-12 : EXAMPLE OF TREE SPECIES IN 5 KM RADIUS OF STUDY AREA

C. Fauna Species

Number of Species in Project Site

In the project site, 39 fauna species were found in the project site, consisting of: (i) 5 mammal species, (ii) 24 bird species, (iii) 7 reptile species and, (iv) 3 amphibian species. ***Photo 5.3-13*** shows pictures of some species. The detail on each fauna species were described as follow:

(a) Mammals Species

A total of 5 mammal species were recorded during surveyed period. Among the recorded species, major mammal species found in the project site are bat (Family: Vespertilionidae) such as *Pipistrellus javanicus* and *Scotophilus kuhlii*. and rat/ squirrel (Family: Muridae) such as *Mus musculus*, *Rattus rattus* and *Callosciurus caniceps*.

(b) Birds Species

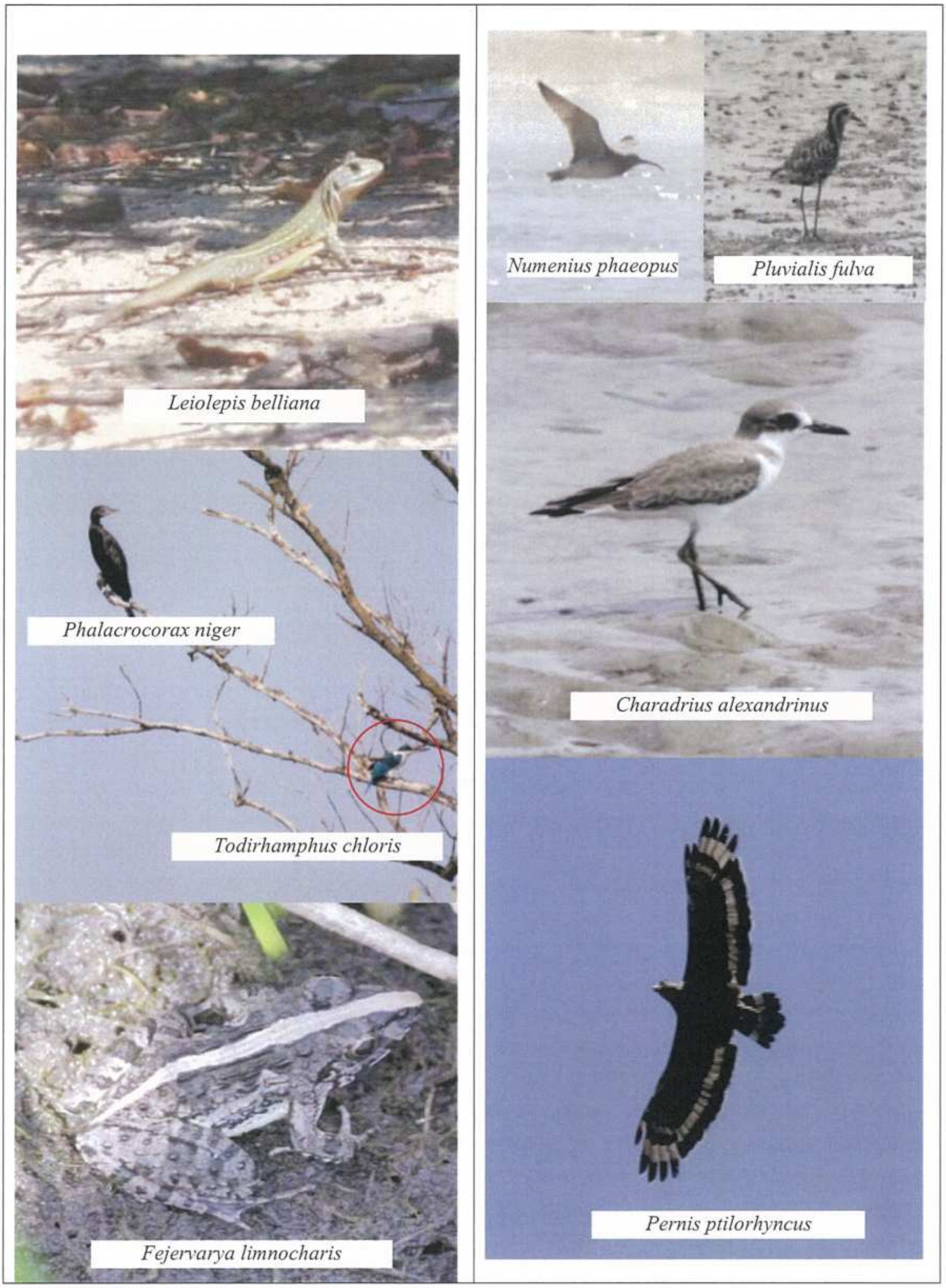
A total of 24 bird species were recorded during surveyed period. Among the recorded species, major bird species that found in the project site are composed of familay Ardeidaev (heron) such as *Egretta sacra*, *Butorides striata*, *Egretta garzetta*, *Phalacrocorax niger*, *Todirhamphus chloris*, and *Halcyon smyrnensis*. Group of bird that live in open area and coastal area such as *Vanellus indicus*, *Charadrius dubius*, *Numenius phaeopu*, and *Actitis hypoleucos*. Group of bird that can adapt in all area condition such as *Columba livia*, *Geopelia striata*, *Acridotheres tristis*, and, *Acridotheres grandis*. Group of carnival bird such as *Haliastur indus*, *Milvus migrans*, and *Glaucidium cuculoides*. Group of small bird such as *Cinnyris jugularis* and *Orthotomus sutorius*.

(c) Reptile Species

A total of 7 reptile species were recorded during the survey period. Among the recorded species, major reptile species found in the project site are composed of gecko (family: Gekkonidae) such as *Hemidactylus garnotii* and *Cosymbotus platyurus*., skink (family: Scincidae) such as *Mabuya multifasciata* and *Mabuya macularia*, Colubrid (family : Colubridae) such as *Trimeresurus purpureomaculatus*, and group of reptile that live in mangrove area such as *Varanus nebulosus*.

(d) Amphibians Species

A total of 3 amphibian species were recorded during the survey period. Among the recorded species, all amphibian species found in the project site are frog (family: Ranidae) such as *Fejervarya cancrivora, Rana erythraea*, and *Fejervarya limnocharis*.



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

PHOTO 5.3-13 : EXAMPLES OF WILDLIFE FOUND IN THE PROJECT SITE

Number of Species in Study Area (5 km Radius)

In the study area, 86 species were found consisting of: (i) 9 mammal species, (ii) 50 bird species, (iii) 20 reptile species and, (iv) 7 amphibian species. ***Photo 5.3-14*** shows pictures of some wild life found in the study area. The detail on each fauna species were described as follow:

(a) Mammals Species

A total of 9 mammal species were recorded during surveyed period. Among the recorded species, major mammal species found in the study area are bat such as *Macroglossus sobrinus* (family: Pteropodidae) and *Pipistrellus javanicus* (family: Vespertilionidae), squirrel such as *Callosciurus caniceps* (family : Sciuridae)

(b) Birds Species

A total of 50 bird species were recorded during surveyed period. Among the recorded species, example of bird species that found in the study area are composed of *Egretta garzetta*, *Halcyon smyrnensis*, *Pernis ptilorhyncus*, *Milvus migrans*, and *Haliastur indus*.

(c) Reptile Species

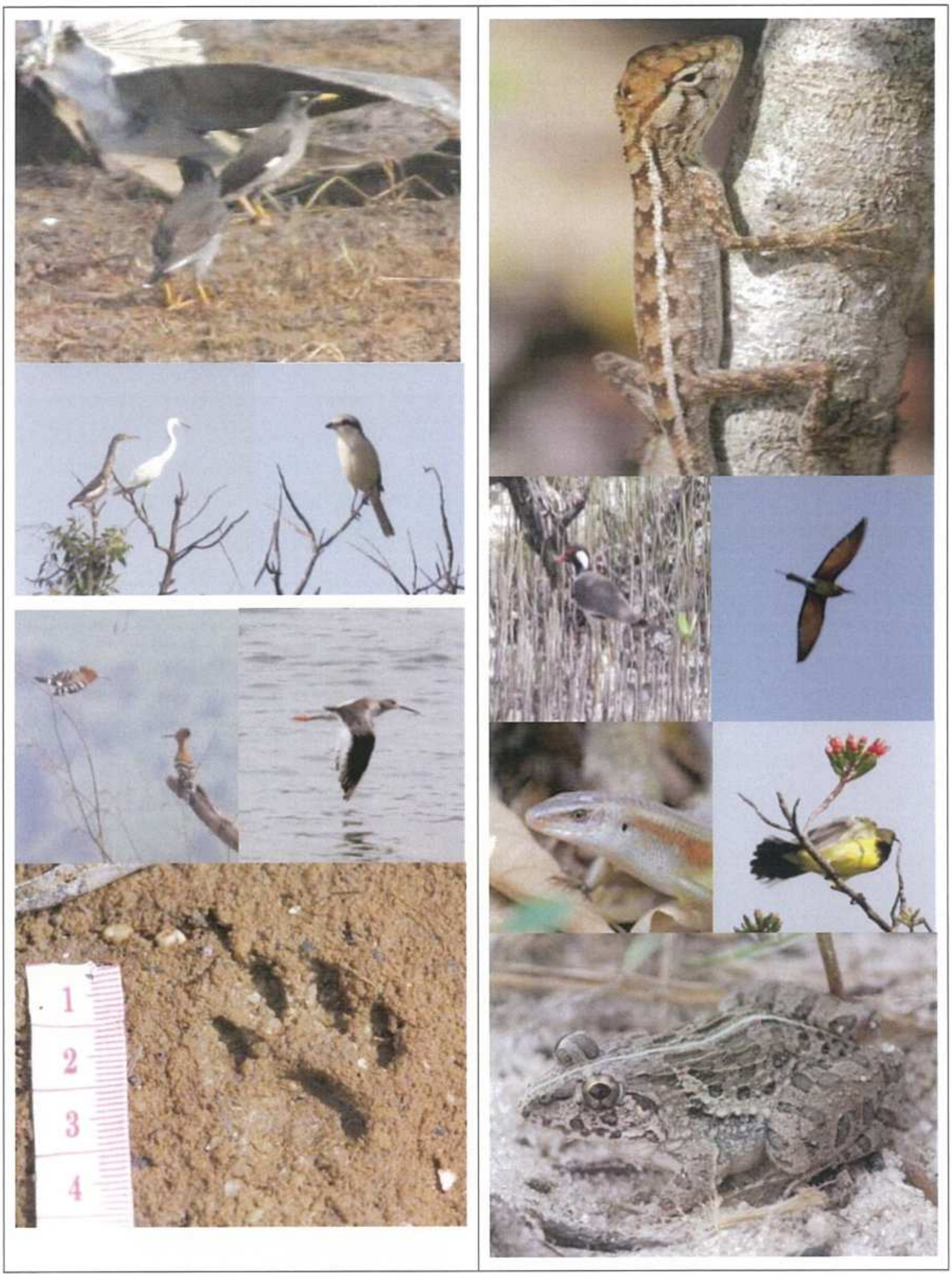
A total of 20 reptile species were recorded during the survey period. Among the recorded species, example of reptile species found in the study area are composed of snake such as *Chrysopelea ornata*, *Naja sp. Python reticulatus*, lizard such as *Gekko gecko*.

(d) Amphibians Species

A total of 7 amphibian species were recorded during the survey period. Among the recorded species, the amphibian species found in the study area are composed of *Fejervarya limnocharis*, *Fejervarya cancrivora*, *Duttaphrynus melanostictus*, *Kaloula pulchra*) and *Polypedates leucomystax*.

Conservation Status

All of species found in both the project site and study area are not in any of the four categories in the conservation list of IUCN (2013)-critically endangered, endangered, vulnerable, and near threatened species. The status of all the species is "least concern".



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

PHOTO 5.3-14 : EXAMPLES OF WILDLIFE SPECIES IN THE STUDY AREA

5.4 SOCIO-ECONOMIC COMPONENTS

5.4.1 Socio-Economic

Although socio-economic study in this context is focusing on the local community groups situated within 5 km radius from the project site[3], the global view at the township level is also used for elaboration. Hence information was derived from both secondary and primary and sources. The former is from relevant documents and official statistic while the latter is from interviewing village headmen and key informants in the five (5) villages in the study area. They are Nga Pitat, Sakhanthit, Nyaung Bin Seik, Pan Din In and Vee Na Pin community of Muangmagan village ***(Figure 5.4-1)***. All of them are in Launglon Township. Questionnaires were used to guide the interview these peoples (***Appendix 5D***). The socio-economic activities shown in ***Photo 5.4-1***. Results describe the local socio-economic condition as follows:

Population

Number of population and households of these five (5) villages are presented in ***Table 5.4-1***. In total, the study area is inhabited by 10,597 peoples in 1,523 households, an average household size of about 7 persons.

The population in the study area is a very small portion of Launglon Townships, about 7% only.

TABLE 5.4-1

HOUSEHOLDS AND POPULATION IN FIVE VILLAGES OF THE STUDY AREA

Village	No. of Household	Population		
		Male	Female	Total
1. Nga Pitat	180	477	434	911
2. Sakhanthit	160	357	407	764
3. Nyaung Bin Seik	75	157	213	370
4. Pan Din In	1,000	3,298	4,634	7,932
5. Vee Na Pin	108	300	320	620
Total of 5 villages in the study area	1,523	4589	6,008	10,597
Township population	N/A	73,525	78,349	151,874
% to township population	N/A	6	8	7

Sources: Data derived from:

1. Health Profile of Launglone Township
2. Interview village headmen key informants in each village, in January 2015 by the Consultant.

[3]The study area of potential impacts is not defined in Myanmar context. This study follows the guideline of the Office of Natural Resources and Environmental Policy and Planning, Thailand which define an area within a 5 km. radius of the project site as an area of potentially impact by the project development.

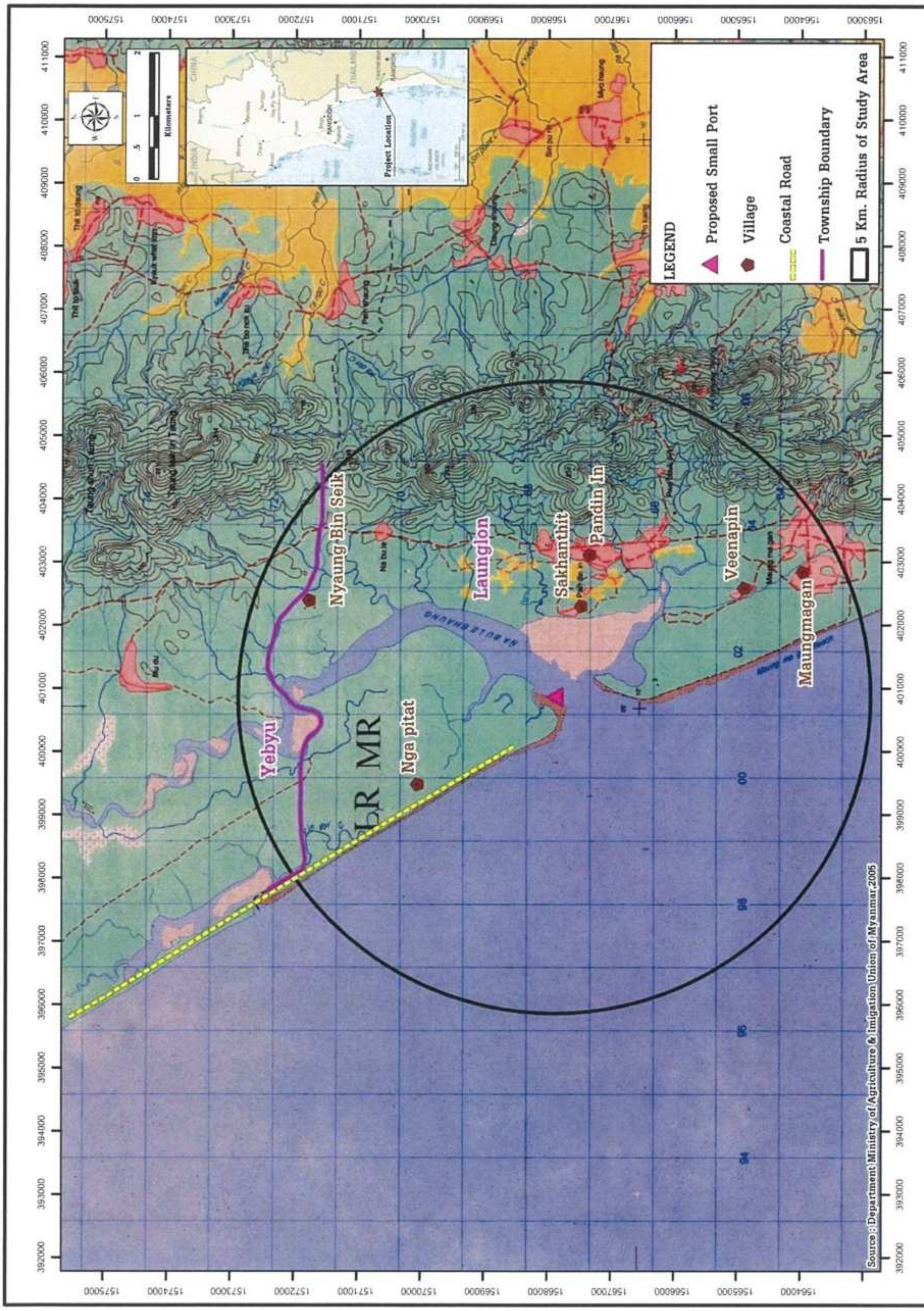


FIGURE 5.4-1 : VILLAGE IN 5 KM STUDY AREA

Socio-economic Survey at Nga Pitat Village

Socio-economic Survey at Sakhanthit Village

Socio-economic Survey at Sakhantiht Village

Socio-economic Survey at Pan Din In Village

Socio-economic Survey at Muangmagan and Vee Na Pin Villages

PHOTO 5.4-1 : EXAMPLE OF SOCIO-ECONOMIC SURVEY

Health Conditions

According to information derived from the interview of village headmen and key informants, there were no serious health problems in these five (5) villages of the study area. The mortality and morbidity rate is low. In year 2014, only few cases of fever, cough, hypertension and malaria were found. These are similar to the five leading diseases of the townships. However there was no report of mortality by these diseases.

There is 1 station hospital at Muangmagan village. In case of illness, the villagers go to this station hospital, where its location is differed from village to village. Vee Nit Pin, Sakhanthit and Pan Din In are in a distance of 1.5-4 km while Nga Pitat and Nyaung Bin Seik are farer, about 7-10 km. This station hospital equips 16 beds, 1 doctor and 16 nurses. Pan Din In has more advantage of 1 private clinic in the village.

There is no management system for solid waste and wastewater in these communities. Disposal is on primitive method, of throwing away or buried individually.

There are two sources of drinking water, buying and shallow well. The latter is also a source for washing and cleaning. Its quantity is sufficient with fair quality in most of these villages, but not in Vee Na Pin. This village faces to insufficient of water supply in the dry season, and the quality is not good.

Gender Issues

As shown in ***Table 5.4-1,*** female population in these five (5) villages is higher than male, with the female to male population ratio of 1.065 to 1. This is slightly higher than the township rate which is about 1.03.

In general, men and women are equal in Myanmar, thus there is no gender issue 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, but the decisions are respected by the other.

In the study area, men and women are making decisions together on important issues for family such as house purchasing and religious activities. While men play a major role on fishing, farming and political interest, women dominate in cooking and children's education. Although the women don't go fishing in the sea due to physical constraints, they do collect aquatic fauna such as shell, clams, shrimp etc. in the tidal zone within mangroves forest.

Main Economic Activities

(1) Occupations

Fishing and collecting aquatic fauna are the main economic activities of the peoples in these five (5) villages. However agriculture also plays a role. Paddy and orchards are dominant crops. Perennial crops of cashew nut, betel nut, rubber and fruits are cultivated, and sold for cash.

Apart from major occupation of fishing and farming, about 10% of them earn form general wage labour and employees. Besides, about 5% of villagers are out-migrated for work, in Dawei city and also in neighbor country.

(2) Household Income and Cost of Livings

Based on occupations mentioned above, major sources of villagers' income are from fishing and farming while the other portions are from employment. Annual average income per household of these five (5) villages is about 2,650 USD, or in a range of 1,220-4,400 USD. Expenses are slightly lower than earnings. Its annual average is about 2,550 USD, or in a range of 1,080-4,400 USD. Nearly all earnings are spent, mostly on food, followed by education, health and others.

(3) Unemployment

As the major occupations are family business of fishery and farming, almost family members involve and support each other. Therefore, unemployment rate is very low in these communities.

Level of Education

The majority of villagers in these five (5) villages have completed primary education. Only few peoples have middle and higher education. Some elders received rudimentary education from monks in temples.

Vulnerable Groups

Vulnerable groups in all five (5) villages are small in number, less than 5% of total population. The number of disabled and living alone person is very small, only 1% and 0.5% of total population respectively. Proportion of heads of households who are men and women who are over sixty years old is less than 1.5% each. According to key informants, there is no special program to support these peoples in this area. Based on social structure, they are taken care of by their families, relatives and neighbors. So, they stay in the communities without difficulties.

5.4.2 Land Use

According to land use field survey during 24-26 January 2015, the land use results can be described as follow:

1) 5 km radius of study area

Total area for 5 km radius of study was 19,407.09 acres. There are four types of land use include 1) urban and built up land 2) agricultural area 3) forest land and 4) miscellaneous land. The detail of these four land use types can described as follow:

- **Urban and built up land**: Total area of this land was 630.36 acres. Major land use types that found in this area is village alternate with agricultural land (516.19 acres).
- **Agricultural area**: Total area of this land was 4,369.36 acres. Major land use types that found in this area is rubber tree plantation area (1,997.89 acres).
- **Forest land**: Total area of this land was 4,441.21 acres. Major land use types that found in this area is mangrove forest (3,341.87 acres).
- **Miscellaneous land**: Total area of this land was 9,696.17 acres. Major land use types that found in this area is sea/water bodies (9,289.13 acres).

2) Small Port Area

Total area of small port was 180 acres. There are two types of land use include 1) forest land and 2) miscellaneous land. The detail of these four land use types can described as follow:

- **Forest land**: Total area of this land was 83.46 acres. Major land use types that found in this area is mangrove forest (81 acres) and another type is beach forest (2.46 acre).
- **Miscellaneous land**: Total area of this land was 16.54 acres. Major land use types that found in this area is sea/water bodies and sea beach/sand dune (7.78 and 7.16 acres, respectively).

3) 20 m. right-of-way (10 m. strip line) of project access road

Total area for 20 m. right-of-way (10 m. strip line) of project access road was 46.39 acres. There are four types of land use include 1) urban and built up land 2) agricultural area 3) forest land and 4) miscellaneous land. The detail of these four land use types can described as follow:

- Urban and built up land: Total area of this land was 2.98 acres. All of land use types in this area is village and agricultural land.
- Agricultural area: Total area of this land was 0.86 acres. All of land use types in this area is cashew nut/perennial.
- Forest land: Total area of this land was 13.84 acres. All of land use types in this area is beach forest.
- Miscellaneous land: Total area of this land was 28.71 acres. Major land use types that found in this area is sea beach/sand dune (23.12 acres).

4) 50 m. right-of-way (25 m. strip line) of project access road

Total area for 50 m. right-of-way (25 m. strip line) of project access road was 116.28 acres. There are four types of land use include 1) urban and built up land 2) agricultural area 3) forest land and 4) miscellaneous land. The detail of these four land use types can described as follow:

- Urban and built up land: Total area of this land was 7.46 acres. All of land use types in this area is village and agricultural land.
- Agricultural area: Total area of this land was 2.16 acres. All of land use types in this area is cashew nut/perennial.
- Forest land: Total area of this land was 34.70 acres. All of land use types in this area is beach forest.
- Miscellaneous land: Total area of this land was 71.96 acres. Major land use types that found in this area is sea beach/sand dune (49.85 acres).

Table 5.4-2 described on all types and area of land use in study area. ***Figure 5.4-2*** shown overall land use that found in study area and ***Photo 5.4-2*** shown example types of land use in study area.

TABLE 5.4-2

TYPES AND AREA OF LAND USE IN STUDY AREA

TYPES OF LAND USE	5 KM. RADIUS OF STUDY AREA		SMALL PORT AREA		PROJECT ACCESS ROAD ROW. 20 M		PROJECT ACCESS ROAD ROAD ROW. 50 M	
	ACRE	%	ACRE	%	ACRE	%	ACRE	%
URBAN AND BUILT UP LAND								
ESTABLISHMENT	14.17	0.07	-	-	-	-	-	-
VILLAGE / AGICULTURAL LAND	516.19	2.66	-	-	2.98	6.42	7.46	6.42
OFFICAIL PLACE	6.26	0.03	-	-	-	-	-	-
SCHOOL	13.05	0.07	-	-	-	-	-	-
MONASTERY	67.36	0.35	-	-	-	-	-	-
HOSPITAL	2.63	0.01	-	-	-	-	-	-
CEMETARY	10.70	0.06	-	-	-	-	-	-
TOTAL	**630.36**	**3.25**			**2.98**	**6.42**	**7.46**	**6.42**
AGICULTURAL LAND								
PADDY FILED	556.34	2.87	-	-	-	-	-	-
MIXED ORCHARDS / PERENNIAL	882.51	4.55	-	-	-	-	-	-
PARARUBBER	1,997.89	10.29	-	-	-	-	-	-
CASHEW NUT	227.22	1.17	-	-	-	-	-	-
CASHEW / PERENNIAL	528.51	2.72	-	-	0.86	1.86	2.16	1.86
PERENNIAL / SHRUBS	365.56	1.88	-	-	-	-	-	-
BETAL PLANT / COCONUT	27.78	0.14	-	-	-	-	-	-
COCONUT	53.55	0.28	-	-	-	-	-	-
TOTAL	**4,639.36**	**23.91**			**0.86**	**1.86**	**2.16**	**1.86**
FOREST LAND								
FOREST (MIXED DECIDUOUS FOREST)	339.03	1.75	-	-	-	-	-	-
MANGROVE FOREST	3,341.87	17.22	81.00	81.00	-	-	-	-
BEACH FOREST	760.30	3.92	2.46	2.46	13.84	29.84	34.70	29.84
TOTAL	**4,441.21**	**22.88**	**83.46**	**83.46**	**13.84**	**29.84**	**34.70**	**29.84**
MISCELLANEOUS LAND								
OPEN AREA	50.16	0.26	-	-	-	-	-	-
IDEL LAND	5.20	0.03	-	-	-	-	-	-
SAND BEACH / SANDDUNE	189.29	0.98	7.16	7.16	23.12	49.85	57.96	49.84
ROAD	162.38	0.84	1.60	1.60	4.39	9.46	11.00	9.46
SEA / WATER BODIES	9,289.13	47.86	7.78	7.78	1.20	2.58	3.00	2.58
TOTAL	**9,696.17**	**49.96**	**16.54**	**16.54**	**28.71**	**61.89**	**71.96**	**61.88**
GRAND TOTAL	**19,407.09**	**100.00**	**100.00**	**100.00**	**46.39**	**100.00**	**116.28**	**100.00**

Source : TEAM Consulting Engineering and Management Co., Ltd., 24-26 January 2015

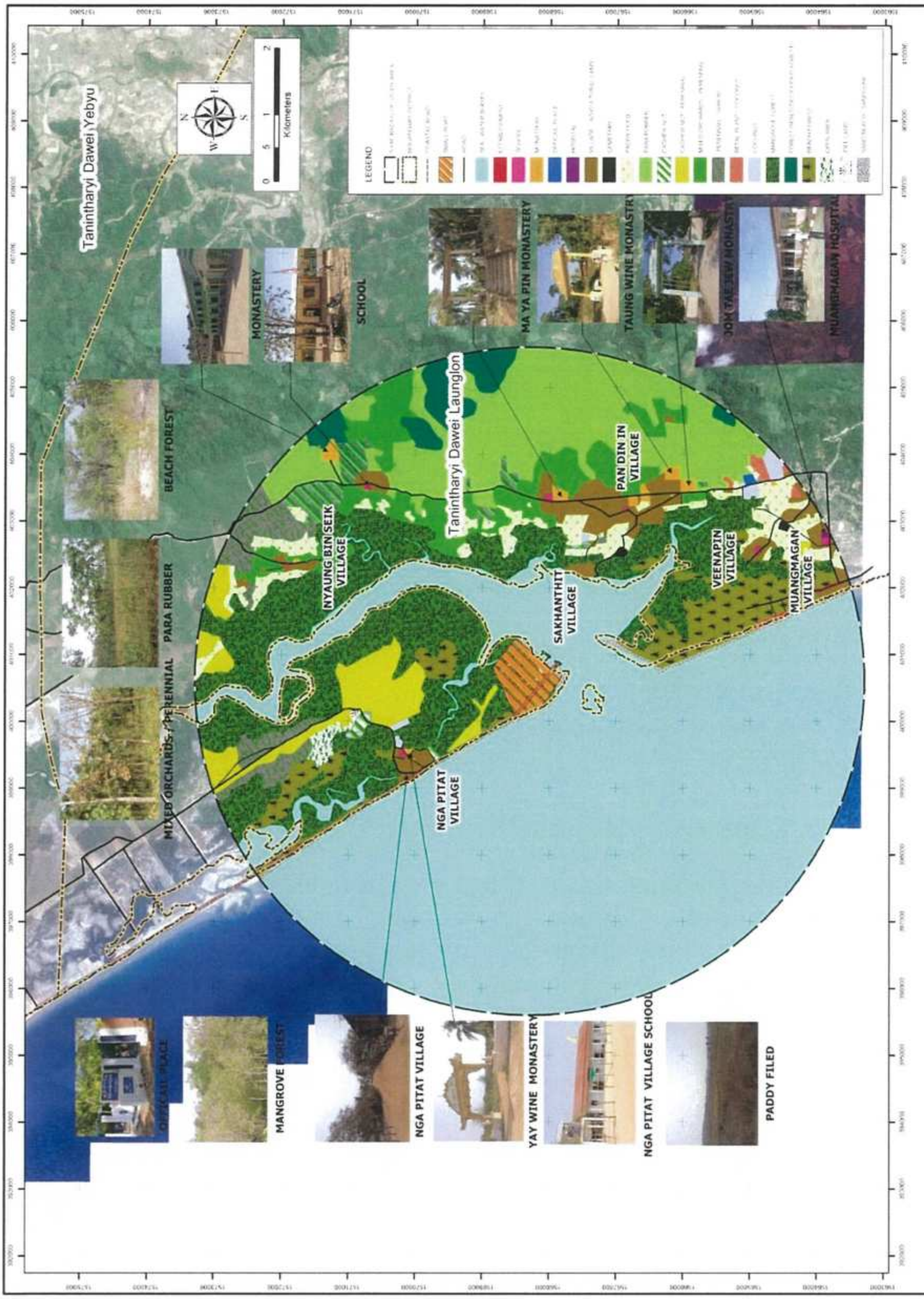


FIGURE 5.4-2 : LAND USE IN STUDY AREA

Existed Road from Small Port Site	Coconut
Mangrove Forest at Sakhanthit village	Sand Dune at Pan Din In Estuary
Klong Nya Bienseik	Beach Forest
Sand Beach and Andaman Sea along Project Access Road	Primary School in Nga Pitat Village

PHOTO 5.4-2 : EXAMPLE TYPES OF LAND USE IN STUDY AREA

5.4.3 Public Health

Health Profile

The project development may cause health hazard to local residents and the Project workers. Monitoring potential health impact caused by the project development at different phases is therefore necessary. This includes data collection related to public health and health conditions of the people in the Study Area. The data is then use for assessment of potential impact caused by the project development in both construction and operation phases.

Data on public health population, resources, personal and health status in the Study Area is summarized below:

(1) Health Facilities

In the study area, there are two government hospital; namely Yephyu hospital (25 bedded) and Launglon hospital (25 bedded) together with 5 station hospital (65 bedded), 11 rural health center and 49 sub center. Details are presented in ***Table 5.4-3***.

TABLE 5.4-3

HEALTH FACILITIES IN STUDY AREA, 2015

Health Facility	Yephyu Township	Launglon Township
Township hospital (25 bedded)	1	1
Station hospital (13 bedded)	3	2
Rural health center	5	6
Sub center	21	28

Source: Township Health Profile, 2015

(2) Medical staffs

According to data on medical staffs in 2013, there were 9 medical doctors and 57 licensed nurses in the Study Area (***Table 5.4-4***).

TABLE 5.4-4

NUMBER OF MEDICAL STAFFS IN STUDY AREA (2013)

Township	Medical Doctor	Licensed Nurse
Yebyu	5	31
Launglon	4	26

Source : Township Health Profile, 2015

When the number of medical staffs is compared with the number of population based on the World Health Organization standard, there are not sufficient medical staffs in Study Area. Detail are described in ***Table 5.4-5***.

TABLE 5.4-5

SUFFICIENCY OF MEDICAL STAFFS IN STUDY AREA (2013)

Sufficiency of Medical Staffs on the Study Area , as of 2013				
Career	**Yebyu Township (Population = 126,798 persons)**	**Launglon Township (Population = 151,874 persons)**	**Study Area (Population = 278,672 persons)**	**WHO Standard**
Medical doctor	1 : 25,260	1 : 37,968	1 : 30,963	1 : 5,000
Licensed Nurse	1 : 4,090	1 : 5,841	1 : 4,888	1 : 500

Source : Township Health Profile, 2015

(3) Health impact indicators

- **Yebyu Township**

In the past three year (2011-2013), the maximum birth rate in Yebyu Township per 1,000 population was in 2013 (equal to 13.9) and the minimum was in 2011 (equal to 3.27). Then the birth rate decreased in 2011 and 2012 at 3.27, and 6.37 per 1,000 population, respectively.

- **Launglon Township**

In the past three year (2011-2013), the maximum birth rate in Launglon Township per 1,000 population was in 2011 (equal to 9.39) and the minimum was in 2013 (equal to 7.28). Then the birth rate decreased in 2012 and 2013 at 8.48, and 7.28 per 1,000 population, respectively.

(4) Population

The project development may affect health of people in the Study Area during both construction and operation phases, particularly among those who are sensitive to health hazard (children of 0-14 year and adult of 60 years or above). Details are described below.

- **Yebyu Township**

In 2013, Yebyu Township had a population of 126,798. The number of male and female is roughly the same (49.1 percent of male and 5.9 of female). Most population is in labor (54.29percent). The percentage of population sensitive to health hazard (children of 0-14 years) is 45.71 percent. (Yebyu Township health profile, 2013)

- **Launglon Township**

In 2013, Launglon Township had a population of 151,874. The number of male and female is roughly the same (48.1 percent of male and 51.9 of female). Most population is in labor (51.57 percent). The percentage of population sensitive to health hazard (children of 0-14 years) is 48.43 percent. (Launglon Township health profile, 2013)

(5) Health Condition

(a) Five leading causes of morbidity

The diseases are listed in ***Table 5.4-6*** within an order of the morbidity rate.

- **Yebyu Township**

According to the report on five leading causes of morbidity and mortality of Yebyu Township in 2013, common diseases was Malaria, Diarrhea, ARI, Dysentery, and TB respectively.

- **Launglon Township**

According to the report on five leading causes of morbidity and mortality of Launglon Township in 2013, common diseases was Malaria, Diarrhea, ARI, Dysentery, and TB respectively.

TABLE 5.4-6

COMMON DISEASES IN STUDY AREA (2013)

Yebyu Township	Launglon Township
Malaria	Acute Respiration Infection (ARI)
Diarrhea	Diarrhea
Acute Respiration Infection (ARI)	Malaria
Dysentery	Dysentery
Tuberculosis (TB)	Tuberculosis (TB)

Source : Township Health Profile, 2015.

(b) Hospital service and administrative indicator

- **Yebyu Township (Yebyu hospital)**

The statistics on out-patients service of Yephyu Hospital in 2011-2013, the highest number of out-patients receiving treatments was in 2012 which equaled to 11,901 person. Consideration on the trend of out-patients of this hospital during 2011-2013, the number of out- patients receiving treatments in 2011, 2012 and 2013 were 10,684 persons, 11,901 persons and 11,723 persons, respectively.

The statistics on in-patients service of Yephyu Hospital in 2011-2013, the highest number of in-patients receiving treatments was in 2012 which equaled to 3,030 person. Consideration on the trend of in-patients of this hospital during 2011-2013, The number of in-patients receiving treatments in 2011, 2012 and 2013 were 2,891 persons, 3,030 persons and 2,866 persons, respectively.

- **Launglon Township (Launglon hospital)**

The statistics on out-patients service of Launglon Hospital in 2011-2013, the highest number of out-patients receiving treatments was in 2013 which equaled to 8,503 person. Consideration on the trend of out-patients of this hospital during 2011-2013, the number of out- patients receiving treatments in 2011, 2012 and 2013 were 6,909 persons, 4,545 persons and 8,503 persons, respectively.

The statistics on in-patients service of Launglon Hospital in 2011-2013, the highest number of in-patients receiving treatments was in 2013 which equaled to 2,543 person. Consideration on the trend of in-patients of this hospital during 2011-2013, the number of in-patients receiving treatments in 2011, 2012 and 2013 were 2,252 persons, 2,322 persons and 2,543 persons, respectively.

(c) Bed Occupancy Rate

- **Yebyu Township (Yebyu hospital)**

The statistics of bed occupancy rate of Yebyu hospital during 2011-2013 was analyzed. The highest number of bed occupancy rate was in 2012 which was 65.46 percent, followed by year 2013 and 2011 which were 57.32 percent and 57.07 percent respectively.

- **Launglon Township (Launglon hospital)**

The statistics of bed occupancy rate of Launglon hospital during 2011-2013 was analyzed. The highest number of bed occupancy rate was in 2013 which was 60.92 percent, followed by year 2012 and 2011 which were 46.16 percent and 44.27 percent respectively.

5.4.4 Infrastructure

(1) Land Transportation

(a) Existing Roads in the Study Area

From the site observation in January 2015, the study area has two roads as shown in a map in ***Figure 5.4-3***. Information on the two existing road is described as follows:

(a.1) The road from the ITD camp site to the existing small port: This existing road, constructed by ITD, is about 12 km long starting from the ITD camp site to the existing small port. The road is unpaved laterite road, about 6 m wide, and runs parallel to the beach. A section of this road passes through Nga Pitat Village, about 2 km from the existing small port. The road is mainly used by ITD for transporting workers and materials from the camp site to the existing small port. Residents in Nga Pitat village also use this road for travelling from the village to Lounglone Township and Dawei District.

(a.2) The road from ITD camp site to Muangmagan village: This existing road runs from the ITD camp site to Muangmagan village, a total length of about 20 km. The road is unpaved, about 6 km wide, with some laterite surface sections and some gravel surface sections. The road extends in land to run behind Pan Din In River to end at Muangmagan village after passing two villages-Nyaung Binseik and Pan Din In. Villagers in Nga Pitat village do not normally use this road to Muangmagan village due to its circuitous route. They prefer travelling by boats to Muangmagan village.

Figure 5.4-3 shown the road network inside 5 km of study area.

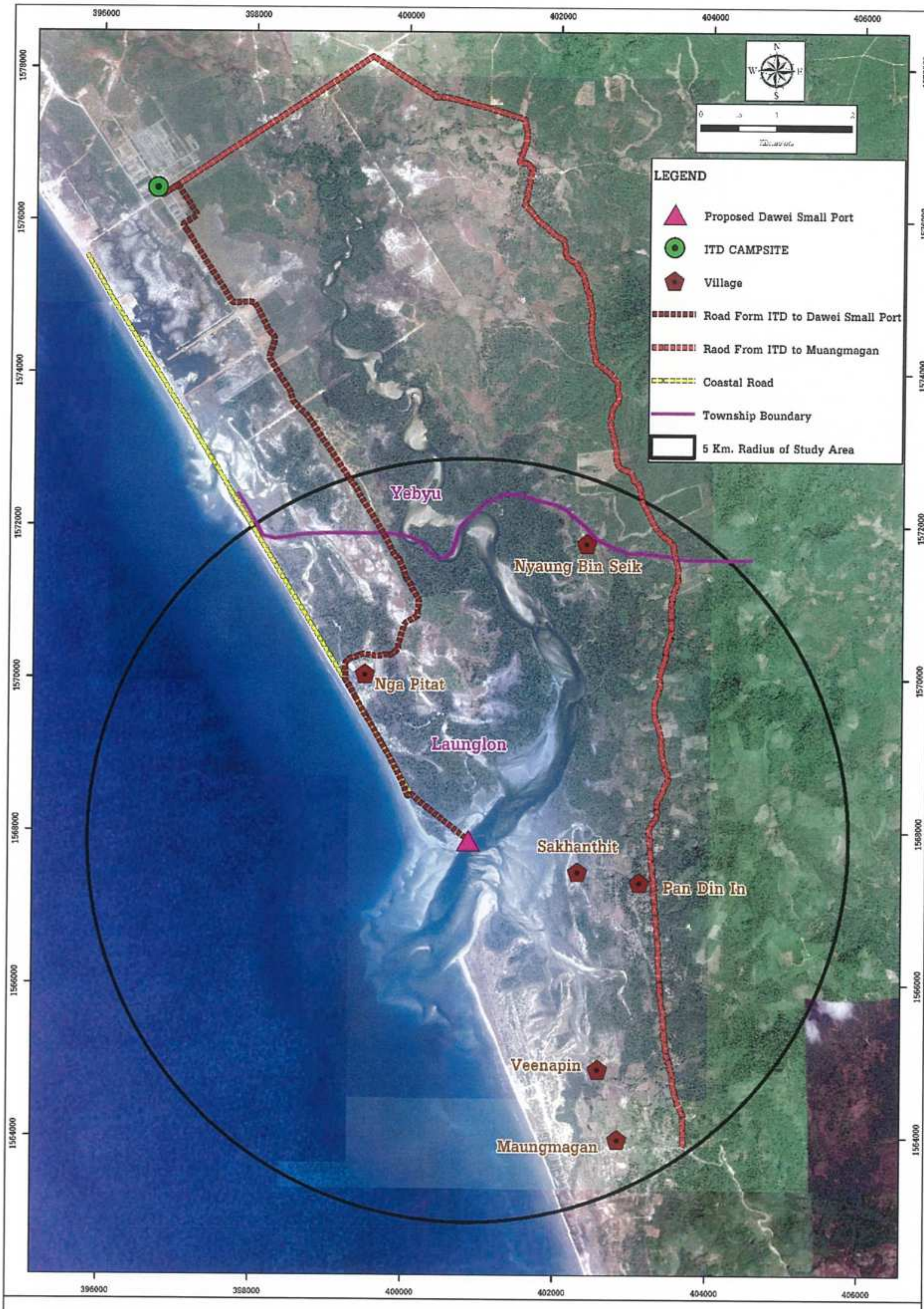


FIGURE 5.4-3 : THE ROAD NETWORK INSIDE 5 KM OF STUDY AREA

(b) Proposed Project Access Road

The proposed project access road will be about 8.3 km long. It will use part of the existing road from the existing small port to Nga Pitat village. This section of the existing road is about 4.3 km long. It will be upgraded to increase its width from 6 m to 8 m. A new section with a total length of about 4 km will be constructed. The alignment passes through beach forest and agricultural area. ***Photo 5.4-3*** shows existing conditions of the alignment of the project access road.

Beach Forest	Existing Project Access Road

PHOTO 5.4-3 : EXISTING CONDITION OF PROJECT ACCESS ROAD

(c) Traffic Volume

Types and number of vehicles were recorded at the existing small port during 23-24 January 2015, and at Nga Pitat village during 25-26 January 2015. The daily recording period was 12 hours from 6:00 am to 18:00 pm. The two-day traffic survey at each site included one working day and one holiday. Information on the two survey stations is as follows:

T1: Existing Small Port (coordinates-400762E 1567933N): This station is in the planned LNG terminal area. Most vehicles were related to ongoing development activities by ITD.

T2: Junction of Nga Pitat Village (coordinates -399322E 1569791N**):** This station is close to the project access road. Recorded traffics included those from the existing small port to Nga Pitat Village and from Nga Pitat Village to the ITD camp site.

Figure 5.4-4 shows the locations of the two traffic survey stations.

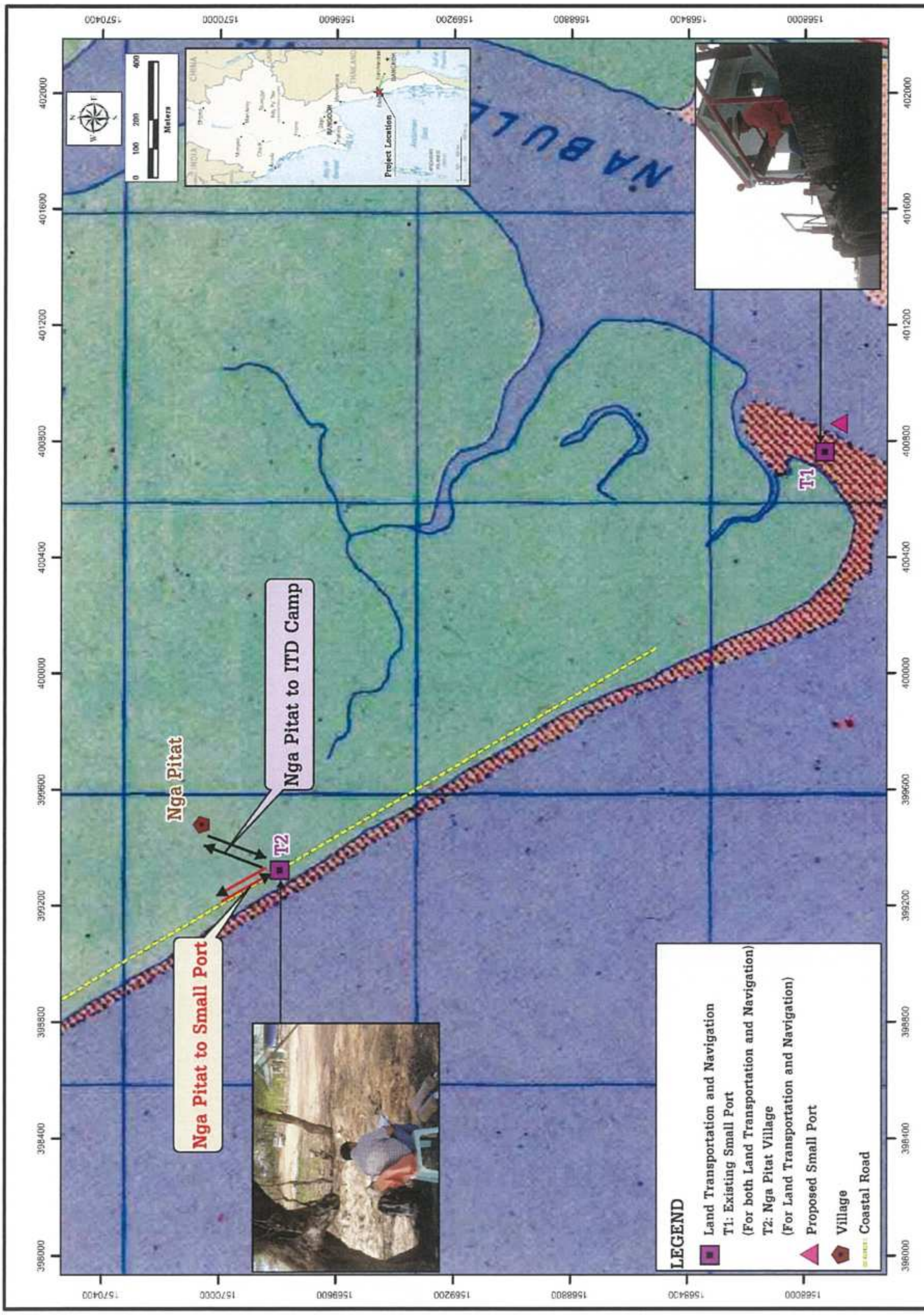


FIGURE 5.4-4 : THE SAMPLING STATION FOR TRAFFIC VOLUME AND NAVIGATION

Results of the traffic counts at the existing small port are summarized in ***Table 5.4-7*** and at the junction of Nga Pitat village in ***Table 5.4-8***. From the results, the following major conclusions can be drawn:

(1) Existing small port

- The types and number of vehicles observed at this station in the working day (23 January 2015) and the holiday (24 January 2015) were no significantly different.
- Light trucks were the majority of vehicles followed by motor cycles.
- The traffic of both types of vehicles was low. Only 21 light trucks and 14 motorcycles were observed during the working day. During the holiday, the corresponding number was 22 and 23, respectively. This low traffic load was expected as the existing small port had not yet been in operation.

(2) Junction of Nga Pitat Village

- Most of the traffic at this station were motorcycles. The number of motorcycles observed at this station was much higher than that observed at the existing small port, 95 and 104 motorcycles compared with 14 and 23 motorcycles at the existing small port.
- The number of motorcycles during the working day was not much different from that during the holiday-95 compared with 104. The number light trucks during the holiday was higher than during the working day-45 compared with 23.
- The number of vehicles observed at this station indicated very low traffic. This could be expected considering low economic activities in the village and DSEZ.

(d) V/C Ratios

To quantitatively assess the traffic condition, V/C ratios of the roads at the two stations were calculated. The V/C ratio calculation method is described as follows:

1) Each type of vehicle has its own Passenger Car Unit (PCU) which can be calculated in the form of Passenger Car Equivalents (PCE) using the conversion factor as shown in ***Table 5.4-9***.

2) Select an applicable carrying capacity for the road. The carrying capacities can be estimated following the highway capacity manual

3) V/C ratio can calculated using the following formula:

V/C ratio = (Traffic Volume / Carrying Capacity)

4) The calculated V/C Ratio is compared with the standard values for future traffic condition based on the criteria in ***Table 5.4-10***.

TABLE 5.4-7

TYPES AND NUMBERS OF VEHICLES AT EXISTING SMALL PORT DURING 23-24 JANUARY 2015 (6:00 - 18:00)

Types of vehicles	Numbers of vehicles and direction			
	23 Jan 2015 (workday)		24 Jan 2015 (holiday)	
	Into small port	Out from small port	Into small port	Out from small port
Bicycle	-	1	1	1
Motorcycle	7	7	12	11
Passenger Car	-	1	-	-
Light Bus	-	-	-	-
Heavy Bus	-	-	-	-
Light Truck	12	9	12	10
Medium Truck	-	-	-	-
Heavy Truck	1	1	3	4
Trailer	-	-	-	1
Other	-	-	1	-
Total	20	19	29	27

Source: TEAM Consulting Engineering and Management Co., Ltd., 23-24 January 2015

TABLE 5.4-8

TYPES AND NUMBERS OF VEHICLES AT JUNCTION OF NGA PITAT VILLAGE DURING 25-26 JANUARY 2015 (6:00 - 18:00)

Types of vehicles	Numbers of vehicles and direction							
	25 Jan 2015 (holiday)				26 Jan 2015 (workday)			
	From Nga Pitat to Small Port	From Small Port to Nga Pitat	From Nga Pitat to ITD Camp Site	From ITD Camp Site to Nga Pitat	From Nga Pitat to Small Port	From Small Port to Nga Pitat	From Nga Pitat to ITD Camp Site	From ITD Camp Site to Nga Pitat
Bicycle	5	6	2	4	8	6	10	3
Motorcycle	32	23	14	35	11	12	36	36
Passenger Car	-	-	-	-	-	-	-	-
Light Bus	-	-	1	-	-	-	-	-
Heavy Bus	-	-	-	-	-	-	-	-
Light Truck	10	3	10	2	20	11	3	11
Medium Truck	1	-	1	-	4	3	-	3
Heavy Truck	6	1	1	3	5	7	-	-
Trailer	-	-	-	-	1	1	-	-
Other	-	-	-	-	-	-	-	-
Total	54	33	29	44	49	40	49	53

Source: TEAM Consulting Engineering and Management Co., Ltd., 25-26 January 2015.

TABLE 5.4-9

PASSENGER CAR EQUIVALENT FACTOR FOR EACH TYPE OF VEHICLE

Types of Vehicle	Passenger Car Equivalents Factor (PCE)
Passenger Car and Taxi	1.00
Light bus	1.50
Medium bus	1.50
Heavy bus	1.50
Light truck	1.00
Medium truck	2.10
Heavy truck	2.10
Trailer	2.50
Motorcycle	0.33
Bicycle, Tri-cycle	0.33
Terrain Crane and motor grader	2.10
Other	1.30

Source : 1. Puopong Ninjunpansri, 1997. Highway Engineering. Department of Civil Engineering. Faculty of Engineering. Rachamongkol Technology Institute, 312 p.

2. Department of Highway, 2011. Highway Traffic Report.

TABLE 5.4-10

STANDARD VALUES (RANGE OF V/C RATIO) FOR TRAFFIC CONDITION CLASSIFICATION IN THE FUTURE

Range of V/C Ratio Value	Classification of Traffic Condition
0.88 – 1.00	Severe traffic congestion
0.67 – 0.88	Heavy traffic congestion
0.52 – 0.67	Satisfactory traffic flow
0.36 – 0.52	Good traffic flow
0.20 – 0.36	Very high traffic flow

Source : Puopong Ninjunpansri, 1997. Highway Engineering. Department of Civil Engineering. Faculty of Engineering. Rachamongkol Technology Institute, 312 p.

The V/C ratios for the two survey sites were calculated and the results are presented in ***Appendix 5E***. The values of calculated V/C ratio are presented in ***Table 5.4-11***. The figures indicate very high traffic flow at the two stations. Therefore, the roads can accept more traffic volume.

TABLE 5.4-11

CALCULATED VALUES OF V/C RATIO

Dates of Surveys	Existing Small Port	Nga Pitat Village Junction
Working day	0.001	0.004 a/, 0.002 b/
Holiday	0.002	0.002 a/, 0.002 b/

Notes : a/ traffic direction from the existing small port to Nga Pitat
b/ traffic direction from Nga Pitat village to ITD camp site

(2) Navigation

(a) Existing Navigation in the Study Area

From the site observation on 23-24 January 2015, fishermen in the Study Area use the Andaman Sea and Pan Din In River for water transport. The main navigation routes include:

1) From Pan Din In River to Andaman Sea
2) From the Andaman Sea to Sakhanthit Village
3) From Nga Pitat Village to Muangmagan Village (via Andaman Sea)

Figure 5.4-5 described the direction of navigation route in study area.

(b) Navigation Volume

Types and number of boats were recorded at the existing small port during 23-24 January 2015 (***Figure 5.4-5***). The daily recording period was 12 hours from 6:00 am to 18:00 pm. The two-day records included one working day and one holiday. ***Table 5.4-12*** summarizes results of the boat counting at the existing small port.

Three route (include in and out) of at existing small port were counting for number of boat include:

1) From Andaman Sea to Pan Din In River
2) From Andaman Sea to Sakhanthit Village
3) From Nga Pitat Village to Muangmagan Village

FIGURE 5.4-5 : THE DIRECTION OF NAVIGATION COUNTING

TABLE 5.4-12

TYPES AND NUMBERS OF BOAT AT EXISTING SMALL PORT DURING 23-24 JANUARY 2015 (6:00 - 18:00)

Types of boats	Numbers of vehicles and direction											
	23 Jan 2015 (workday)						24 Jan 2015 (holiday)					
	Andaman Sea to Pan Din In River	Pan Din In River to Andaman Sea	Andaman Sea to Sakhanthit village	Sakhanthit village to Andaman Sea	Nga Pitat to Muangmagan Villages	Muangmagan to Nga Pitat Villages	Andaman Sea to Pan Din In River	Pan Din In River to Andaman Sea	Andaman Sea to Sakhanthit village	Sakhanthit village to Andaman Sea	Nga Pitat to Muangmagan Villages	Muangmagan to Nga Pitat Villages
3-m long tail boat	1	2	1	1	1	0	2	1	1	1	0	0
5-m long tail boat	1	1	5	3	4	1	6	0	2	4	0	0
8-m fishing ship	3	0	1	3	2	1	1	1	3	2	1	6
10-12- m fishing ship	0	0	0	1	2	5	0	0	0	2	6	3
Total	**5**	**3**	**7**	**8**	**9**	**7**	**9**	**2**	**6**	**9**	**7**	**9**

Source: TEAM Consulting Engineering and Management Co., Ltd., 23-24 January 2015

The results can described as follow:

During the boat surveys, four types of boats were found including (i) long tail boat 3 m long; (ii) long tail boat 5 m long; (iii) fishing boats 8 m long; and (iv) fishing boats 10 to 12 m long. The majority of boats in the workday was 5 m long long tail boats (15 boats) and in the holiday was 8 m long fishing boats (14 boats).

For each navigation routes, during the holiday the route from Nga Pitat Village to Muangmagan Village had the highest number of boats (9 boats), During the working day, all three routes had the same traffic volume (9 boats each).

In summary, the number of boats plying the three navigation routes at this time is still small and the route can support much more traffic. However, boat traffics in the three navigation routes could be impeded by off-shore activities during the project construction such as dredging of the access channel and construction of the two break waters. This potential impact of the project construction and operation on local navigation is an issue that will be studied in the EIA investigation.

(3) Water Supply

Currently, there are no piped water supply systems in the villages around the project site. The primary source of domestic water supply is groundwater from shallow and bore wells. Some houses also collect rainwater. ***Photo 5.4-4*** shows typical groundwater wells in two villages.

Groundwater Well in Nga Pitat Village	Groundwater Well in Sakhanthit Village

PHOTO 5.4-4 : EXAMPLE OF GROUNDWATER WELL IN VILLAGES AT 5 KM RADIUS OF STUDY AREA

(4) Electricity

Currently, there are no electricity supply systems in the villages. Some households use small generators.

(5) Solid Waste Management

At present, there are no proper solid waste management and sanitation systems in the study area. Domestic solid wastes are collected inside the villages using inappropriate containers, and are disposed of by open dumps or open burning within the village boundaries.

5.5 CULTURAL COMPONENTS

(1) Religions and Belief

Ethnically, the majority of people in the study area are Dawei ethnic group of Bamar, practicing Theravada Buddhism and speaking the native language of Dawei. There are a very small number of Mon, Rakhine and Karen in these communities.

(2) Sites of Traditional and Historical Value

As the Burmese is strongly religious people, temples exist in every village (see **Section 5.4.1**). It is common for villagers to visit local temples for religious purposes and also for some community social activities. Village temples also have cemeteries. Therefore, temples have prominent roles in villagers' lives.

There are an important historical and religious Buddha's footprint and other pagodas in the area of Nabule settlement where Mudu is 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 three pagodas in Pandin In are ancient. Antique coins and potteries were found under the basement of pagodas.

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

As all the five communities are situated on coastal area, most households rely on marine and mangroves resources (***Photo 5.5-1***). The total mangrove area is estimated at about 3,500 acres.

Fish and other marine products are the primary source of protein and cash income for the locals. While men fish in the sea, women collect aquatic products from mangroves and creeks. Most of them are sold for cash. According to the villagers, seafood products finally find their ways to market in Thailand.

Woods from mangroves are commonly used for construction and fuel. This reflects great value of mangroves. In addition to being a nursing ground of marine aquatic resources, the mangrove is also a source of local livelihoods.

Available land and soil resources are used for cultivation. Rice is cultivated in the lowland area, while cashew nut, betel nut, coconut, rubber and fruits are cultivated in the upland area. The cultivation is still based on simple and natural methods,

with low use of chemical fertilizers and soil maintenance. Farm products are sold for cash income.

Nearly every house practice small-scale livestock. Chicken and pigs are raised freely around the houses. The main purpose is for home consumption. Some villagers raise cows, mainly for draft labour.

PHOTO 5.5-1 : FISHERY COMMUNITY AND MANGROVES IN THE 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.

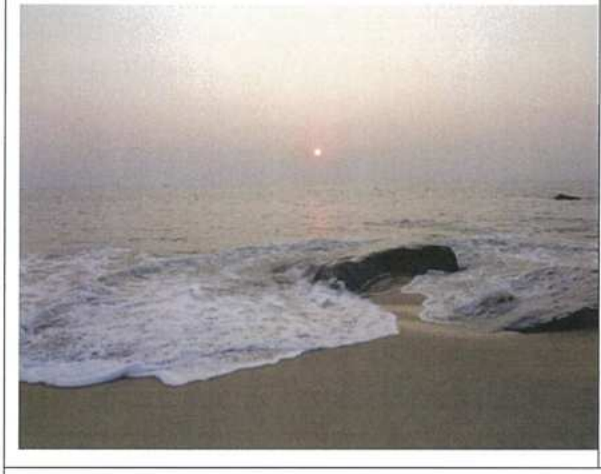
Youth groups are active at the community level. The number of members of each youth group varies from village to village. The group in Mudu has about 300 members while the group in Sakhanthit has only 30 members. The youth groups help in community functions when required, such as in religious ceremonies, 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 local 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 focuses 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-Nebule and Maungmagan beaches. Nabule beach is about 32 km northwest of Dawei and 11 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 a host of simple restaurants serving fresh seafood (***Photo 5.6-1)***.



Nabule Beach

Muangmagan Beach

PHOTO 5.6-1 : VIEWS AT NABULE AND MUANGMAGAN BEACHES

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 and Social Impact Assessment (ESIA) of a proposed development project is now recognized that it is essentially environmental management planning. In this regard, impact and risk assessment and formulation of mitigation measures are the first stage of environmental management planning. Consequently, the context of ESIA reports is now required by MONREC in its EIA Procedure and EIA 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 adopted in Article 2 (h) of the EIA Procedure 2015 is shown below:

Environmental Impact means the probable effects or consequence on the natural environment and built environment, and people and communities 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, public and community health, and safety issues. Moreover, social impacts include Involuntary Resettlement and relating to Indigenous People.

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.

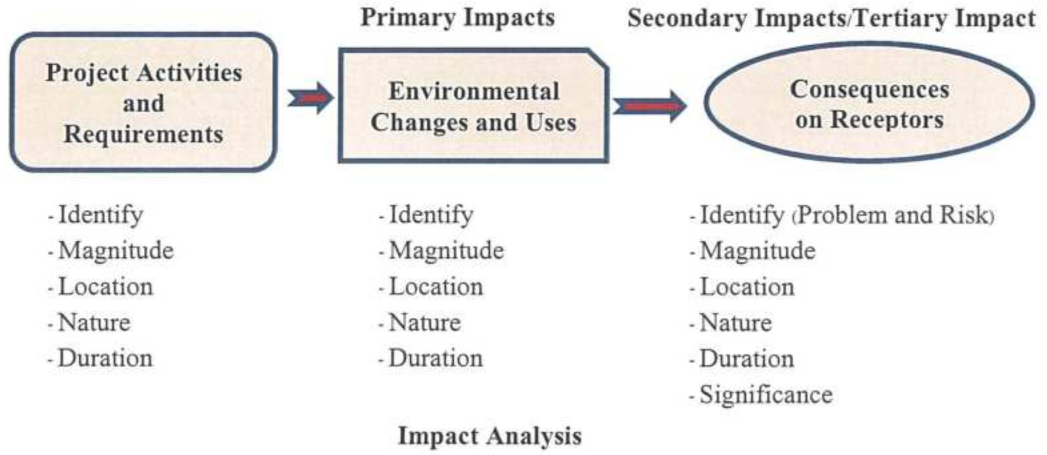


FIGURE 6.1-1 : IMPACT ANALYSIS LOGIC

(1) Project construction and operations involve various physical activities and require use of environmental resources as inputs. Examples:

- Construction activity-filling and compacting a 100 acre of onshore construction site and 46 acre of 8.3 km of project coastal road.
- Requirement-use of an 91.24 acre of forest for the onshore construction site and 12 households of Nga Pitat Village will be moved for project coastal road.

(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 by percussive piling activities (project activity), change in ambient air quality during land clearance, change in coastal water quality during dredging activities, and relocation of 12 households during project coastal road construction.
- Changes during operation-change in shoreline stability due to the presence of breakwaters, change in coastal water quality during maintenance approach channel, and traffic accident during operation of project coastal road.

(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 reservoir, and conversion of a mountain into a limestone quarry.

(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 requirements. 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 due to leak in gas pipe.

(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 entity 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.

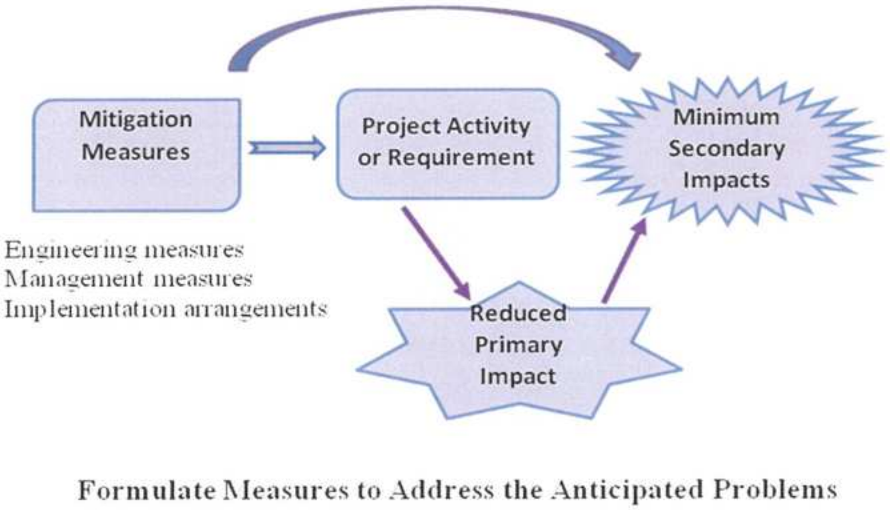


FIGURE 6.1-2 : MITIGATION MEASURE CONCEPT

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 use of a dredging method and equipment that will minimize disturbances of the sea bed; and (ii) frequent water spraying on uncovered construction site to suppress fugitive dust. *Therefore, the assessment will be on the severity of the residual impacts to determine the need for additional measures to further reduce the residual impacts*. For example, if the residual dust levels will cause health risk and discomfort to people in the villages proximate to the construction site, additional measures will be needed to reduce the dust levels at the receptors.

The above principle indicates that all Project activities must comply with applicable source or emission standards or environmental guidelines.

The assessment of impacts will cover (i) impacts on the ambient environment; and (ii) impacts on the receptors.

B. Impact on Ambient Environment

The impacts on the relevant ambient environment will be predicted, if possible, using an appropriate mathematical model.

C. Impacts on Receptors

Each environmental issue will have an impact area. Receptors in the impact area could be people, ecosystem, and properties depending on the nature of the issue. Impacts on the receptors are consequences of the impacts on ambient environment. For example, excessive dust concentration in the ambient air could adversely affect health and daily living of peoples living near the construction area and transportation routes. The significance of the impact will be determined by severity and extent of the impacts which, in turn, will depend on the magnitude of the issue, and natural and socio- economic characteristics of the impact area. For example, the impact of fugitive dust during construction will depend on the amount of dust released into the air, wind speed and direction, and land use and population density of the impact area.

Normally, if the ambient air quality meets the applicable standards, impacts on the receptors should be insignificant or 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; and (ii) the magnitude of the traffic issue is the number of truck loads to be generated during the construction phase.

(2) Identify Best Practicable Measures to Minimize the Magnitude of the Issue

Regardless of the level of its impact, the magnitude of the environmental issue must be minimized through best practicable measures to be implemented through design, construction method, or good construction practices.

Examples: (i) a construction method with a low noise level will be used; and (ii) the construction site will be surrounded by fence and frequently sprayed water in order to reduce sound level and suppress fugitive dust.

(3) Estimate the Remaining Magnitude of the Issue

The remaining magnitude of the issue can be estimated from the efficiency of the mitigation measures reported in various references.

Examples: the remaining amount of fugitive dust after water spraying can be calculated from reported efficiency of water spraying in suppressing fugitive dust.

(4) Compare the Remaining Magnitude of the Issue with Applicable Source Standards

Environmental issues related to pollution such as wastewater issues can be referred to applicable source standards, such as effluent quality standard for the wastewater issue.

If the remaining magnitude of the issue does not meet the applicable source standards, additional measures will be required to further reduce the remaining magnitude of the issue.

Some environmental issues, such as fugitive dust and construction wastes, have no source standards. In this case, the assessment can proceed to the next step.

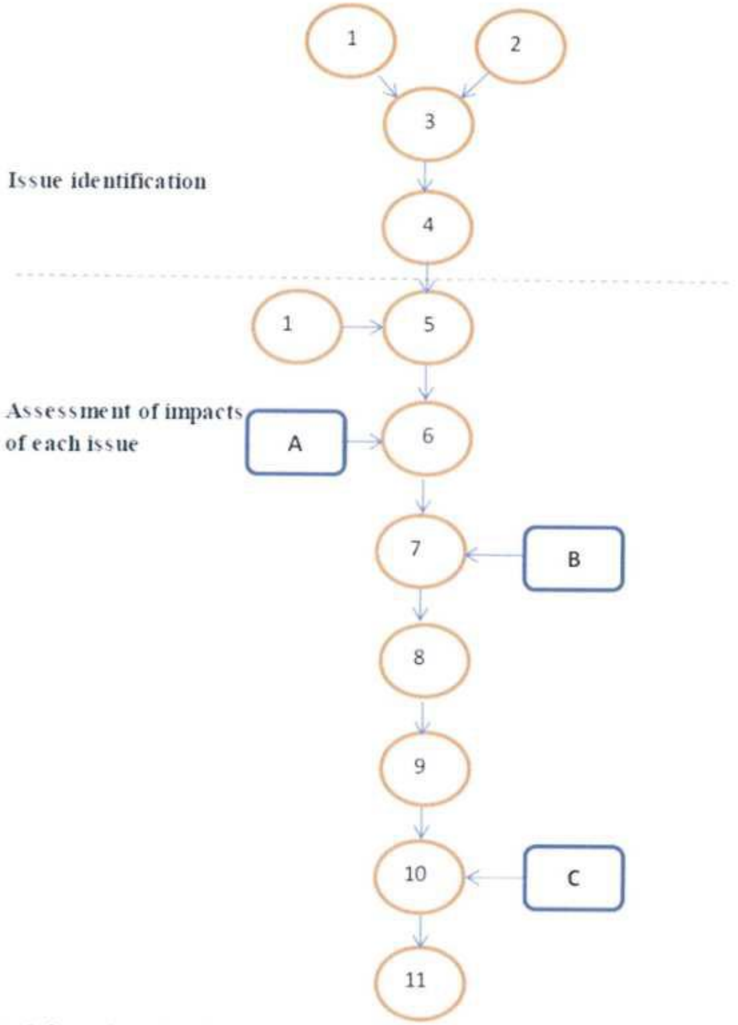
(5) Calculate or Estimate the Impact of the Remaining Magnitude of the Issue on Ambient Environmental Quality

A good example is the air pollution issue. This step will calculate the dispersion of the remaining amount of TSP in the ambient air around the project construction site and quarry site. The results will be increases in TSP value in the ambient air at various locations around the project construction site and quarry site.

(6) Compare the Resulting Ambient Environmental Quality with the Applicable Ambient Environmental Quality Standard.

An example is the construction noise issue. If the resulting ambient noise levels at the sensitive receptors exceed the maximum permissible noise limits prescribed in the ambient noise standard, it will be necessary to implement measures for noise blocking at the sensitive receptors.

It is also possible that the ambient environment is so severely polluted that the ambient environmental quality standard cannot be met. If this is the case, the project could worsen the pollution problem. Pollution from other sources will need to be reduced or the project moves to other locations.



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 sensitive 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

In environmental management, it is necessary to prioritize key environmental issues. Significance in this context is therefore related to priority that the project environmental management will accord to the issue.

The impact of an environmental issue is divided into 5 levels based on six criteria or considerations as shown in ***Table 6. 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	Long	Relative short	Short	Very short
After implementing best available measures					
- the remaining magnitude can meet the source standards	No	No	Yes	Yes	Yes
Impacts of the remaining magnitude on ambient env quality					
- resulting ambient env quality can meet the ambient standards	No	Yes	Yes	Yes	Yes
Sensitivity of the impacted area	Very High	High	Medium	Low	Relatively Low

The impact assessment will be made for the impact without control and the impact with control or residual impact. The five impact levels are:

Level 5-Critical- the impact is irreversible with extensive and severe ecological damages or socio-economic damages. The issue cannot be resolved. The project plan will need to be changed, relocated or abandoned.

Level 4-Major- the impact will be substantial but it can be effectively reduced using both engineering and management measures.The residual impact will be minor.

Level 3-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.

6.1.1.5 Monitoring

In environmental management, monitoring of results of the implementation of mitigation measures will have to be carried out during the pre-construction, construction, operational, and decommissioning phases. Parameters to be monitored, frequency of monitoring, method of monitoring, and geographical location of monitoring will have to be clearly stated. The monitoring must be relevant and adequate to provide reliable and accurate data and information as feed back to the management system for taking corrective actions. It should be noted that the proposed monitoring for each key valued environmental component will have to be consolidated and presented in the environmental management plans.

6.1.1.6 Mapping

Maps are used in this ESIA Report to support narrative description of various subjects. They were obtained from various secondary sources, including: (i) site maps prepared by the Project Design Consultant for using in the ESIA Report; (ii) regional maps presented in various documents; and (iii) satellite images in Google Earth. The available maps are in various scales and they are selected and adapted to suit the illustration purposes.

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.

[1]Modified from the matrix in NASA Risk Management Presentation - Imsworld.org

www.imsworld.org/.../NASA%20risk%20managemnt%20power%20poin...

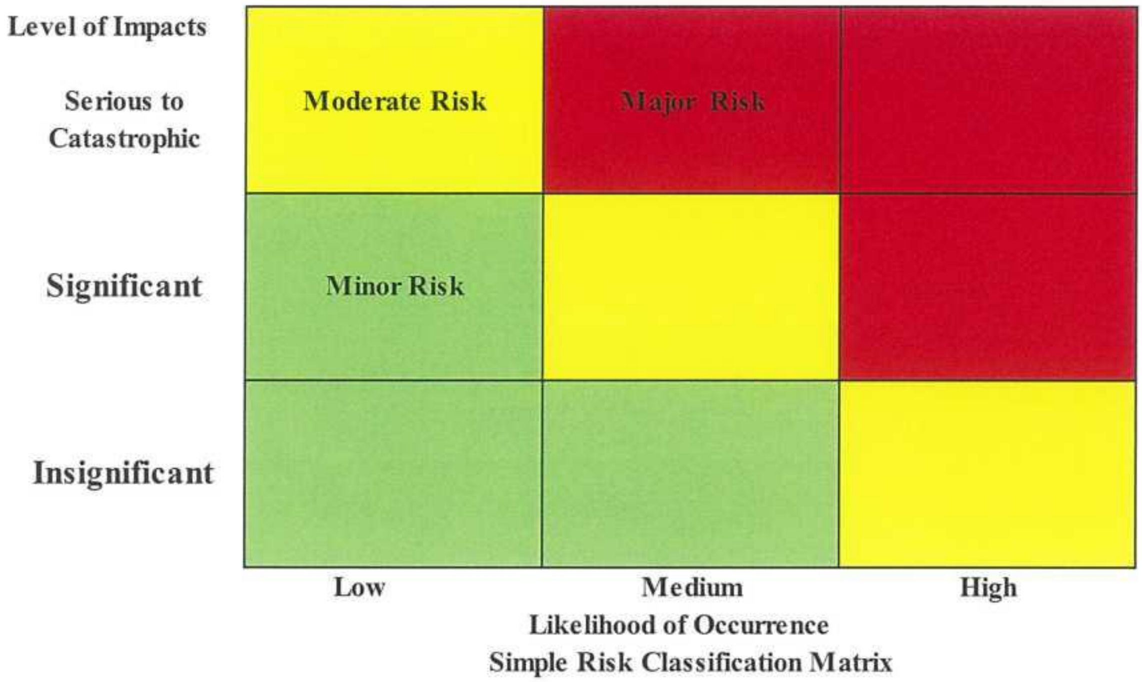


FIGURE 6.1-4 : SIMPLE RISK MATRIX

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.

(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.

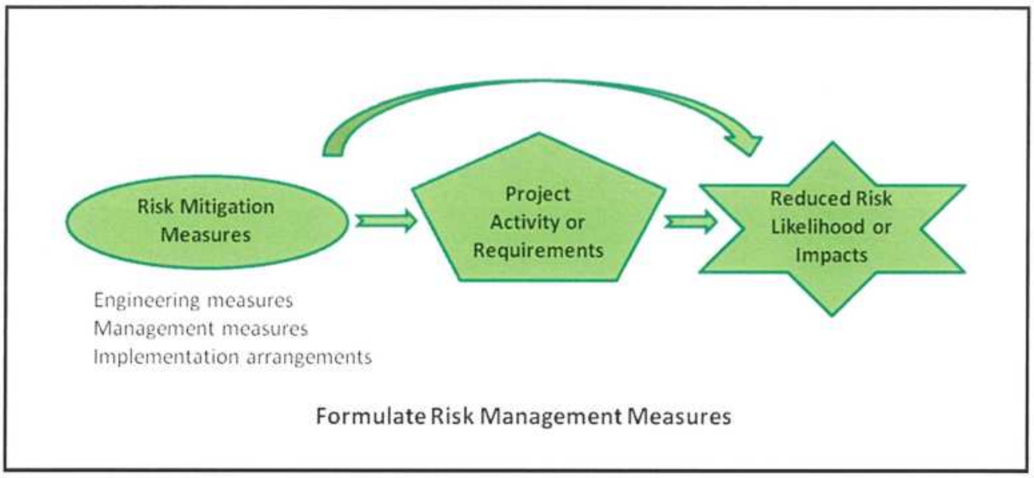


FIGURE 6.1-5 : ENVIRONMENTAL RISK MANAGEMENT LOGIC

(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 Small Port 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 during Pre-construction Phase

6.2.1.1 Impact Identification

For the onshore site, the pre-construction phase will prepare the construction site ready for the construction of onshore facilities. For the offshore site, the pre-construction phase may involve additional sea bed surveys as most required surveys have already been carried out during the detailed planning of offshore 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 small port 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.

The site clearance and filling of project coastal road will permanently eliminate the existing beach forest. Some wildlife living in the ecosystems may be able to flee to the adjacent beach forest area. The impacts are permanent and irreversible.

B. Biomass Waste Disposal

The clearance of vegetation cover could generate as much as 6,839.90 tons of biomass waste for small port site and 13.84 tons of biomass waste for project coastal road (see ***Table 4.4-2*** and ***Table 4.4-3*** of Chapter 4). This biomass waste must be properly disposed to minimize impacts on soil or water environment near the disposal site.

C. Impacts on Livelihood of Villagers

For small port project, villagers in Nga Pitat Village will be adverse affected due to loss of some part of mangrove area. This area is one of sources of firewood for villagers.

For project coastal road, 12 households of Nga Pitat village who living within the right of way will be relocated to proposed resettlement area at Nga Pitat village.

Table 6.2-1 and ***Photo 6.2-1*** shows the name lists and characteristic of affected 12 households of Nga Pitat village.

D. 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 and Sakhanthit villages. These environmental disturbances would be mainly the OHS issue affecting workers at the construction site.

TABLE 6.2-1

LIST OF AFFECTED HOUSEHOLD FROM PROJECT COASTAL ROAD

No.	Owner Name	Village	Size (m^2)	Family Member		
				Male	Female	Total
1	U Tin Ko	Nga Pitat	21 X 31	2	1	3
2	U Thar Naing Tin	Nga Pitat	9 X 13	1	1	2
3	U Nay Soe	Nga Pitat	23 X 40	2	3	5
4	U Kyaw Lwin	Nga Pitat	17 X 49	3	3	6
5	U San Myint	Nga Pitat	17 X 38	3	1	4
6	U Hla Aye	Nga Pitat	22 X 25	4	3	7
7	Daw Kan Win	Nga Pitat	17 X 37	2	4	6
8	U Naing Linn Oo	Nga Pitat	15 X 23	1	1	2
9	U Tin Aye (U Hla Win)	Nga Pitat	14 X 14	1	2	3
10	U Win Myint	Nga Pitat	17 X 26	2	1	3
11	Daw Sann Lwin	Nga Pitat	18 X 29	1	1	2
12	U Aung Aung	Nga Pitat	15 X 22	2	2	4
Total				**24**	**23**	**47**

Source : Compensation Rate of Myanmar, obtained by ITD, 2014

Source : Compensation Rate of Myanmar, obtained by ITD, 2014

PHOTO 6.2-1 : CHARACTERISTIC OF THE 12 AFFECTED HOUSHOLDS (ITD 2014)

6.2.1.2 Impact Assessment

A. Impacts on Ecosystems

(1) Small Port

The Project site has 3 near-threatened of flora species (as described on Table 5.3-6 of Chapter 5). However, all identified three nearly threatened species are not indigenous found only in Dawei area. They are known to exist in any mangrove areas in Myanmar and worldwide.

Another impact is in term of loss of area during site clearance activities. The loss of all vegetation and some wildlife would have some ecological impacts which are unavoidable. The Project will eliminate 64.8 acres of degraded mangrove, 16.2 of natural mangrove, and 10.3 acres of beach forest and swamp areas. 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

(2) Project coastal road

The Project site has no endangered flora and fauna species. However, the loss of all vegetation and some wildlife would have some ecological impacts which are unavoidable. The Project will eliminate only 13.84 acres of beach forest. This loss of beach forest is small compared to the total beach and dune forest area of Myanmar of 3,397,699 acres (1,375,000 ha) in 2004[4]. As all the beach forest 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 Myanmar Country, the beach and dune forest coverage was 1,376,900 ha in year 1995[5] and 1,375,000 ha in 2004. It should be noted that the loss of beach forest has been an area of concern in Myanmar long before the development of DSEZ.

The impacts of the 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 coastal road ROW.
Impact magnitude	Small
Impact severity	Low
Control priority	Low

Mitigation Measure

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.

[4] Major forest types in Myanmar, 2004 (Source: Planning and Statistics Division, Forest Department.)

[5] **Source**: www.fao.org/docrep/005/ac648e/ac648e08.htm :access on July 2016.

B. Biomass Waste Disposal

The Contractor will need to conduct a detailed site survey to make a more accurate estimate of the biomass waste both Small Port Site and Project coastal road ROW. The impact of biomass disposal is considered medium as shown below.

Impact category	Direct impact
Impact duration	Medium term, reversible impacts as biomass is biodegradable.
Impact extent	Mostly confined to within the disposal site
Impact magnitude	Medium
Impact severity	Medium
Control priority	Medium

Mitigation Measure

The biomass wastes will consist of trunks, stems, branches, and leaves. The components that could be used for construction, charcoal making, and firewood should be sorted out. The remaining unusable components should be reduced in size and disposed of in the Project site by land fill. No open burning should be allowed. A biomass removal subplan is proposed in the Environmental Management Plan.

C. Impacts on Livelihood of Villagers

(1) Small Port

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

(2) Project coastal road

Due to 12 household in project coastal road will be moved for project coastal road, the analysis by Entitlement Matrix for the loss of Project coastal road was in line with Resettlement and Compensation Planning Framework assessed and prepared by ERM-Siam Co., Ltd (October 2015). The following principles will be followed in determining eligibility for entitlements (see also ***Table 6.2-2***):

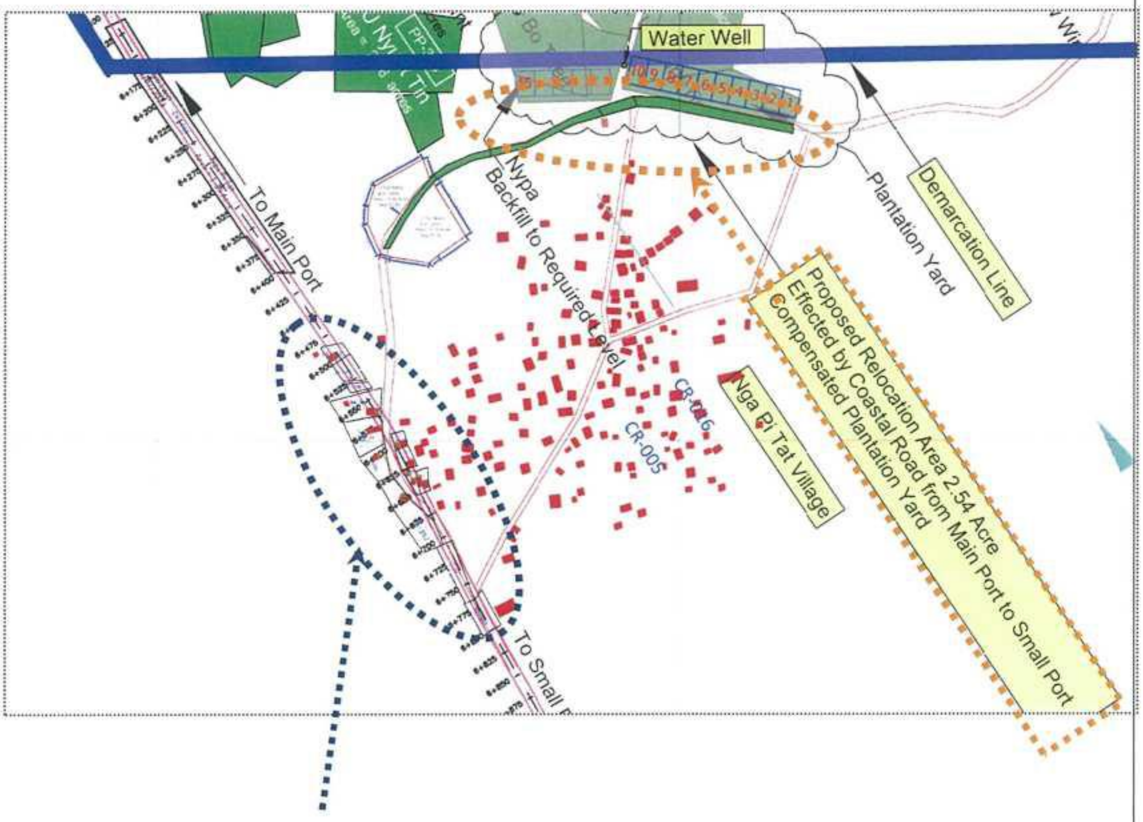
TABLE 6.2-2

PRINCIPLE ENTITLEMENT MATRIX FOR DSFZ PROJECT RAP

Loss	*Compensation and Resettlement*
Land	Cash compensation or grants/supports can be provided to meet the previous condition or to enhance community infrastructure.
Tree	Compensation rate by using the Program of the Compensation for the Land in Dawei Special Economic Zone and Implementing related project zone, July 7, 2013 (Government and DSEZ Price).
Housing Replacement	Houses will be provided, situated nearby the existing village (Nga Pitat).
Business	Compensation and resettlement should be consulted with the committees and GoM's Authorities.
Demolishing dwelling/relocating/housing materials transport services	The entire process concerning demolition, relocation and hosing material services will be assisted.
Compensation for Damages and Loss	All damages and loss concerning with demolition, relocation and housing material transport will be responsible.
Allowance for Time Lost	Allowance will be made for those who lose their income during demolition, relocation as this period of time offers wage for local staffs in term of providing services concerning with demolition, materials transport etc.

Source: Draft Report. *Resettlement and Compensation Planning Framework for the Initial Development Phase of the DSEZ*, ERM-Siam Co., Ltd., 2015

For 12 effect homes, there were agree during consultant meeting that they will move to nearby home pot, provided by developer, within the same village. ***Figure 6.2-1*** shows the existing location of the affected households (Nga Pitat Village) and proposed location for resettlement site, nearby Nga Pitat Village. The details or resettlement were described in **Resettlement Action Plan Report for Project Coastal Road.**



The Existing Households

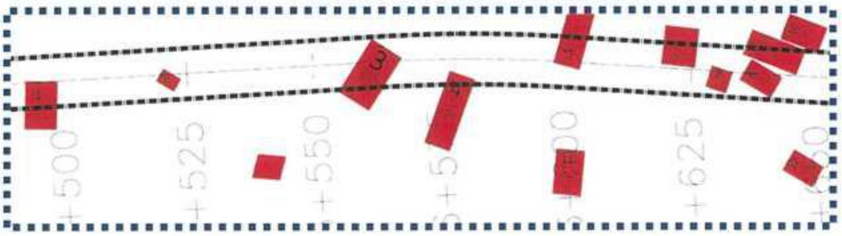


FIGURE 6.2-1 : LOCATION OF NEW HOUSING REPLACEMENT FOR 12 HOUSEHOLDS

In summary, the impact is considered significant and its control is accorded high priority and proposed mitigation measures with CSR program must be prepared. The evaluation is shown below.

Impact category	Primary impact
Impact duration	Permanent, reversible
Impact extent	About 12 household in Nga Pitat village
Impact magnitude	High, long term
Impact severity	Significant
Control priority	High

Mitigation Measure

(1) Small Port

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

(2) Project coastal road

The Project Proponent will need to prepare a detailed of resettlement plan in consultation with the 12 affected households, village headman and committees of Nga Pitat Village, and concerned authorities including MONREC. The plan will need approval from these authorities. If justified, supports will be provided to the 12 affected households to enable them to adjust to the new resettlement site. The detail of resettlement plan are described in ***Resettlement Action Plan Report for Project Coastal Road.***

D. Environmental Disturbances Caused by Dust, Noise and Gaseous Emissions

(1) Small Port

As Nga Pitat and Sakhanthit villages, the both nearest village, is about 2.64-1.51 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.[6] According to calculation, main concern should be proposed mitigation measures include dust on both Nga Pitat and Sakhanthit villages and increase noise level in Sakhanthit village.

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.

(2) Project coastal road

As Nga Pitat, the nearest village, is approx. 100 m from the construction site, the effects of dust, noise, and emissions during the pre-construction period will not reach the village. Typical noise levels of Bulldozers, excavators and graders are around 85 dB(A) measures at 15 m from the source. According to calculation, main concern and should be proposed mitigation measures include dust diffusion and increase noise level on Nga Pitat Village.

Appendix 6C presents calculations of fugitive dust dispersion and ***Appendix 6D*** presents calculations of noise propagation. The environmental disturbances will be confined mostly within the construction site. Therefore, they will affect on both the villagers and 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 and villagers.

[6]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

Mitigation Measure

(1) Small Port

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. A fugitive dust control subplan is included in the EMP.

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 small port to reduce noise impact to Sakhanthit Village.

(2) Project coastal road

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. A fugitive dust control subplan is included in the EMP.

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 of project coastal road close to Nga Pitat Village.

6.2.2 Risk Assessment during Pre-construction Phase

It is assumed that the EPC Contractor will also be responsible for site preparation works including biomass disposal.

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 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.

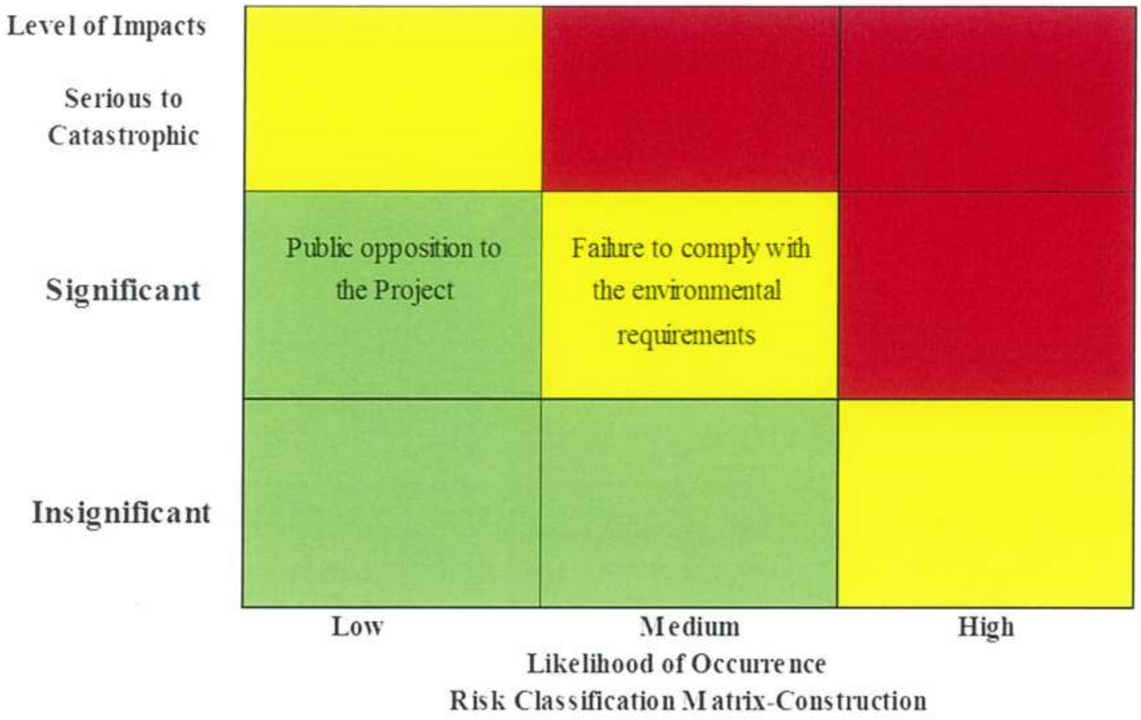


FIGURE 6.2-2 : RISK MATRIX FOR THE PRE-CONSTRUCTION PHASE

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 6.2-3***. The measures will be implemented through contractual arrangements and stakeholder engagement.

TABLE 6.2-3

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 EIA report and the associated CEMP, detailed design and construction plan and schedule. The CEMP must clearly define: - The project's environmental requirements and obligations - Physical measures that are needed to comply with the requirements and obligations - Construction measures that are needed to comply with the requirements and obligations - Assignment of responsibilities to each subcontractors 2. Require the EPC contractor to clearly incorporate 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.

TABLE 6.2-3

MITIGATION MEASURES FOR ENVIRONMENTAL RISK MANAGEMENT DURING PRE-CONSTRUCTION PHASE (CONT'D)

Cause	Mitigation Measures
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.
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 small port 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.

6.2.3 Comprehensive Monitoring Program

A monitoring program for environmental management during the pre-construction phase is presented in ***Table 6.2-4***.

TABLE 6.2-4

ENVIRONMENTAL MONITORING PROGRAM DURING PRE-CONSTRUCTION PHASE

Issue/Parameter	Location	Frequency	Method
Flora and Fauna	Construction site	Before start clearing activities	Collect number and types of flora and fauna species at construction site to establish the baseline level
Biomass Disposal			
- Volume of Biomass sent to the designated disposal site	Biomass sorting area	Daily starting when the wastes are sent to landfill	Number of trucks transporting the biomass to the disposal site
- Volume of useful parts of biomass	Biomass sorting area	Daily starting when the sorting activities start	Estimated volume of useful parts of biomass sorted out
Noise	Construction site	First two days of operations to establish the baseline level	Continuous measurement over the working period of heavy equipment by using sound level meter
Air Quality (PM-10 and TSP)	Construction site	- First four days of operation to establish baseline level - First two days with no control dust, subsequent day with frequent spray water	Large volume sampler, over the working period
	Nga Pitat and Sakhanthit	Daily during the first week of filling and compaction to establish baseline level	
Livelihoods	Nga Pitat	Before start pre-construction phase	Discussion with concerned authorities and affected local villagers about detailed plan for the resettlement plan and livelihood development plan until justified.

6.2.3.2 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.

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 Phase Activities

Construction activities will be specific for each project component. However, the activities could be grouped into two categories: (i) civil works; and (ii) mechanical and electrical works.

Project coastal road: Almost all construction activities of the project coastal road component will be civil works. They would generate changes to air quality, noise, vibration, and increased traffic in the existing DSEZ road. The magnitudes of the changes in air quality, ambient noise, and traffic could be moderate in the construction of the road sub-base. Another moderate impact is in term of impede navigation at Britney Creek due to construction of the bridge in km 3 of project coastal road. This creek is the in and out route for fishermen from Nga Pitat village.

Small Port: Almost all construction activities of the small port will be civil works. Significant environmental changes will occur off shore caused by dredging of the approach channel and construction of the two wave breakers. The dredging will cause significant changes to sea water turbidity and loss of the original bottom sediment over the 150-m width, approximated 3,000-m length and 8 m depth of the approach channel. The construction of wave breakers will also cause loss of the original bottom sediment over their base areas, and small changes in sea water turbidity. The most important change will be the change in coastal process caused by the two breakers. The changes will be permanent and will show impacts during the operational phase. Another significant impact is in term of impede navigation route of fishermen due to this route is for fishermen from Nga Pitat navigate to Muangmagan.

Remaining Components: The construction of small support buildings and facilities will involve both civil works and mechanical and electrical works. These works would cause small to negligible changes to the various relevant environmental components. Worker camps would cause small or negligible changes in environmental quality. If most workers come from outside the region, moderate level of social conflicts would occur.

6.3.2 Impact Identification

Based on the nature and magnitude of construction works, the Consultant identified in ***Table 6.3-1*** 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 6.3-1

ENVIRONMENTAL ISSUES TO BE MANAGED DURING CONSTRUCTION WORK

Environmental Issues	Activities / Sources
Gaseous Emissions	- Use of diesel-powered engine and vehicles
Noise / Vibration	- Increase noise and vibration level from heavy equipments and vehicles.
Coastal Water and Marine Ecology	- Water turbidity during dredging activities
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
Navigation	- Obstruction of navigation route of local fishermen

6.3.3 Impact Assessment

6.3.3.1 Impacts from Gaseous Emission (both small port and project coastal road)

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 close to project coastal road 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 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

1) Small Port

The closest receptor to the small port site is Sakhanthit village (1.51 km from the south of small port site).

2) Project coastal road

The closest receptor to the project coastal road is Nga Pitat village. This village has about 180 households. The most noise sensitive receptor in the village is household along project coastal road with ROW.

C. Magnitude of Noise Levels at Sources

Table 6.3-2 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 6.3-2

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 6.3-2*** 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 small port 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 (U.S. EPA 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 10 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 at Sakhathit Village measured during January 25-28 January, 2015 and October 18-21,2014 was 56.8-64.9 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 41.5 to 71.4 dB(A). These ambient noise levels will be used in the assessment of noise impacts.

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

(a) Small Port

Table 6.3.-3 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 1 hr. Therefore, the construction noise at the site perimeter fronting the receptors will have to be reduced.

(b) Project coastal road

Table 6.3.-4 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 all case include noise level at 24 hr. and high and low combine noise level at 1 hr. Therefore, the construction noise at the site perimeter fronting the receptors will have to be reduced.

G. Recommended Mitigation Measures

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.
- Provide ear plugs or ear muffs to workers operating in the excessive noise areas.

Control Case

(a) Small Port

Table 6.3-3 also presents calculated ambient noise levels at three 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 70-80 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 small port. This requirement will have to be prescribed in the contract. ***Table 6.3-3*** 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.

TABLE 6.3-3

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR FOR SMALL PORT PROJECT

Sakhanthit village

Receptor, r2	1,510	m	
Noise source,r1	15	m	
Log (r2/r1)	2.00		
Noise level at r2, Lp1	Source-20x(Log(r2/r1)		
Ambient noise level,Lp2	64.9 dB(A) Leq-24 hr.		
-Low	41.5 dB(A) Leq-1 hr.		
-High	71.4 dB(A) Leq-1 hr.		
Net noise level	10xLog(10^(Lp2/10)-10^(LP1/10))		
Noise level of sources			
Heavy Machine (Crane)	88	92.77	Assume 3 simultaneous operations
Truck	88	92.77	

PARTICULARS	NO CONTROL LEVEL		CONTROL LEVEL					STANDARD
Impact-Leq-24 hr. LP0-ambient	60.7	60.7	60.7	60.7	60.7	60.7	60.7	
LP1-Source	92.8	92.8	70.0	75.0	80.0	85.0	90.0	
LP2-Effect of Source	52.7	52.7	29.9	34.9	39.9	44.9	49.9	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.7	1.5	1.5	1.6	1.7	1.7	
Combined Noise Level	61.3	61.3	60.7	60.7	60.7	60.8	61.1	70.0
Impact-Leq-1 hr High Combined Noise Level	71.5	71.5	71.4	71.4	71.4	71.4	71.4	
Increase	0.1	0.1	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	53.0	53.0	41.8	42.4	43.8	46.6	50.5	
Increase	11.5	11.5	0.3	0.9	2.3	5.1	9.0	3.0

(b) Project coastal road

Table 6.3-4 also presents calculated ambient noise levels at five levels of source control-50,55,60, 64 and 65 dB(A). The figures clearly indicate that the noise levels at the site perimeter will have to be reduced to meet the standard until noise level approximate 64 dB(A). Therefore, 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 project coastal road. This requirement will have to be prescribed in the contract. ***Table 6.3-4*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

TABLE 6.3-4

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR FOR PROJECT COASTAL ROAD

Nga Pitat village

Receptor, r2	100	m	
Noise source,r1	15	m	
Log (r2/r1)	0.82		
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	Assume 3 simultaneous operations
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	
LP1-Source	92.8	92.8	50.0	55.0	60.0	64.0	65.0	
LP2-Effect of Source	76.3	76.3	33.5	38.5	43.5	47.5	48.5	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.9	1.9	1.5	1.6	1.6	1.7	1.7	
Combined Noise Level	76.4	76.4	60.7	60.7	60.8	60.9	61.0	70.0
Impact-Leq-1 hr High Combined Noise Level	77.9	77.9	72.7	72.7	72.7	72.7	72.7	
Increase	5.2	5.2	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	76.3	76.3	47.8	48.1	49.0	50.6	51.1	
Increase	28.7	28.7	0.2	0.5	1.4	3.0	3.5	3.0

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 construction of both small port and project coastal road
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**	Significant
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 small port site.

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 small port and support facilities, and in transportation of materials and heavy equipment. However, the largest source of vibration would be at the small port 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 small port construction site is Nga Pitat community. This village is located about 100 m of the project coastal road. 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 6.3-5***). 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 6.3-5

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

(a) Small Port

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. According to the closest sensitive receptor, Sakhanthit villages is the one which is approximately 1.51 km of distance from the construction site. According to Whiffin, A.C., and Leonard (***Table 6.3-7*** and DIN4150 (***Table 6.3-8***), 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.

(b) Project coastal road

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. According to the closest sensitive receptor, Nga Pitat villages is the one which is approximately 100 m of distance from the project coastal road. According to Whiffin, A.C., and Leonard (***Table 6.3-7***) and DIN4150 (***Table 6.3-8***), 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 6.3-6

VIBRATION LEVEL OF CONSTRUCTION ACTIVITIES AT VARIOUS DISTANCES

Distance from the Project (meter)	Prediction Results of Vibration Level from Construction Activities (inch/sec)
100	0.002
500	0.0002
1,000	0.00006
1,510	0.00003

TABLE 6.3-7

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 6.3-8

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 Coastal Water and Marine Aquatic Ecology

Impact Assessment

During the construction of offshore facilities, coastal water and marine ecology could be affected by Dredging activities

A. Dredging and Disposal

The early stage of small port development will include the dredging of the approaching channel, turning circle and ship berth to maximum depth of 8 m. These dredging activities will create damaged materials of approximately 5.2 MCM will be used for construction activities without disposed offshore. The affected area is the littoral zone with sandy beach.

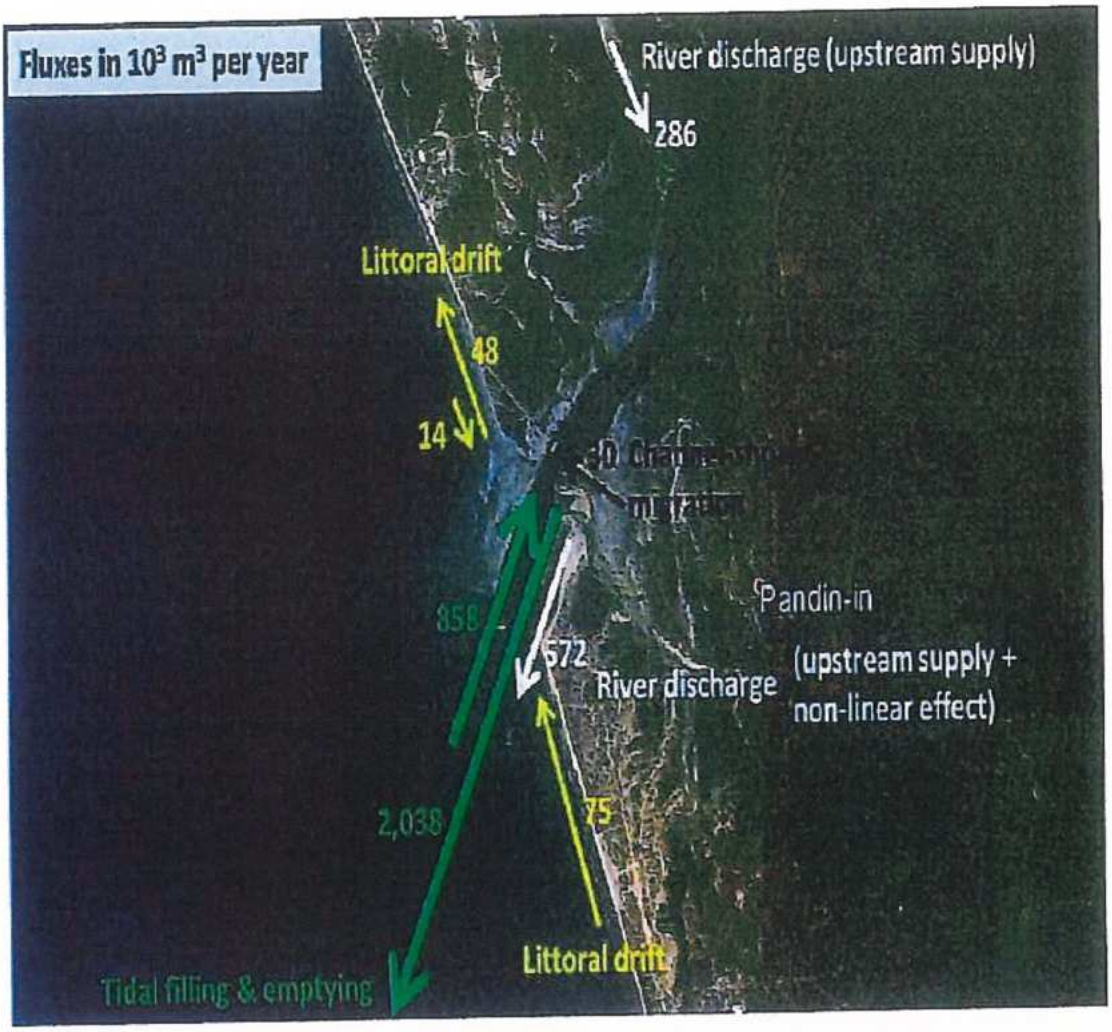
According to the study by Royal Haskoning 2015, the results can described as follow:

Sediment Transport

The study of sediment transportation flux per year can summarize as follow:

- A gross littoral drift of 75,000 m^3 towards the delta from south
- A gross littoral drift of 14,000 m^3 towards the delta from north and gross littoral. Drift of 48,000 m^3 away from the delta towards the north (this component does not result in siltation of approach channel.
- A rough estimated 30,000 m^3 from tidal flats in the estuary into the river's main channel
- Tidal-driven fluxes of 858,000 m^3 into estuary and 2,038,000 m^3 out of estuary (the major part of siltation take place at the edges of the delta).
- River sediment flux of 286,000 m^3 into estuary associated to a constant discharge of 500 m^3/s and river - induced sediments flux through cross-section 1 of 572,000 m^3 due to the none- linear effect of the tidal and river currents.

Figure 6.3-1 shown sediment transportation of the coastal water around propose small port site.



Source : Royal Haskonins, 2015.

FIGURE 6.3-1: SEDIMENT TRANSPORTATION

Siltation due to the Littoral Drift

The total annual littoral drift towards the approach channel amount 89,000 m^3 (long term average). Due to the large tidal variation the surf zone during low water is further offshore than high tidal. Assuming a certain overlap between the surf zone during high and low water, the total surf zone width can estimate to be 500 m.

Since the approach channel is 150 m. wide, the annual littoral drift of 89,000 m^3 deposits in an area of 500 x 150 m^2. On average, this mean 1.2 m thick deposit layer per year.

Siltation in the Port

The simulation have shown that large sediment fluxes are involved in the tidal filling and emptying of the estuary and in the river discharge. In case an approach channel and turning basin dredged it is likely that part of sediment flux deposit in dredging area. Base on results, conservative siltation rate approx. 1-2 m. of dredged area inside the river mouth.

Siltation of Approach Channel Offshore from Surf Zone

According to study results by Royal Haskoning 2015, the siltation of approach channel in expected value amount to 43,000 m^3 and upper limit approach to 100,000 m^3. This volume resulted in siltation layer thicknesses of at most few decimeters.

Effected from Disposal

Due to all of dredged material are used in reclamation on small port area and other project in DSEZ, none of adverse effected from disposal to both coastal water quality and marine ecology

B. Marine Ecology

Effect to Coral Reef and Seagrass Area

Due to the study results indicate that the distance area of siltation during dredging is approximate 500 m. from approach channel, it is not make affected to coral reef and seagrass areas. The reason is the nearest coral reef area from small port is North Island with distance approx. 28 km. whereas the nearest seagrass area from small port is locate on Myiek with distance approx. 40 km.

Effect to Endangered Species

According to results from secondary data, field survey and public consultation indicate that none of any endanger species found in and around project site, the effected from dredging activities to endanger species is negligible.

Effect to Benthos and Marine Species around Project Site

According to field survey during October 2014 and January 2015 around proposed small port area, the result indicate that plankton and benthos species evenness and no significant different among the samples. Most of the species are found in Phylum Annelida, Anthropoda, and Mollusca, with relatively low biodiversity and density.

In addition, the direct impact on marine habitat loss is perceived as temporary impact due to the part of seabed will adjust to original condition by natural wind and wave actions after dredging complete.

Even through the siltation that found only 500 m. around approach channel, the project implementation must follow mitigation measure to minimize impact on coastal water quality and marine ecology around project site. With implementation follow to proposed mitigation measure, the rate of impact is medium.

Impact category	Direct impact
Impact duration	Throughout the construction period of about 15 months. More significant during the dredging activities
Impact extent	Around proposed 500 m. from approach channel and turning cycle
If no control - **Impact magnitude**	Resulting coastal water levels especially suspended solid fully met the applicable standard
- **Severity**	Significant
Control priority	Medium

Mitigation Measures

(a) Dredging Activities

- Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments;
- Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities.
- The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time.
- Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea.
- In case of damage on sediment pipe, the dredging activities must be stopped.
- Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area.
- Check and maintenance all machine and equipment to prevent oil leakage into sea.
- Check and maintenance HD (Hopper Dredger) and Cutting Suction Dredger (CSD) to ensure that no sediment overflow into the sea.
- Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area.
- Monitoring coastal water quality especially during dredging activities and the results must be sent to all concerned agencies.

(b) Disposal

- Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology.

- Use the dredged materials for on-land disposal within the Early Industrial to the maximum extent.

(c) **Marine Ecology**

- Apply the same mitigation measures as recommended for coastal water quality.
- Monitoring marine ecology especially during dredging activities and the results must be sent to all concerned agencies.
- Provide information on the construction schedule and dredging area to local fishermen living near the port.
- Coordinate with local authorities to protect coral and other marine resources.

These mitigation measures will need to be incorporated in the dredging contracts, and strictly implemented in the dredging operations by the contractors.

6.3.3.5 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 273 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 100-acre project area could cause increased turbidity of the coastal waters near the project site. As the exposed area is only about 100 acres, the increased turbidity would be small considering the large coastal volume and intense mixing by wave actions.

The construction would require about 273 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 project 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 about 41 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.[7]

Wash Waters-Wheel Wash Water: For truck wheel washing, the volume of wash water to be disposed will depend on the method selected for wheel washing. For this Project, the EPC contractor would use the flooded basin for truck wheel washing. This method is simple and would be practical for this Project. The Consultant made a rough estimate of the volume of wheel wash water using the following assumptions: (i) 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 40.47 ha (100 acres) for small port construction site and 18.77 ha (46.39 acres) for project coastal road, the total volume of surface runoff will be 84,218 m^3 from small port and 39,060 m^3 from project coastal road.

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.

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[7]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*

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 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 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 for both small port and project coastal road 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. 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	Significant
Control priority	Medium

6.3.3.6 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 6.3-9*** 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 100 acres of land for the small port block Assuming that this area will be concrete floor, the total amount of construction wastes to be generated in the construction was estimated at 810 tons. For the construction period of about 15 months, the average daily amount of waste would be about 2.7 tons/day based on 25 construction days per month.

TABLE 6.3-9

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 273 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 218.4 kg/day at peak.

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 2.18 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 or recycle. 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 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	Medium magnitude considering the waste quantities
Impact severity	Significant impact on the natural environment
Control priority	Medium

6.3.3.7 Road Traffic

A. Sources

During the construction period of 15 months, the construction of small port 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 small port 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 project 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. 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. 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

Small Port

According to conceptual plan during construction phase, the number of vehicles for transport construction material, equipment, and worker are described as follow:

No.	Name of machinery and equipment	Quantity
1	Dump Truck, 10 W	14
2	Water Tank Truck, 10 W (12,000 Lts)	1
3	Medium Truck, 6 W	4
4	Pick - Up, 4 WD	6

Source : ITD, 2015

For the analysis, the information assume that all of vehicles are use every day during construction period. Therefore, the number of vehicle can described as follow:

- Pick-up truck (4 wheels) approx. 6 trucks/day
- 6 wheels of truck (for passenger and oil truck) approx. 4 trucks/day
- 10 wheels of truck (include water tank, and dump trucks) approx. 15 trucks/day

Project coastal road

According to conceptual plan during construction phase, the number of vehicles for transport construction material, equipment, and worker are described as follow:

No.	Name of machinery and equipment	Quantity
1	Dump Truck, 10 W	12
2	Water Tank Truck, 10 W (12,000 Lts)	1
3	Medium Truck, 6 W	2
4	Pick - Up, 4 WD	3

Source : ITD, 2015

For the analysis, the information assume that all of vehicles are use every day during construction period. Therefore, the number of vehicle can described as follow:

- Pick-up truck (4 wheels) approx. 3 trucks/day
- 6 wheels of truck (for passenger) approx. 2 trucks/day
- 10 wheels of truck (include water tank, and dump trucks) approx. 13 trucks/day

D. Predicted Impacts

Small Port

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 during construction phase will increase the existing traffic loads by about 6.49 PCU/hr (***Table 6.3-10***. According to calculation results, the V/C ratio at TC1 and TC2 will be increased as shown in ***Table 6.3-11*** and ***Table 6.3-12***. The traffic at TC1 and TC2 will not be seriously affected in term of increase number of traffic volume in both holiday and working day. However, increase number of vehicles may increase chance on road damage and accident to local villagers.

TABLE 6.3-10

PREDICTION OF AN INCREASE OF TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF SMALL PORT (WORST CASE SCENARIO)

Type of vehicles, as predicted to be increased	PCE factor	Traffic volume		Traffic volume during working hour (PCU/hour) *
		No. of vehicle / day	PCU/ day	
Pick-up truck (4 wheels)	1	6	6	0.75
6 wheel trucks	2.1	4	8.4	1.05
10 wheel trucks	2.5	15	37.5	4.69
Total		**25**	**51.9**	**6.49**

Note : * estimated working hours: 8 hrs.

TABLE 6.3-11

COMPARISON OF CURRENT TRAFFIC VOLUME AND PREDICTED TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF SMALL PORT (IN CASE OF HOLIDAY DAY)

Items	Current traffic volume		Traffic volume during construction phase (present +expected to be increased)	
	ITD coastal road	Nga Pitat Village	ITD coastal road	Nga Pitat Village
Existing traffic volume (PCU/day) during Sunday 25 Jan 2015	55.88	43.75	107.78	95.65
Maximum traffic volume in working hour* (V) (PCU/hour)	5.59	4.38	12.08	10.87
Carrying capacity of highway (PCU/hour)	2,000	2,000	2,000	2,000
V/C ratio in working hour	0.003	0.002	0.006	0.005
Traffic condition	Very high traffic flow	Very high traffic flow	Very high traffic flow	Very high traffic flow

Note: 1) * estimated working hours: 8 hrs.

TABLE 6.3-12

COMPARISON OF CURRENT TRAFFIC VOLUME AND PREDICTED TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF SMALL PORT (IN CASE OF WORKING DAY)

Items	Current traffic volume		Traffic volume during construction phase (present +expected to be increased)	
	ITD coastal road	Nga Pitat Village	ITD coastal road	Nga Pitat Village
Existing traffic volume (PCU/day) during Monday 26 Jan 2015	92.11	47.25	144.01	99.15
Maximum traffic volume in working hour* (V) (PCU/hour)	9.21	4.73	15.7	11.22
Carrying capacity of highway (PCU/hour)	2,000	2,000	2,000	2,000
V/C ratio in working hour	0.005	0.003	0.008	0.006
Traffic condition	Very high traffic flow	Very high traffic flow	Very high traffic flow	Very high traffic flow

Note: * estimated working hours: 8 hrs.

Project coastal road

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 during construction phase will increase the existing traffic loads by about 4.95 PCU/hr (***Table 6.3-13***). According to calculation results, the V/C ratio at TC1 and TC2 will be increased as shown in ***Table 6.3-14*** and ***Table 6.3-15*** The traffic at TC1 and TC2 will not be seriously affected in term of increase number of traffic volume in both holiday and working day. However, increase number of vehicles may increase chance on road damage and accident to local villagers.

TABLE 6.3-13

PREDICTION OF AN INCREASE OF TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF PROJECT COASTAL ROAD (WORST CASE SCENARIO)

Type of vehicles, as predicted to be increased	PCE factor	Traffic volume		Traffic volume during working hour (PCU/hour) *
		No. of vehicle / day	PCU/ day	
Pick-up truck (4 wheels)	1	3	3	0.36
6 wheel trucks	2.1	2	4.2	0.53
10 wheel trucks	2.5	13	32.5	4.06
Total		**18**	**39.7**	**4.95**

Note : * estimated working hours: 8 hrs.

TABLE 6.3-14

COMPARISON OF CURRENT TRAFFIC VOLUME AND PREDICTED TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF PROJECT COASTAL ROAD (IN CASE OF HOLIDAY DAY)

Items	Current traffic volume		Traffic volume during construction phase (present +expected to be increased)	
	ITD coastal road	**Nga Pitat Village**	**ITD coastal road**	**Nga Pitat Village**
Existing traffic volume (PCU/day) during Sunday 25 Jan 2015	55.88	43.75	95.58	83.45
Maximum traffic volume in working hour* (V) (PCU/hour)	5.59	4.38	10.54	9.33
Carrying capacity of highway (PCU/hour)	2,000	2,000	2,000	2,000
V/C ratio in working hour	0.003	0.002	0.005	0.005
Traffic condition	Very high traffic flow	Very high traffic flow	Very high traffic flow	Very high traffic flow

Note: 1) * estimated working hours: 8 hrs.

TABLE 6.3-15

COMPARISON OF CURRENT TRAFFIC VOLUME AND PREDICTED TRAFFIC VOLUME DURING CONSTRUCTION PHASE OF PROJECT ACCCESS ROAD (IN CASE OF WORKING DAY)

Items	Current traffic volume		Traffic volume during construction phase (present +expected to be increased)	
	ITD coastal road	**Nga Pitat Village**	**ITD coastal road**	**Nga Pitat Village**
Existing traffic volume (PCU/day) during Monday 26 Jan 2015	92.11	47.25	131.81	86.95
Maximum traffic volume in working hour* (V) (PCU/hour)	9.21	4.73	14.16	9.68
Carrying capacity of highway (PCU/hour)	2,000	2,000	2,000	2,000
V/C ratio in working hour	0.005	0.003	0.007	0.005
Traffic condition	Very high traffic flow	Very high traffic flow	Very high traffic flow	Very high traffic flow

Note: * estimated working hours: 8 hrs.

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 15 month.

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. 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;

- Employ local people a Nga Pitat village to give a sign when local villagers walk across the road during construction
- 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;

Traffic Management at the Intersection of ITD Coastal Road and Nga Pitat Road

Provide a traffic police or relevant officer 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 pedestrians and cyclists near the worksites.

G. Evaluation of the Significance of Impacts

The impact on traffic was evaluated as shown below. The traffic management deserves medium priority during the construction period.

Impact category	Direct impact
Impact duration	Throughout the construction period of abou15 months..
Impact extent	Mainly on ITD coastal road and along the routes from the material sources to the small port and project coastal road construction site
Impact magnitude	Very good traffic flow at ITD coastal road and Road at Nga Pitat Village
Impact severity	Insignificant
Control priority	Medium

6.3.3.8 Navigation

A. Sources

During the construction period of 15 months, the construction of small port and facilities will necessitate the need for navigation of heavy equipments, offshore construction, and dredging activities. Consequently, navigation loads will be increased on within the study area, Andaman sea and Pan Din In River. Navigation related impacts during the construction phase would be impeded local navigation due to dredging and construction of offshore facilities and increased risk of accidents.

B. Sensitivity of Receptors

The impact areas will be Andaman Sea and Pan Din In River which nearby the project site. The detail as follow;

Andaman Sea- The main navigation route of local fishermen from Nga Pitat Village to fishing at the main fishing ground area include the South Island, North Island and Bok Ye-gen Island (approx. 30 km from the west of Nga Pitat Village). According to focus group meeting on 4 February 2015 at Nga Pitat Village, the results described that approximated 50 fishing boat were found in this village.

Pan Din In River- Pan Din In inside the project site is used by local boats from Sakhanthit and Nga Pitat Villages as boatyard to protect the boats from winds and waves. According to the Navigation counting at existing small port near Pan Din In River Mouth during 23-24 January 2015, approximate 40 boats per day will be pass in the Pan Din In River Mouth.

C. Estimates of Navigation Loads

According to conceptual plan during construction phase, approximate 9 of vessels and boats will be used for offshore construction, and dredging activities are described in ***Table 6.3-16***.

TABLE 6.3-16

NUMBER OF VESSELS AND BOAT DURING CONSTRUCTION PHASE

No.	Name of machinery and equipment	Quantity
1	Cutter Suction Dredge (CSD)	1
2	Hopper Dredger (HD)	1
3	Loading (rock) Barge (1,500-3,000 DWT)	2
4	Loading (working) Barge (800-1,000 DWT)	2
5	Service Boat (200-300 HP)	1
6	Survey Boat (150-200 HP)	1
7	Tug Boat (800-1,000 HP)	1
Total		**9**

Source : ITD, 2015

D. Predicted Impacts

The operations of these vessels and boats could affect the operations of local fishing boats in the area in case of impeded local navigation due to dredging and construction of offshore facilities and increased risk of accidents. Even through the construction period is short term (approx. 15 months), appropriate mitigation measures will need to be implemented to minimize impacts on local fishing boats and prevent accidents. With the mitigation measures in place, the Project impacts on local fishing boats would not be significant.

E. Management Guidelines and Impact Mitigation Measures

Design Concept

1) Vessel Traffic Management

A comprehensive Vessel Traffic System and Management Information System (VTS MIS) will be required for this Terminal. This will include:

- computing hardware
- communications (voice and data) equipment
- surveillance technology
- technical support infrastructure such as power, environmental
- conditioning, security, and Human Machine Interfaces (HMI)
- the VTS MIS systems functionality, including command and control
- capability, COP generation and management, integrated sensor control,
- disaster recovery, and record and replay, both for training purposes and
- legislated incident analysis and reporting requirements

All elements of terminal and landside logistics, security, and traffic management will be provided for through:

- detailing location and functionality of a central control room/tower
- sensor implementation, inclusive of radar, AIS, CCTV, telephone, radios, AIS AtoN's, and MetOcean equipment
- multi-sensor fusion VTS system to provide the Common Operating Picture
- Port Management Information System for logistics/scheduling and implementation and management of charging mechanisms
- associated IT infrastructure
- integration as necessary with other tools such as Portable Pilotage Units, Laser Docking Systems, Mooring Management Systems, Quick Release Hooks, etc.

2) Sea Traffic

- Install signs and warning signs that can be clearly seen (200 meter from the construction area) to show the boundary of offshore construction areas.
- All vessels operating in nighttime must receive special permits.
- All concerned safety rules have to follow the laws related to transportation section of Myanmar.
- Provide information on the boundaries of offshore construction areas to all fishing boat operators.
- Train all concerned crew on navigation safety in the offshore construction areas.
- Carry out routine check and maintenance of vessels to follow safety instructions.
- Prepare and maintain readiness for implementing an emergency plan related to marine accidents.

F. Evaluation of the Significance of Impacts

The impact on navigation was evaluated as shown below. The navigation management deserves medium priority during the construction period.

Impact category	Direct impact
Impact duration	Throughout the construction period of about 15 months.
Impact extent	Proposed approach channel and navigation route of local fishermen
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.3.3.9 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 273 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$100[8] and 80% of income to be spent locally[9], the Project construction will generate a cash flow of about US$ 21,840 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, Sakhanthit, Pan Din In, and Veenapin villages.
- The recruitment process should be fair and transparent and wage rates are commensurate with experiences and qualifications.
- The employment conditions will need to comply with the requirements in the national labor law, the social security law and standard wage rate, and other applicable laws and regulations.
- The Project Proponent should establish good relationship with the locals and provide the locals with timely information about the project, likely impacts and mitigation measures, and procedures to address local concerns and grievances.
- Disclose relevant information before the construction of major components and during the construction through such methods as:
  - Information billboard
  - Information disclosure via village headmen or village community leaders

[8] Calculation is based on findings from household survey in the study area, October 2015.

[9] 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.

- Conduct attitude surveys to collect information on local concerns, issues, and problems of the communities (200 samples within 5 villages).

(ii) Livelihood

A. Impacts

The major livelihood effect is adjustment of 12 household that relocated from project coastal road right-of-way in new relocated area and impact during construction phase to local villager around project sites such as accident from project transportation, impede of navigation, and loss of some area forest resources that change for small port site.

Although these impacts will be occurred temporary within a short period of transportation and navigation, they will concern on major occupation of local fishermen and the use of mangroves which is the main source of food income of the locals. The significance of the negative impacts is considered moderate, once the suggested measures are implemented.

In addition, grievance management process during construction phase must be setted to solve the complaint from the local communities due to impact from construction activities.

B. Mitigation Measures

- Continue restore livelihoods through provision of knowledge for strengthening occupation career as proposed during pre-construction phase

(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 small port 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. 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. In order to prevent the competing use of medical services by the Project, the project 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 ***6.3.3.7***. 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 cyclone and tsunami situations.

6.3.4.1 Risk Identification

Dawei and proposed project, is a location potentially subject to cyclone and tsunami occurrence due to

- The location of project site related to Cyclones in the Bay of Bengal.
- According to Seismic Hazard Map from Meteorological and Hydrological Department, Myanmar, the small port 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.

6.3.4.2 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 6.3-2*** 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.

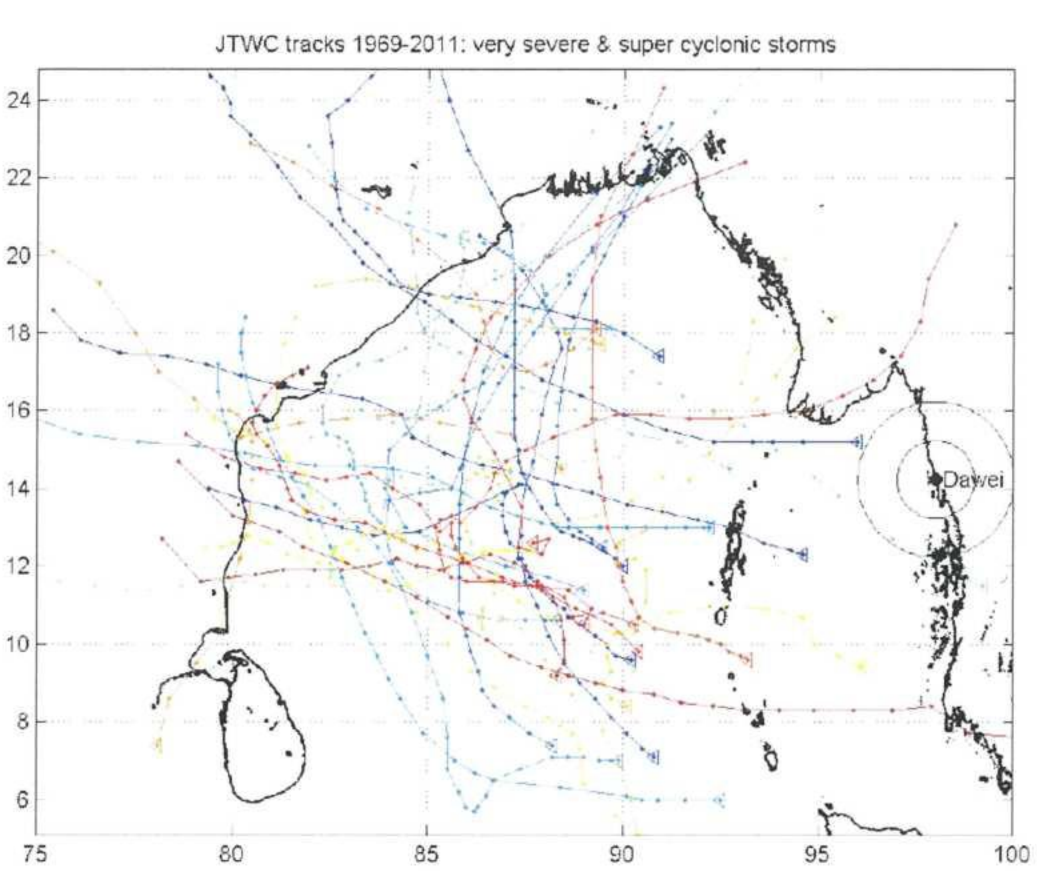
Based on the historical storms presented in ***Figure 6.3-2***, the following observations can be made:

- 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 marine structures of the small port.

Risk 2-Tsunami

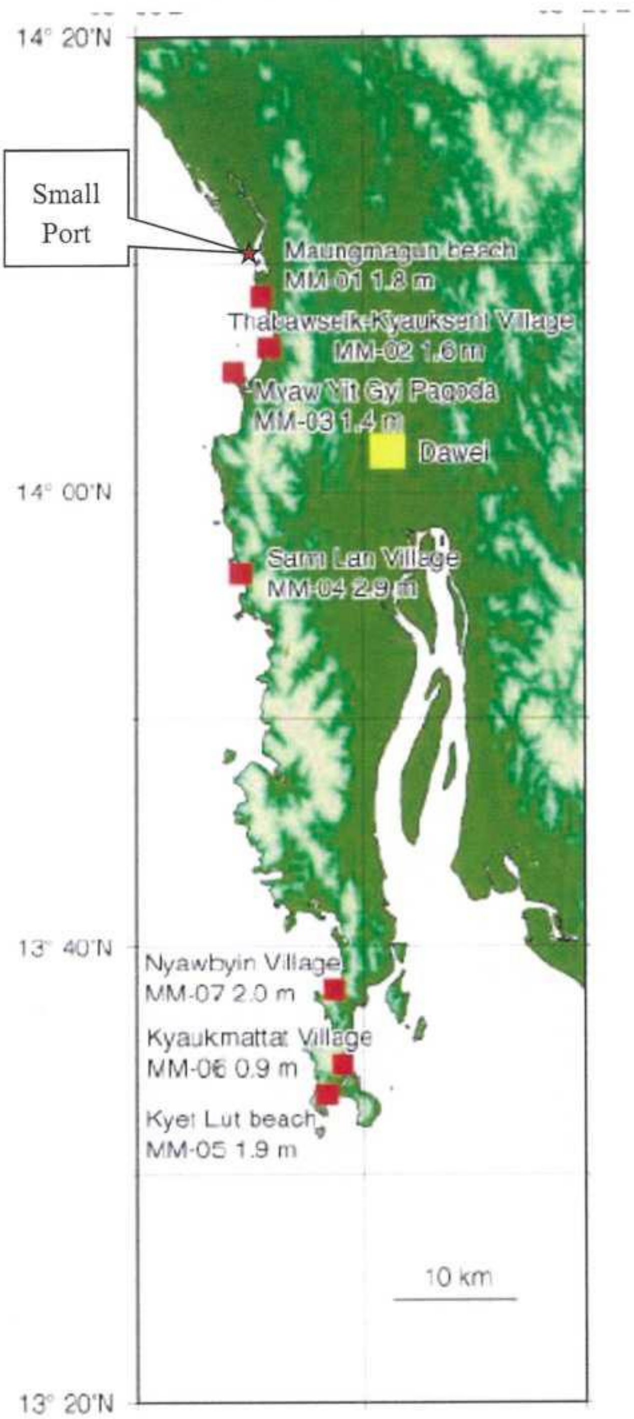
According to the result from "Report on Post Tsunami Survey along the Myanmar Coast for the December 2004 Sumatra-Andaman Earthquake, 2005", The study covered on Muangmagan beach. This area locate near to small port site (Figure 6.3-3). The study can summarize as follow:

- The tsunami height during 2004 at Muangmagan beach approximate 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 6.3-2: 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 6.3-3 : MAP SHOWING TSUNAMI MEASUREMENT AT DAWEI AREA

According to the risk assessment results, ***Figure 6.3-4*** 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.

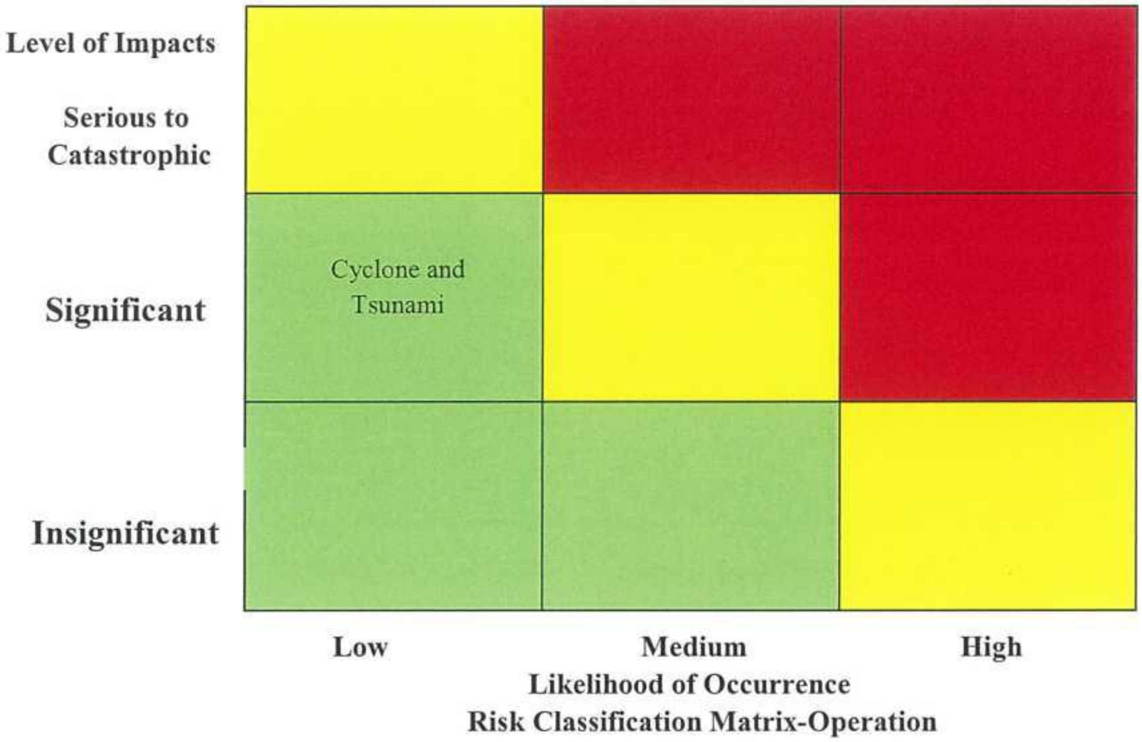


FIGURE 6.3-4 : RISK MATRIX FOR THE CONSTRUCTION PHASE

6.3.4.3 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.

6.4 OPERATIONAL PHASE

6.4.1 Nature of Project Operation

The operation of small port will provide an initial transport infrastructure for Initial Phase Development of DSEZ. For this Project, the following features of small port and coastal road operation which have environmental implications are noted:

(1) Small Port

Facilities	Key Information	Purposes or Functions
Access Channel		Entrance with adequate water depth for various type of vessels
- capacity	One vessel per hour in each direction	
- dimension	Length 3km, width 150m., depth 8 m.	
- turning cycle	Diameter 360 m, depth 8 m.	
Breakwater	One breakwater which 1.6 km long	Minimize wave in mooring area
Revetment	Slope protection length 400 m.	Prevent shoreline erosion caused by waves generated by vessels and tug boats
Stock yard	2 stocks yard, each covering an area about 20 acres	Store container of material and equipments.

(2) The project coastal road will be 8.3 km long and 7 m wide with 1 m ROW. The road will be paved with asphalt concrete.

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 small port and the 9 km of project coastal road, during the operational phase of this Project, the small port and project coastal road management will have to manage the following issues:

(1) Excessive exhaust gas and noise of from vehicle at project coastal road

(2) Coastal water contamination and impact on coastal species due to dredging maintenance

(3) Shoreline erosion

(4) Obstruction on land traffic and navigation

(5) Wastewater and Waste during operation phase

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 small port will not be an issue as the Project area is set near existing small port and has no places of natural beauties. The appearance of the Project's 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 small port together with a rather small number of about 20 workers will therefore have no direct impacts on the local cultural and archaeological heritages.

6.4.3 Impact Assessment

6.4.3.1 Ambient Air Quality and Greenhouse Gas

(a) Ambient Air Quality

During the operation phase, the main air quality impact during operation is increase number of vehicle that using project coastal road. The emissions will include typical pollutants such as NO_x, SO_2, CO, and particulate in the exhaust gases discharged from the engines.

As the Nga Pitat Village is nearest community that close to project coastal road, it is unlikely that this community will be affected by the gaseous emissions during the operation considering the small magnitude of the emissions.

Emission loads of various pollutants could be estimated from information on the number and type of diesel-engine vehicle and their hours of operation.

The significance of the impact of gaseous emissions was evaluated as shown below. The issue is considered medium priority during the operation period.

Impact category	Direct impact
Impact duration	Throughout the operation period
Impact extent	Local, near to project coastal road
Impact magnitude	Small, long term
Impact severity	Insignificant
Control priority	medium

(b) Greenhouse Gas

Main Source of greenhouse gas emission during operation of Project facilities will mostly result from vessels. During operation, types of vessel is general cargo. The number of vessel to mooring at small port is approx. 1 vessel/hour.

In worst case, potential sources of greenhouse gas emission come from approx. 2,920 general cargo per year (365 day x 8 hr working).

1) Sensitivity of Receptors

The receptors of greenhouse gas will be workers and communities near the project site, including Sakhanthit village.

2) 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

The information for using on the formula can described as follow:

1) Results of Fuel Consumption come from

- Fuel consumption of General Cargo

  = 21.3 tonne/day or 24,067.80 liter/day (Ref: Mobile combustion, IPCC 2006)

- Assume Number of General Cargo (worst case) = 2,290 general cargo / year

- Therefore, fuel consumption is

  = 24,067.80 liter/day x 2,920 general cargo/year

  = 70,277,976 liter/year

2) Results of Fuel Heating Value of diesel = 36.4 MJ/liter (Ref:http://www.ocean.washington.edu/courses/envir215/energynumbers.pdf)

3) Emission Factor were use from 2006 IPCC Guidelines for National Greenhouse Gas Inventories as showed in Table below:

Parameter	Emission Factor (kJ/MJ)
CO_2	0.0741
CH_4	0.000007
N_2O	0.000002

Source : Table 3.5.2 and Table 3.5.3, Default Emission Factors For Water-Borne Navigation, 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. 0.19 Mt CO_2 eq. (***Table 6.4-1***). The calculation results is very less or 0.19% when compare with Total GHG Emissions Excluding Land-Use Change and Forestry in Myanmar (98.93 $MtCO_2$ eq.)[10]. Therefore, the operation of small port 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.

[10] CAIT Climate Data Explorer. 2015. Washington, DC: World Resources Institute. Available online at: http://cait.wri.org. Access on March 2016.

TABLE 6.4-1

ESTIMATE GREENHOUSE GAS EMISSION FROM SMALL PORT PROJECT

Heating Value of Diesel (MJ/liter)[1/]		36.4
Diesel Consumption	**liter/year**	70,277,976.00
	MJ/yr	2,558,118,326.40
CO_2	**EF (kg/MJ)**[3/]	0.0741
	Global Warming Potential[2/]	1
	tonne CO_2eq/yr	189,556.57
CH_4	**EF (kg/MJ)**[3/]	0.000007
	Global Warming Potential[2/]	25
	tonne CO_2eq/yr	447.67
N_2O	**EF (kg/MJ)**[3/]	0.000002
	Global Warming Potential[2/]	298
	tonne CO_2eq/yr	1,524.64
Total (Mt CO_2eq/yr)		0.19

Source: 1/ http://www.ocean.washington.edu/courses/envir215/energynumbers.pdf

2/ Global Warming Potential (GWP) ,the Fourth Assessment Report (AR4) in 2007, IPCC, 2007

3/ Table 3.5.2 and Table 3.5.3 Default Emission Factors For Water-Borne Navigation ,2006 IPCC Guideline For National Greenhouse Gas Inventories

Mitigation Measures

- Use low sulfur diesel fuel
- Check and maintenance vehicle regularly to minimize the exhaust emission.
- Speed reductions by vessels approaching a port can result in significant reductions in nitrogen oxide emissions.
- Control and formulate monitoring program on air quality throughout operation period.

6.4.3.2 Ambient Noise

During the operation phase, the impact from operation of small port is vehicle using project coastal road. The major sensitive receptor that get affect from noise level increase is Nga Pitat village (close to project site). Due to the period of project to use project coastal road is long term, the impact of noise on the nearby communities is evaluated as follows:

Impact category	Direct impact
Impact duration	Throughout the operational life of the small port and Initial phase development of DSEZ.
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 noise level issue deserves medium control priority.

Mitigation Measures

Small Port

- Implemented to control noise level at lower than 85 dB (A) at 1 m from the noise sources and lower than 70 dB (A) at the port fence line.

Project coastal road

- Limit speed of vehicles at the Project site at 40 km/hr. and speed of ships.
- Install temporary noise barriers, if necessary, to minimize noise impacts on sensitive areas
- Transportation shall be carried out only during the day time.
- Always maintain road surface in good condition.

6.4.3.3 Maintenance Dredging

During port operations, dredging of the approach channel will be periodically carried out to maintain adequate navigation depths. The magnitudes of dredging and disposal of dredged materials will be much lower or same as during the construction phase. The main concern will be increases in turbidity of the sea water which will be impact on coastal water quality and marine ecology. Even through the impacts of dredging and disposal of dredged materials will not be significant when compare with the construction phase, the impacts of maintenance dredging will also issue deserves medium during the operation phase.

Impact category	Direct impact
Impact duration	Throughout the operational life of the small port
Impact extent	Mainly on the sea of maintenance dredging area
Impact magnitude	Small
Impact severity	Significant
Control priority	Medium

Mitigation Measure

The mitigation measures are similar to those proposed for dredging during the construction phase include

Design Concept

The Developer will prepare detailed design of maintenance dredging and disposal activities. The proposed design concept is same as during operation phase as described below:

Vessel for Dredging Activities

- Disposal vessels should be equipped with accurate positioning systems, e.g. with AIS (Automatic Identification System), which shall be switched on during disposal operations. Disposal vessels and operations should be inspected regularly to ensure that the conditions of the disposal permit are being complied with, and that the crews are aware of their responsibilities under the permit. Ships' records and automatic monitoring and display devices (e.g. black-boxes), where these have been fitted, should be inspected to ensure that the disposal is taking place at the specified site.

- The following typical methods are available to reduce plume generation when dredging with a HD (Hopper Dredger):

  - Optimize trailing velocity, suction mouth and pump discharge rates. This results in less spillage from the drag head.

  - Limit overflow and/hopper filling. This is sometimes imposed on dredging operations but slows the dredging process, and increases costs significantly.

  - Reduce intake water. This results in more in-situ material being taken into the dredge. This increases costs as the fuel requirement per m^3 rises. The effect on the production rate is controlled by pumping at a higher rate.

  - Reduce air content in the overflow mixture.

- The following typical methods are available to reduce plume generation when dredging with a CSD (Cutting Suction Dredger):

  - Optimize cutter speed, swing velocity and suction discharge. This reduces the spill rates at the cutter head, as more in situ material is taken up at the cutter head. This method will also optimize production rates and it should be the most cost effective method of dredging with a CSD.

- Optimize cutter head design. This method requires a high level of detail of the soil characteristics to be removed. The method also optimizes production rates and it should be the most cost effective method of dredging with a CSD.

- The following typical methods are available to reduce plume generation when dredging with a Backhoe dredge.

- Use of a visor over the bucket. This is a relatively cost effective method, but does reduce production rates and thus increase overall Project costs.

- Use of a silt screen. Silt screen scan under certain conditions can be used to minimize the impact of spilled dredge materials. They need to be moved carefully, and can considerably slow down production rates. If they are not used correctly, they are ineffective.

Dredging

- Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments;

- The project developer/contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities.

- The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time.

- Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea.

- In case of damage on sediment pipe, the dredging activities must be stopped.

- Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area.

- Check and maintenance all machine and equipment to prevent oil leakage into sea.

- Check and maintenance HD and CSD to ensure that no sediment overflow into the sea.

- Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area.

- The monitoring results on coastal water quality must be sent to all concerned agencies.

Disposal

- Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology.

- Use the dredged materials for on-land disposal within the Early Industrial and for beach nourishment to the maximum extent.

Marine Ecology

- Apply the same mitigation measures as recommended for coastal water quality.
- Provide information on the operation schedule and area to local fishermen living near the small port.
- Coordinate with local authorities to protect coral and other marine resources

6.4.3.4 Shoreline Stability

It is likely that the port facilities to be developed in a separate project will affect the sediment supply from the catchment area and interrupt the sand supply from the estuaries to the beach system. For this project, the affected come from setting of 1.6 km of breakwater. This situation is long term affected and more significance if not good management. The mitigation measure must be proposed to protect the erosion prone cause of breakwater. Therefore, the impact is rate moderate.

Impact category	Direct impact
Impact duration	Throughout the operational life of the small port
Impact extent	Beach around project site
Impact magnitude	Small
Impact severity	Significant
Control priority	Medium

Mitigation measure

- Recheck and reclaim sand (bleach nourishment) on the eroded beach around the shoreline of Project site every year.
- Based on limited physical and environmental information available, as well as engineering judgment, Regular shoreline monitoring is recommended to gain the necessary information and prepare the setback line or beach erosion protection with hard structure such as groynes if high erosion on the shoreline.

These mitigation measures will be implemented by the port operation office.

6.4.3.5 Waste Waters

A. Sources

Waste Waters of the small port will come from the following sources:

- Ship wastes
- Port Wastewaters include domestic sewage from port workers and wastewater from washing of port facilities
- Stormwater

B. Sensitivity of Receptors

The wastewater from the ship and port cleaning will be treated to meet the national effluent standard before being discharged into the sea. The remaining volume will need to be discharged into the sea. Wastewater from consumption of staff 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 small port site may not have impacts on seawater quality and the marine ecosystem.

C. Estimated Wastewater Volume

During operational period, 20 operators are expected to be working in the small port. Water consumption is estimated at 150 liter/person/day, therefore, total water consumption is approximately 3.0 m^3/day. Consequently, wastewater, which is estimated at 80% of water consumption, is generated at a rate of 2.4 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
• TSS	<50 mg/l	
• Oil and grease	<10 mg/l	

- BOD_5* <30 mg/l
- COD <125 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, 2015 for port, harbour, and terminal projects adopted from Environmental, Health, and Safety Guidelines for Port, Harbour, and Terminal (April 30, 2007), IFC.

F. Predicted Impacts on the Receptors

The domestic sewage from the small port 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 20 staff of the small port 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

Ship Wastes

- The port operation office will need to enforce appropriate controls on the discharge of ship wastes in line with MARPOL (***Appendix 6E***). In this respect, the port operation office will work out procedures for ship waste management as indicated in MARPOL, and install adequate waste reception and treatment facilities for handling ship wastes.

- In addition, the port operation office will need to prepare a contingency plan and establish an organization for implementing the plan including reporting system to effectively handle oil and chemical spillage incidents from ships. The contingency plan is described in ***Appendix 6F.***

Port Wastewaters

- In addition to a waste treatment system for handling ship wastes, a central wastewater collection and treatment system will be required to take care of domestic sewage and other port wastewaters. This requirement will have to be included in the port design.

- The port operation office should try to reuse wastewater as much as possible to minimize its volume.

- The port operation office will prohibit ships and port operators to discharge all kinds of wastes and wastewaters directly into the Andaman Sea.

F. 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 small port
Impact extent	Mainly on the sea of effluent discharge point and ship.
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.4.3.6 Waste

A. Sources

During the operation phase, the following waste will be generated and need to be controlled:

- Used lubricant.
- Sludge and other solid wastes from wastewater treatment plants
- Hazardous waste such as used batteries, chemicals etc.
- Garbage, about 20 kg/day of garbage will be generated by the port workers and staff.

B. Sensitivity of Receptors

Routine and scheduled maintenance of the vessel and port facilities will generate a small volume of waste lubricating oil.

C. Estimated Waste Quantities

Approximately 3,000 liters of waste lube oil

D. Mitigation Measures for Waste Reduction at Sources

1. Used Lubricant

Set up and operate a system for collection of used lubricant and engine oils in all workshops and engine maintenance facilities. Contractors will be appointed to remove and dispose the collected lubricant and oils.

2. Solid Wastes from Wastewater Treatment Plants

If the wastewater is treated using such high rate biological processes as activated sludge process and a fixed film aerobic process, the sludge dewatering unit of the wastewater treatment plants will generate organic sludge with 20-35% water content. This surplus sludge could be disposed of as garbage or could be used as fertilizer in the green area.

3. Hazardous Wastes

The port operation office will need to set up and operate a hazardous waste management system covering waste classification, separation, collection, storage, transfer and disposal. The hazardous waste management system will comply with applicable regulations of the government, if any. It will need to have a registration system to enable tracking of hazardous wastes. The hazardous wastes will be storage and disposed by Hazardous Disposal Services. The method of disposal will follow best international practices. If hazardous waste disposal services are available, the port operation office may consider using the outside services.

4. Garbage

If the port area cannot be served by the garbage collection services of the local government, the port operation office will need to address this issue. It will need to set up and operate a simple garbage management system as the garbage volume will be small, less than two tons per day. Proper containers will be provided at all garbage sources for collection and storage at sources before collection. The garbage will be daily collected using a small garbage truck and transported to a disposal site inside or outside the port area as appropriate. The garbage will be disposed of by sanitary landfill.

The proposed mitigation measures will be implemented by the port operation office. Waste management facilities will have to be designed and constructed as part of port facilities.

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 small port
Impact extent	Mainly on the soil and coastal quality near the maintenance area
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

6.4.3.7 Land Traffic

A. Sources

During operation phase, the land traffic impact comes from transportation of construction equipment, materials, and workers that use project coastal road to DSEZ zone such as LNG Terminal, Initial Phase Power Plant and ITD Camp Site.

B. Sensitivity of Receptors

The sensitive receptor is household of Nga Pitat village that locate nearby project coastal road

C Predicted Impacts on the Receptors

Due to increase of number of vehicles may cause inconvenience on local traffic and may increase the probability of accidents.

D. Evaluation of the Significance of Impacts

The impact on traffic was evaluated as shown below. The traffic management deserves medium priority during the operation period.

Impact category	Direct impact
Impact duration	Throughout the operational life of the coastal road
Impact extent	Mainly on ITD coastal road and along the routes from the material sources to the small port and project coastal road construction site
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

E Mitigation Measures

- Prepare and implement an improvement program for improving safety of the local road network to cope with expected increase in traffic volume during port operations.
- Construction the bridge at Nga Pitat village for local villagers and children walk across the project coastal road.
- In addition, the local administration should impose a regulation limiting truck traffic speed in the areas around the port at not exceeding 40 km/hr.

6.4.3.8 Navigation

Port operations will invariably increase traffic in the coastal waters within the port operational area. Approximate 1-2 of vessels/hour will navigate to small port area. Clearly the sea traffic volume will be medium and would pose navigation dangers in the coastal waters. With reference to the international safety procedure and other mitigation measures, the impact on navigation during the operation phase is perceived as medium level.

Impact category	Direct impact
Impact duration	Throughout the operational life of the small port
Impact extent	Proposed approach channel and navigation route of local fishermen
Impact magnitude	Small
Impact severity	Insignificant
Control priority	Medium

Mitigation Measures

The port will have a vessel traffic management system to ensure navigation safety and keep records of vessels calling at the port.

The navigation area will have adequate number of buoys and signs to clearly indicate the navigation channel and the port boundary.

6.4.3.9 Community Development Supports

During the operational phase, the impacts of the small port both positive and negative on the nearby communities will be much less than those during the construction. The main reasons is only 20 persons will work in the small port compared with 273 persons in the construction; and

Therefore, the only positive impacts of the Project during the operational phase will have to come from the provision of community development supports under a corporate social responsibility (CSR) program of the Project Proponent.

In the public consultation meetings, several participants requested supports for electricity supply and improve on local road.

The Project Proponent should consider a CSR program to provide community assistance in line with these needs. The CSR program would need to be designed and implemented in consultation with the authorities concerned and the community leaders.

In addition, grievance management process during operation phase will be setted to solve the complaint from the local communities due to impact from project implementation.

6.4.3.10 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.

The OSH management system and procedures to be established will need to cover the following issues: (i) Physical hazards; (ii) Chemical hazards; (iii) Confined spaces; (iv) Exposure to organic and inorganic dust; and (v) Exposure to noise.

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: Environmental, Health, and Safety Guidelines for Port, Harbour, and Terminal (April 30, 2007). Based on these two documents, the Consultant recommends the Project Proponent to take the following actions:

Design and Equipment Selection

(1) Incorporate in the EPC contract, all OSH requirements that the EPC contractor will in the design of the small port 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 accidental, 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; and (xv) 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 small port 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 small port 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
- 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 project operational team to ensure that the operational team clearly understands the OSH plan and implementation procedures.

During Operations

The Project 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.

6.4.4 Risk Assessment During Operation Phase

It is study in case of opportunity of proposed project site to get impact from ship collision.

6.4.4.1 Risk Identification

During the operational phase, the major concerns are on possible vessel collision which, if occur, would seriously damage and could cause injuries and fatalities to operational personnel and fishermen. The situation in the small port are generally well understood resulting in numerous standards and codes of practice to cover the design, construction, operation and maintenance of the small port facilities.

Vessel collision

The vessels collision often occurs as a result of:

- Higher speed of vessel than standard.
- Excessive load

6.4.4.2 Risk Assessment

Consequences

If a serious accident occurs, the damages would be contained accidental area in Andaman sea.

Underlying Causes

Several studies traced the incidents to the following root causes or underlying causes: (i) improper navigation procedures; (ii) natural disaster and (iii) human error.

Likelihood of Occurrence

The likelihood of occurrence of the operational risks would be low if: (i) management on navigation follow to regulation; (ii) training on crew and operator; and (iii) efficient plant safety management.

Although the operational risks could have serious consequences on the small port, their likelihood of occurrence is low. Therefore, they are classified as moderate risks.

A simple risk matrix for the operational phase is shown in ***Figure 6.4-1***.

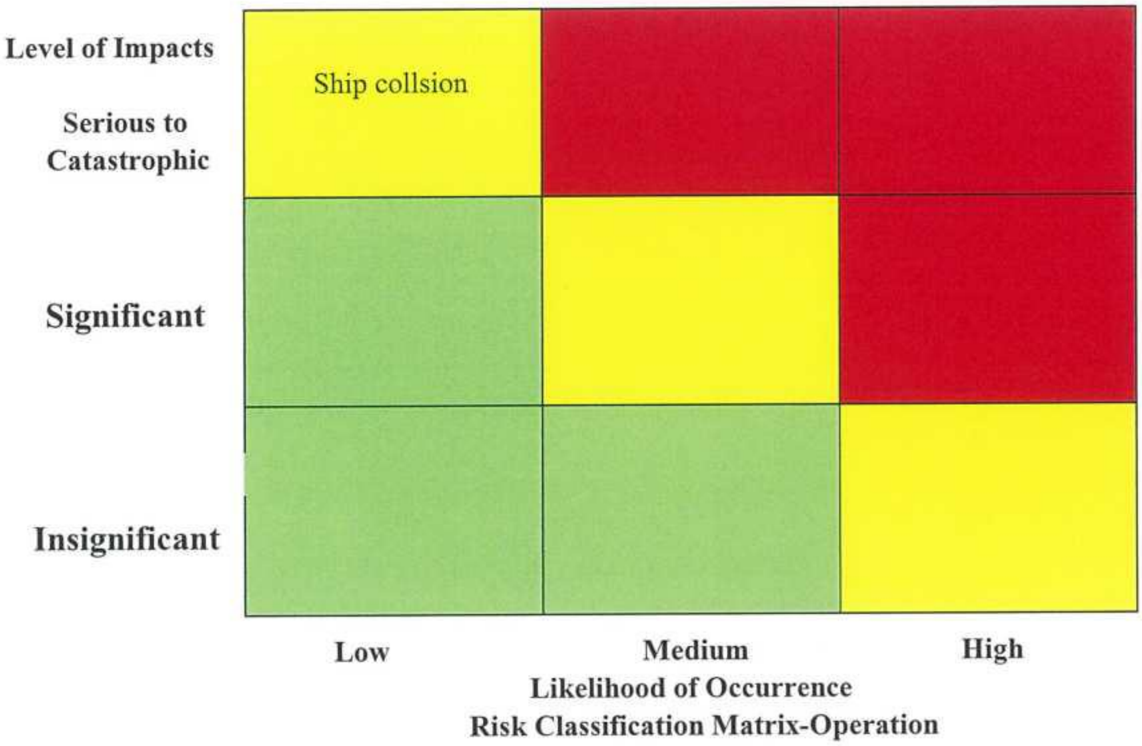


FIGURE 6.4-1 : RISK CLASSIFICATION MATRIX-OPERATION PHASE

6.4.4.3 Risk Mitigation Measures

The Project Proponent will, as part of the contract, require the EPC contractor to carry out the following tasks:

- Submit a detailed plan of navigation route to small port.
- Organize and conduct training of the small port operational team to be nominated by the Project Proponent in the operation and maintenance and risk management of the small port. The training will use the work procedures prepared by the EPC contractor. 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 project.

In addition to the insurance, the Project Proponent should require the EPC contractor to prepare an emergency response plan to enable the small port 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

6.5 DECOMMISSION PHASE

6.5.1 Decommission Phase Activities

For this Project, the time for decommission of the small port would come in the distant future after expire of the concession and none of agree otherwise by the Authority.

As the decommission is the event in distant future, the demolition EIA would need to considerably update the Decommission Environmental Management Plan (DEMP) to prepare a new DEMP. The new DEMP will reflect conditions related to technologies, laws and regulations, and land use around small port area which would be much different from the present conditions.

In case of, the small port is decommissioned, i.e. taken out of operation, it would need to be demolished and dismantled. During the decommission phase, major activities will be include:

- Removal of onshore facilities (include stockyard, drainage system, office, and support facilities);
- Removal or adjust of offshore facilities such as breakwater, jetty, and support offshore facilities and;
- Land Reclamation.

6.5.2 Impact Identification

The potentially affected environmental components to be considered during decommission phase are air quality, noise, coastal water, wastewater, residue and unused waste, land reclamation, and occupational health and safety of personnel (***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.
Coastal Water / Marine Ecology	- Water turbidity in case of offshore facilities removal.
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 Sakhanthit and Nga Pitat villages, the both nearest village, is about 1.51-2.64 km from the small port 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 include dust on both Nga Pitat and Sakhanthit villages and increase noise level in Sakhanthit village.

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. Therefore, they will affect only the 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.

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 Sakhanthit Village.

6.5.3.2 Coastal Water and Marine Ecology

During port decommission, the main concern will be increases in turbidity of the sea water during demolition of offshore facilities such as breakwater, jetty, and support facilities. This situation will be impact on coastal water quality and marine ecology. However, the magnitudes of demolition offshore facilities will be much lower than during dredging activities (both construction and operation phases).

Even through the impacts of demolition of offshore structure will not be significant when compare with dredging activities during both construction and operation phase, the impacts from demolition of offshore facilities will also issue deserves medium during the decommission phase.

[11]Construction Equipment Noise Levels and Ranges, www.fhwa.dot.gov › ENVIRONMENT › Noise › Construction Noise › Handbook

Mitigation Measure

- Avoid demolition of offshore structure. Consider to planting the mangrove around breakwater. This can reduce impact on coastal water marine ecology in term of increase turbidity during demolition of offshore structure.
- If cannot avoid demolition activities, project must be design and technology to minimize impact on coastal water and marine ecology in term of increase turbidity.
- The project developer/contractor must monitor the coastal water quality and marine ecology around offshore facilities at least 3 months prior to demolition activities and after demolition complete.

6.5.3.3 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.

6.5.3.4 Land Reclamation

During decommission phase, the land use will be change from port 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.

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.

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 small port is developed to support the Dawei SEZ. According to results of impacts assessment, it can be concluded that the Project will have significant impacts on coastal water quality and marine ecology, shoreline stability, navigation, and mangrove.

7.2.2 Assumptions

The CIA has to adopt the following assumptions:

- Due to the small port located nearby LNG Terminal, power plants, and proposed other project which the environmental impact are list below:

Project	Environmental Concerned			
	Coastal Water and Marine Ecology	Navigation	Shoreline Erosion	Mangrove / Beach Forest
LNG Terminal	√	√	√	√
Power Plants	√			√
Boil-off Power Plant	√			√
Project Coastal Road				√

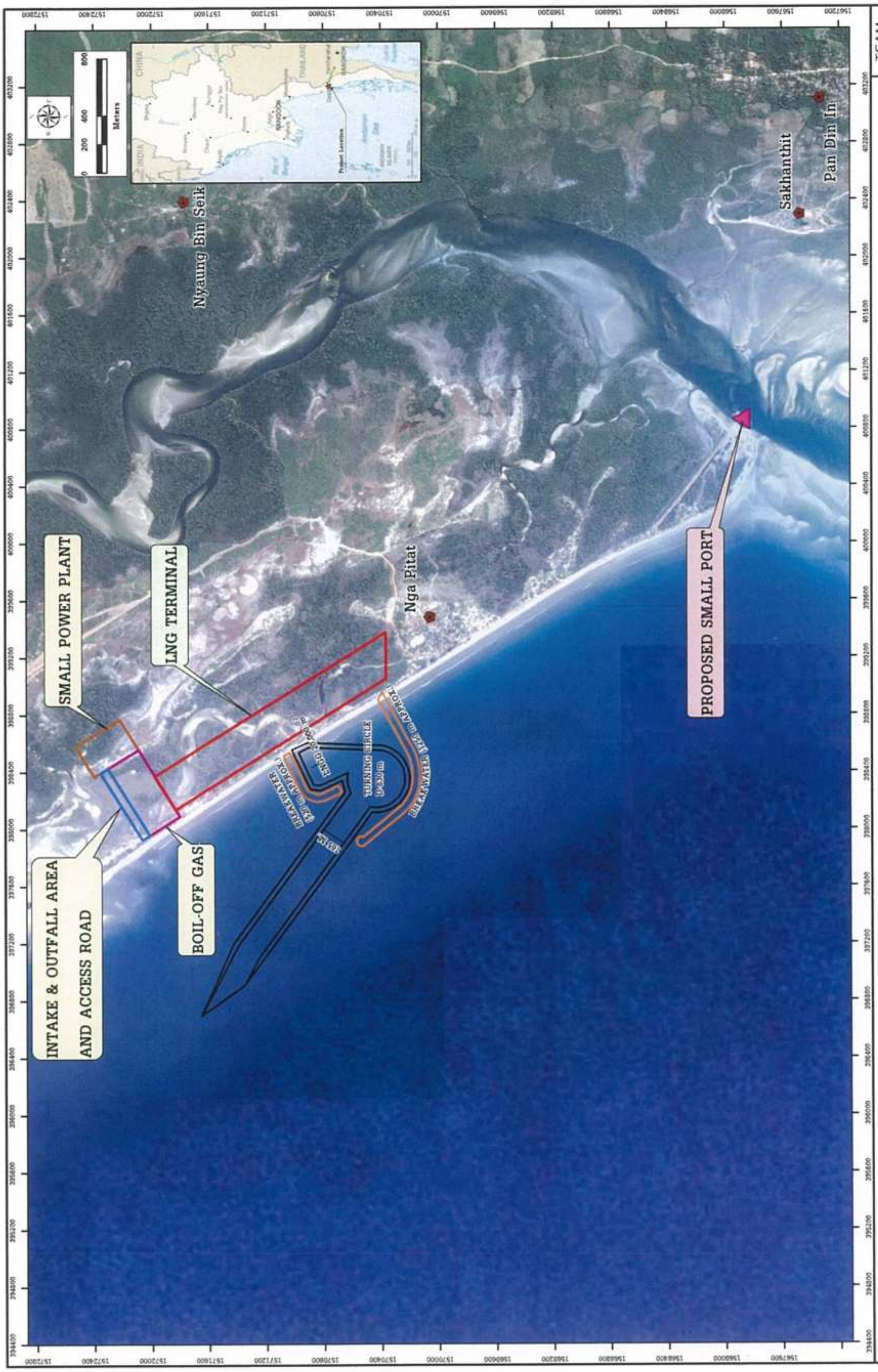


FIGURE 7.2-1: LOCATION SMALL PORT, LNG TERMINAL, AND POWER PLANTS

7.3 CUMULATIVE IMPACTS ASSESSMENT

7.3.1 Coastal Water Quality and Marine Ecology

The cumulative on coastal water and marine ecology in case of dredging activities of Small Port and LNG Terminal Project. Total dredged material during dredging in case of combination of three project approximate 7,052,00 m^3 (5,200,000 $m^3$from small port and 1,852,000 m^3 from LNG Terminal and minor from power plants project). This volume is may cause of affect in both coastal water and marine ecology in term of increase of suspended solid and reduce dissolve oxygen in the sea.

Therefore, best management plan and monitoring program during dredging activities from all projects must be proposed and operated.

7.3.2 Shoreline Erosion

The cumulative on shoreline erosion in case of setting of breakwaters from small port, LNG Terminal Project, and proposed other port project. This situation may change condition of beach which cause of erosion situation.

Therefore, best management plan and monitoring program on beach erosion and shoreline stability from related projects must be proposed and operated.

7.3.3 Mangrove / Beach Forest

The cumulative on mangrove and beach forest in case of site clearing for small port, LNG Terminal Project, power plants and other project (Boil-off and Project Coastal Road). Even through the project located in DSEZ demarcation area, approximate 280 acres of mangrove area and 30 acres of beach forest will be loss for project sites which impact on wildlife habitat and forest resource for local villager. The reforestation program should be design and implemented.

7.3.4 Navigation

The cumulative on navigation in case of increase of vessels for small port, and LNG Terminal Project. These may increase chance on accident to local fishermen. Therefore, project boundaries of exclusion zone for the small port, LNG terminal and the other proposed port must be defined. The boundaries will need agreement from both concerned authorities and local people to minimize impacts on the locals.

7.4 THE RECOMMENDATION MITIGATION ON CUMULATIVE IMPACT

According to the cumulative impact as mention on **Section 7.3**, this recommendation mitigation measure will proposed for minimize the cumulative impact that create from the development project in DSEZ area. The recommendation mitigation measures can described as follow:

7.4.1 Coastal Water Quality and Marine Ecology

(a) Dredging Activities

- Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments;
- Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities.
- The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time.
- Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea.
- In case of damage on sediment pipe, the dredging activities must be stopped.
- Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area.
- Check and maintenance all machine and equipment to prevent oil leakage into sea.
- Check and maintenance TSHD and CSD to ensure that no sediment overflow into the sea.
- Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area.
- Monitoring coastal water quality especially during dredging activities and the results must be sent to all concerned agencies.

(b) Disposal

- Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology.
- Use the dredged materials for on-land disposal within the Early Industrial to the maximum extent.

(c) Marine Ecology

- Apply the same mitigation measures as recommended for coastal water quality.
- Monitoring marine ecology especially during dredging activities and the results must be sent to all concerned agencies.
- Provide information on the construction schedule and dredging area to local fishermen living near the port.
- Coordinate with local authorities to protect coral and other marine resources.

7.4.2 Shoreline Erosion

- Recheck and reclaim sand (bleach nourishment) on the eroded beach on the shoreline of Project site every year.
- Based on limited physical and environmental information available, as well as engineering judgment, Regular shoreline monitoring is recommended to gain the necessary information and prepare the setback line or beach erosion protection with hard structure such as groynes if high erosion on the shoreline.
- Monitor on beach profile, bathymetric, and shoreline erosion along the beach along small port and LNG Terminal projects.

7.4.3 Mangrove / Beach Forest

- 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, prepare seeding, and maintain the areas. Developer should provide appropriate budget for this activity.
- Developer should be create a green buffer zone around the Project 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.
- Give a brief orientation for collectors/visitors (for educational and recreational purposes) about mangrove forest and other relevant topics for rehabilitation plan.

7.4.4 Navigation

- Install signs and warning signs that can be clearly seen (200 meter from the offshore area) to show the boundary of offshore areas during both construction and operation phases.
- All vessels operating in nighttime must receive special permits.
- All concerned safety rules have to follow the laws related to transportation section of Myanmar.
- Prepare and maintain readiness for implementing an emergency plan related to marine accidents.

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

CHAPTER 8

ENVIRONMENTAL MANAGEMENT PLANS

For convenience in the use of EMPs during Project implementation and as prescribed in the ESIA Procedure 2015, and ESIA Guideline 2014, the construction phase EMP and the operational phase EMP are presented in Volume 2 of this Final ESIA Report. This Chapter presents the conceptual framework of EMPs and a summary of each EMP.

8.1 THE CONCEPTUAL FRAMWORK

8.1.1 Scope of Environmental Management Plans

The results of ESIA investigation lead to 2 implementable environmental management plans (EMPs): one EMP for implementing in the construction phase of the Project (CEMP) and another EMP for implementing in the operational phase of the Project (OEMP).

The two EMPs are defined in the ESIA Procedure as follows:

Construction Phase EMP *means a detailed and comprehensive Environmental Management Plan (EMP) for the construction phase of a Project. Such plan shall present all relevant commitments, Emission Limit Values, Environmental Quality Standards and other environmental requirements and include a description of the construction works, present an overview of Adverse Impacts, present mitigation measures and monitoring programs together with time schedules, overview maps, images, aerial photos, satellite images, site layout plans, cross-sections, transects, environmental management and monitoring sub-plans for each construction site, thematic sub-plans, and management procedures as appropriate.*

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 depened on decision of the Concerned Authorities confirm to remove of all components at the end of concession.

8.1.2 Application of the Owner-EMPs

The Project Proponent will require in the EPC contract (Contract) to prepare a detailed CEMP in due course before commencing the construction. The Contractor CEMP; The Contractor will use the Owner-CEMP as the basis for preparing a detailed Contractor-CEMP. The Contractor-CEMP will be based on the Contractor's final designs, construction methods, and construction schedule. The scope and content of the Contractor-CEMP will not be less than the scope and content of the Owner-CEMP. The Contractor-CEMP shall be contractually binding. During the construction, the Contractor will implement the Contractor-CEMP under the supervision of a Project Manager to be appointed by the Project Proponent.

As the Contractor will also be responsible for the design, supply, installation, and operation of the small port 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 Small Port Operation Team will review and revise the Contractor-OEMP as appropriate to prepare the Final OEMP for implementation in the operational phase.

For clarity, the application of the Owner-EMPs as above described is shown as a diagram in ***Figure 8.1-1***.

8.1.3 Scope of Project Environmental Management

Environmental management during the construction and 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 8.1-2***):

(i) Plan (P) – what need to be done to minimize the anticipated impacts;
(ii) Do (D) – implement the plan;
(iii) Check (C) – monitor and evaluate the results of implementation

(iv) Act (A) – taking corrective actions to improve the results, if found inadequate

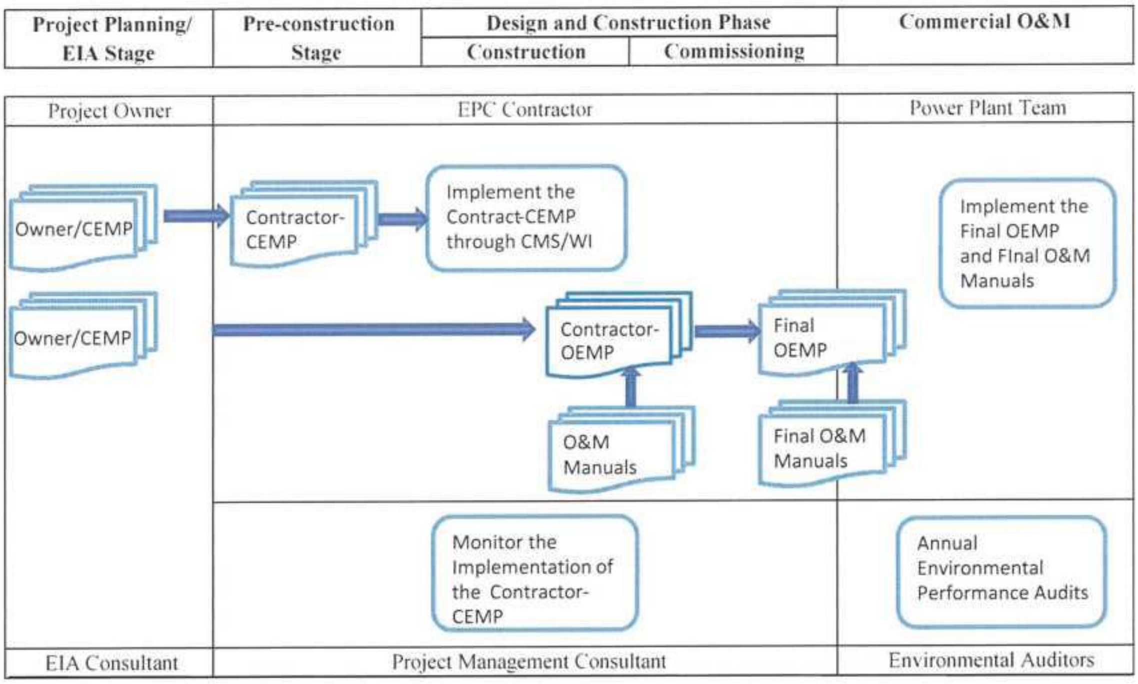


FIGURE 8.1-1: APPLICATION OF THE ESIA-EMP

FIGURE 8.1-2: PDCA CYCLE FOR ENVIRONMENTAL MANAGEMENT

Therefore, the CEMP and OEMP will need to cover the following subjects: (i) mitigation measures to be implemented; (ii) arrangements for the implementation of mitigation measures; (iii) monitoring, evaluating and reporting of the implementation of mitigation measures to provide feedback information on whether the environmental performance deviates from the prescribed benchmarks; (iv)corrective actions process if the environmental performance below the benchmarks, environmental incident response, and emergency plan; (v)arrangements for operating the EMS, including organizational structure, responsibilities, documentation, training, communication, and management review; and (vi)involvement of stakeholders or affected people in environmental management, including public grievance redress mechanism.

8.2 PROJECT'S EHS POLICY AND COMMITMENTS, AND LEGAL REQUIREMENTS

The Owner's EHS policy and commitments and legal requirements will set the levels and targets of environmental performance of the Project both during construction and operation.

8.2.1 Owner's Policy

The Project Proponent is committed to the sustainable development principle. In this regard, the Project Proponent will manage environmental aspects of the Project in accordance with the Corporate Governance Policy, Italian-Thai, 2015

The Company has established the policy in term of environment and social which can summarize as follow:

Policy on occupational safety, health, and working environment

- 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.
- The Company shall encourage all employees to understand and recognize occupational safety and health concern in their operation.
- The Company recognizes an important of operational accident prevention.
- The Company shall support and promote the improvement of working environment and working with safety and healthy.
- The management shall supervise occupational safety, health, and working environment of the subordinates according to related Company's regulation.
- The Company shall support and promote safety campaign for maximum effectiveness of an application of the policy in practice.
- 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 the Corporate Social Responsibility

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- CSR Report The Company will disclose the information related to CSR activities of the Company in the annual report.

The Project Proponent will establish and activate the EHS Management System starting from the commencement of construction.

During Pre-construction/Construction: The Project will endeavour to minimize environmental impacts and meet all EHS requirements during the construction. This will be achieved through adopting designs, construction methods, construction management practices, and impact mitigation measures. The Project EHS performance will be measured and evaluated against applicable national or international standards and guidelines prescribed by MONREC or proposed in the CEMP. In addition, the Project will establish an environmental management system (EMS) for the Project construction.

During Operation: The Project will endeavor to minimize environmental impacts and meet all EHS requirements of the small port's operation and maintenance (O&M). This will be achieved through adopting: (i) best management in the small port 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 small port operation, which will follow principles and good practices in environmental management of small port.

8.2.2 Legal Requirements

Environmental management of the Project will comply with legal requirements pertinent to the EMP prescribed in the draft Environmental Conservation Rule 2014, and the Final ESIA Procedure 2015.

A. 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.

B. ESIA Procedure 2015

Articles in the ESIA Procedure relevant to the preparation and implementation of the EMPs are summarized in ***Table 8.2-1***. Preparation and implementation of the two EMPs will need to comply with relevant articles in the table.

TABLE 8.2-1

CONTENT OF THE 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	87,88,89,90,91,92,93,94,95,96,97,98,99,100,101
- Submission of an CEMP and OEMP	91,92,94,100
Revision and updating the EMPs	94,95,96,97,98,99,101
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	111,112,113,114,115,116,117,118,119,120,121,122

C. MARPOL 73/78

The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. MARPOL 73/78 is one of the most important international marine environmental conventions. It was designed to minimize pollution of the seas, including dumping, oil and exhaust pollution

8.3 SUMMARY OF CEMP

As discussed in ***Chapter 6***, the Project is not expected to have major environmental impacts during construction apart from environmental disturbances normally experienced in small port 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 small port and its associated facilities, construction methods, and specifications.

The content of the Owner-CEMP presented in Volume 2 follows the basic elements of environmental management as discussed in ***Section 8.1.3***. Major aspects of the Owner-CEMP are summarized as follows:

The following issues will be managed during the pre-construction/construction phase:

(1) general construction,

(2) mangrove management,

(3) air quality management,

(4) noise,

(5) dredging and disposal,

(6) wastewater management,

(7) waste management,

(8) hazardous waste management,

(9) traffic management,

(10) navigation management,

(11) OSH management,

(12) natural used monitoring plan,

(13) social environmental management,

(14) land acquisition management and

(15) emergency management plan (flood, tsunami, and cyclone).

A sub-management plan for each of the identified issues is prepared and the 15 sub-plans are presented in ***Appendix 6A of Volume II***. The Contractor will update the sub-plans and include in the Contractor-CEMP. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in construction schedule and management review changes.

8.3.1 Arrangements for the Implementation of Mitigation Measures

The Contractor will elaborate and update the Owner-CEMP to prepare a Contractor-CEMP for approval by the Owner's Project Manager. The Contractor will then implement the Contractor-CEMP under supervision of the Owner's Project Manager through the Construction Supervision Consultant. The Contractor will field an EHS manager to be in charge of all aspects of the implementation of the Contractor-CEMP.

TABLE 8.3-1

ANTICIPATED IMPACTS OF THE PRE-CONSTRUCTION

Construction Activities	Impacts
Onshore Preparation include land clearance, land filling and compaction	Dust, Noise, Mangrove, and Social / Livelihood

TABLE 8.3-2

ANTICIPATED IMPACTS OF THE CONSTRUCTION

Construction Activities	Impacts
Onshore construction	Exhaust Gas, Noise, Wastewater, Construction Waste, Land Traffic, Mangrove, and Social / Livelihood
Dredging Activities	Coastal Water , Marine Ecology, and Navigation
Breakwater and offshore construction	Coastal Water and Marine Ecology, and Navigation

Note: Duration of activities based on project construction schedule in *Chapter 4*.

8.3.2 Monitoring, Evaluating and Reporting

Monitoring, evaluating, and reporting (MER) of the environmental performance of the Contractor will include scheduled monitoring of the indicators related to each impact issue as indicated in each sub-plan in ***Volume II EMP***. In addition, the Contractor's and the Owner's EHS managers will conduct daily, weekly, and monthly site inspection programs to observe environmental performance of the construction. The Contractor will submit two monthly monitoring reports-one for internal use and another for reporting to MONREC. These two types of reports are discussed in details in the CEMP.

In addition to the scheduled MER, environmental incidents, if occurred, will be recorded, registered and reported.

8.3.3 Corrective Actions

The Contractor will be instructed by the Owner's Project Manager to take corrective actions for any identified non-compliance with prescribed environmental indicators. Taking corrective actions in the context of CEMP will have to be a part of project management and will use the same procedure for taking corrective actions in project management. The procedure proposed in the CEMP will therefore have to be reviewed and revised as necessary to make it similar to the procedure for project management. A single procedure for taking corrective actions should be used in project management.

The Contractor is required to establish own procedure for corrective actions related to EHS non-compliances. The CEMP proposes several categories of non-compliance, levels of non-compliance, and responsibilities and process for taking corrective actions based on the level of non-compliance. The Contractor will be required to conduct an investigation of the non-compliance to determine its root causes and formulate effective actions to correct the root causes. The Contractor will report to the Project Manager the results of taking corrective actions. The Contractor will also be required to prepare an emergency response plan and establish adequate capacity for implementing the emergency response plan.

8.3.4 Organization

Environmental management during the project construction will involve the Project Proponent, the Contractor, and MONREC through ECD, and other government agencies at the regional, township and community levels.

As environmental management will be carried out as part of the Project management, it will be a functional unit in the project management organization. ***Figure 8.3-1*** shows a tentative organizational structure for Project construction consisting of an organizational structure of the Project Proponent and an organizational structure of the Contractor. The two organizational structures will need to be revised as appropriate as the Project moves from the planning stage to the design stage.

8.3.5 Public Consultation and Disclosure

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.

8.3.6 Audit

An audit is proposed at the end of the first year of construction and another audit at project completion.

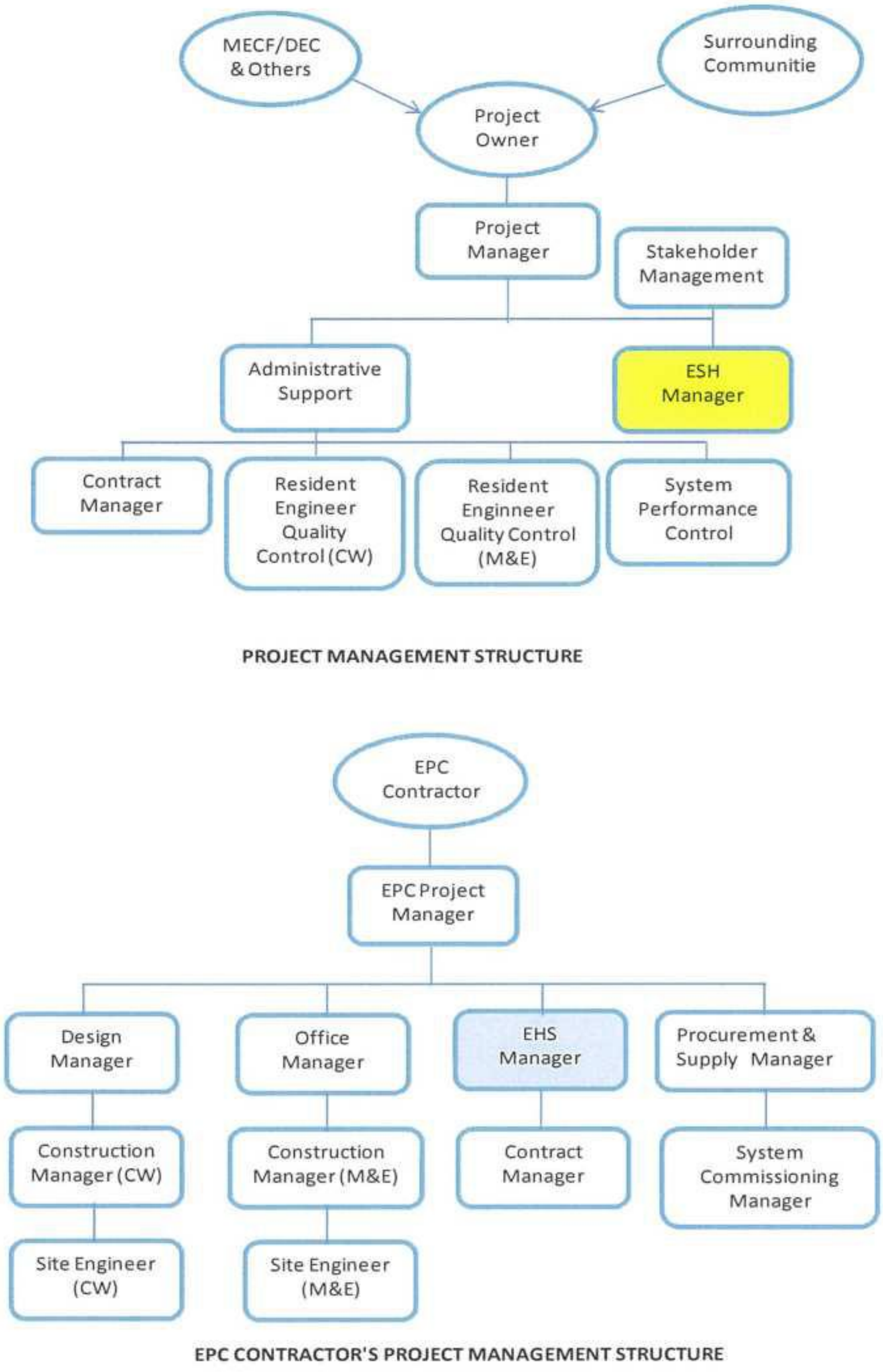


FIGURE 8.3-1 : ORGANIZATION FOR PROJECT CONSTRUCTION

8.4 SUMMARY OF OEMP

As discussed in ***Chapter 6***, the operation of the small port will not create any significant environmental impacts apart from social impacts related to sub-plans such as air quality and greenhouse gas, noise, coastal water and marine ecology, shoreline stability, land traffic, navigation, and waste management. Therefore, the OEMP will require much less activities and a much simpler EMS compared to those of the CEMP. A summary of the Owner-OEMP is presented below:

8.4.1 Mitigation Measures and Plans

The following issues will be managed during the operation phase:

(1) mangrove management
(2) air quality and greenhouse gas management,
(3) noise,
(4) maintenance dredging and disposal,
(5) wastewater management (from onshore and vessel),
(6) waste management,
(7) hazardous waste management,
(8) traffic management,
(9) navigation management,
(10) shoreline erosion management,
(11) OSH management,
(12) social environmental management and CSR Program,
(13) vessel traffic and safety management,
(14) operation staff management and
(15) emergency management plan (flood, tsunami, and cyclone).

A sub-management plan for each of the identified issues is prepared and the 15 sub-plans are presented in ***Appendix 7A*** of Volume II. The developer will update the sub-plans and include in the Contractor-OEMP. Each sub-plan will be a working document and as such it will be reviewed and amended or updated as deemed necessary to reflect changes in operation schedule and management review changes.

8.4.2 Environmental Management System (EMS)

The small port management organization will set up a simple EMS for its O&M activities. This EMS will focus more on occupational health and safety of small port workers which are around 20 persons.

8.4.3 Monitoring, Evaluating and Reporting

The MER such scheduled monitoring of coastal water and marine ecology and shoreline stability. Coastal water and marine ecology will be conducted Once a month collection especially during maintenance dredging. Shoreline stability include Beach Profile and Bathymetric Survey will be conducted 2 times/year. Annual environmental reports will be prepared for submission to MONREC, Port Authorities, and other concerned authorities.

8.4.4 Corrective Actions

Corrective actions are described as part of the management of the implementation of the community development. The process is discussed in the sub-plans.

8.4.5 Organization

As environmental management will be carried out as part of the small port management, it is a functional unit in the small port management organization. ***Figure 8.4-1*** shows a tentative organizational structure for small port management, including the EHS unit. The organizational structure will be revised as appropriate in due course by the Project Proponent before the commissioning.

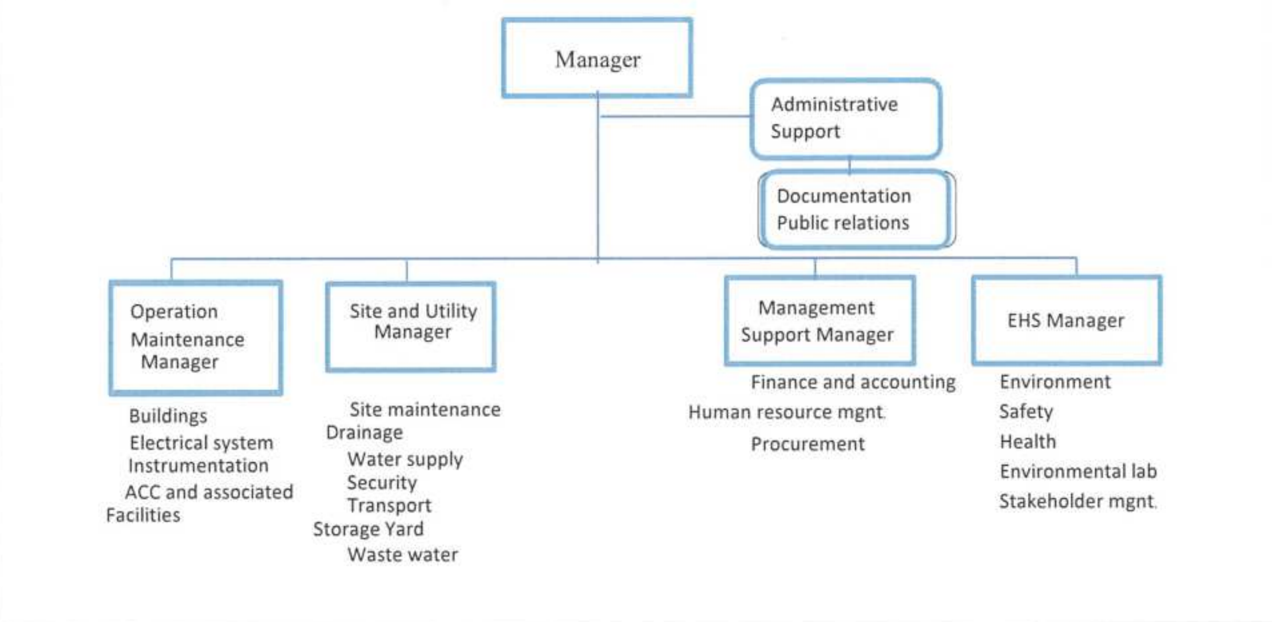


FIGURE 8.4-1 : TENTATIVE ORGANIZATION FOR SMALL PORT O&M AND ENVIRONMENTAL MANAGEMENT

8.4.6 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 small port operation will be effectively addressed as quick as possible.

8.4.7 Audit

An audit is proposed at the end of the first year of operation and thereafter, if necessary.

8.5 SUMMARY OF EMP DURING DECOMISSION PHASE

The EMP during decommission phase depened 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;
- Coastal Water and Marine Ecology Management plan (in case of demolition of offshore structure);
- Waste Management Plan and;
- Land Reclamation Management Plan.

8.6 SUMMARY OF BUDGET AND SCHEDULE

8.6.1 Mitigation Measures

Construction Phase

All mitigation measures to be implemented in the construction will be included in the contract cost. As most mitigation measures are operational control measures, it is not possible to estimate their costs.

Operational Phase

All mitigation measures to be implemented in the operation will be included in the contract cost. As most mitigation measures are operational control measures, it is not possible to estimate their costs.

8.6.2 Monitoring

During the construction phase, a budget of about 512,050 US$ (include 10% contingency) 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 2 period separation. 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 394,350 US$ equivalent (include 10% contingency) will be allocated for the five first year, and an annual budget of 3,398,450 US$ (include 10% contingency) will be allocated from the 6th year throughout the project life. Therefore, total cost during operation phase approx. 3,792,800 US$ (include 10% contingency). The cost detail and schedule are described in ***Table 8.6-1*** and ***Table 8.6-2***.

TABLE 8.6-1
BUDGET AND SCHEDULE DURING PRE-CONSTRUCTION / CONSTRUCTION PHASES

A. Annual Budget during 15 months of Pre-construction and Constrution Phase

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Total Cost (US$)
		US$	Units			
1	Environmental monitoring during the pre- construciton/ construction period					
	air quality (3 stations)	800	Station	1 time/three months (5 time during pre-construction/construction Phase)	3 stations at project site, Nga Pitat and Sakhanthit Village	12,000
	noise measurement (3 stations)	700	Station	1 time/three months (5 time during pre-construction/construction Phase)	3 stations at project site, Nga Pitat and Sakhanthit Village	10,500
	coastal water measurement (10 stations)	500	Station	1 time/ months (15 time during pre-construction/construction Phase)	10 stations at proposed approach channel and 1 km radius	75,000
	marine ecology measurement (10 stations)	1,000	Station	1 time/ months (15 time during pre-construction/construction Phase)	10 stations at proposed approach channel and 1 km radius	150,000
	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	2 station at project access road near Nga Pitat Village and Small Port Area	2,000
	navigation flows measurement (1 stations)	500	Station	2 times per year during pre-construction/operation phase	1 station at access channel	1,000
	flora and fauna field survey	6,000	Lumpsum	1 time before site clearance	100 acre of proposed project site and 42 acres at Project Access Road	6,000
2	OHS Management Plan	-	Include Construction Cost	Every day	Cosntruction Site and Surrounding Area	a
3	For natural resource used management and Village Forum	200,000	Lumpsum	Every day	At 5 affected villages	200,000
	TOTAL					**465,500**
	CONTINGENCY (APPROX. 10%)					**46,550**
	GRAND TOTAL					**512,050**

Remark : a = include on construction cost prepared by sub-contractor

TABLE 8.6-2
BUDGET AND SCHEDULE DURING OPERATION PHASE

B. Annual Budget during Operation Phase (75 years, 50 years operation plus 25 years extensions)

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Annual Budget During Operation Phase (US$)	
		US$	Units			From year 1 to year 5 of operaiton (toal 5 years)	From year 6 and throughout operation (total 70 years)
1	Environmental monitoring during the operation period						
	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 Village near Project Access Road and at Sakhanthit near Small Port Project	16,000	112,000
	noise quality (2 station)	700	Station	twice a year during 1st-5th year of operation phase and 1 time per year throughtout operation phase	at Nga Pitat Village near Project Access Road and at Sakhanthit near Small Port Project	14,000	98,000
	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
	coastal water measurement (10 stations)	500	Station	twice a year throughtout operation phase during dredging activities and after complete maintenance	10 stations at proposed approach channel and 1 km radius	5,000	70,000
	marine ecology measurement (10 stations)	1,000	Station	twice a year throughtout operation phase during dredging activities and after complete maintenance	10 stations at proposed approach channel and 1 km radius	10,000	140,000
	navigation flows measurement (1 stations)	500	Station	twice a year throughtout operation phase	1 station at access channel	5,000	70,000
	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 reforestation, rehabilitation and maintenance program (10 year	200,000	Lumpsump	uring 1st-10th year of operation phas	at reforestation area	100,000	100,000
	support local villagers in rehabilitation activities (10 years)	1,500	time	uring 1st-10th year of operation phas	at reforestation area	7,500	7,500
	Shoreline Erosion	750,000	Lumpsump	everyday	1 km of south and north breakwater	50,000	700,000
	Beach Profile	10,000	time	twice a year throughtout operation phase	beach in front of project site and 1 km of south and north breakwater	100,000	1,400,000
2	OSH 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	2,000	time	During 1st-5th of opration phase	at five affected village	10,000	-
3.2	Development Fund during 6th to throughout opeartion phase	1,000	time	During 6th-throughout opration phase	at five affected village	-	70,000
3.3	Village forum	3,000	Lumpsum	2 times per year during 1st-5th of opration phase and once a year throughout operation	at five affected village	30,000	210,000
	TOTAL					358,500	3,089,500
	CONTINGENCY (APPROX. 10%)					35,850	308,950
	GRAND TOTAL					**394,350**	**3,398,450**
							3,792,800

Remark : b = include operation cost prepared by project proponent

CHAPTER 9

PUBLIC CONSULTATION AND DISCLOSURE

CHAPTER 9

PUBLIC CONSULTATION AND DISCLOSURE

This chapter presents results of public consultation and disclosure carried out in the ESIA investigation, including results of initial public consultation and disclosure reported in the Scoping Report. The chapter is structured as prescribed in ***Annex 3 of the Administrative Instruction of Environmental Impact Assessment Procedure***.[1]

9.1 PURPOSES OF THE CONSULTATION DURING THE PREPARATION OF ESIA REPORT

Public consultation conducted as part of the ESIA investigation of this Project has three purposes:

(i) informing the stakeholders about the Project, environmental and social issues related to Project construction and operation, and mitigation measures to minimize environmental and social impacts;

(ii) Seeking views of the stakeholders on the Project and mitigation measures; and

(iii) Participation and partnership where issues and needs are jointly discussed and assessed.

Results of the public consultation are useful to the formulation and implementation of environmental and social management plans for the Project.

9.2 METHODOLOGY AND APPROACH

Public Consultation during preparation of ESIA report was conducted in three periods, following the Administrative Instruction of Environmental Impact Assessment Procedure.The Three period of consultation were organized as follow;

- 29 to 31 January, 2015
- 5 to 6 December, 2015
- 29 March, 2018, respectively.

The methodology and approach of public consultation is presented below:

[1] Administrative Instruction of Environmental Impact Assessment Procedure (2015), the Government of the Union of Myanmar, Ministry of Environmental Conservation and Forestry.

9.2.1 Identification of Stakeholders and Group Affected by the Project

Considering the Project scope and the legal and institutional framework for environmental and social impact management applicable to the Project, the Project stakeholders could be identified and classified into three categories:

(1) Government Authorities Involved in 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: (i) Ministry of Environmental Conservation and Forestry; (ii) Environmental Conservation Department and (iii) Ministry of Social Welfare, Relief and Resettlement.

Relevant key offices at the regional level are: (i) Tanintharyi Region Office of the Environmental Conservation Department; (ii) Tanintharyi Region Office of Social Welfare, Relief and Resettlement; (iii) Tanintharyi Region Office of the Ministry of Electricity and Industry; (iv) Tanintharyi Office of Planning and Economic; (v) Tanintharyi Region Office of Environment Conservation Department; (vi) Tanintharyi Region Office of Fisheries; and (vii) Chairman of Hluttaw.

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 is involved in development activities in the project area. It is comprised of 14 representatives of relevant government agencies and organizations from various ministries.

Relevant key offices at the local level is 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
- Port Authorities Department
- Dawei Development Association (DDA)
- Medecins Sans Frontieres, Dawei Office (MSF)

(3) The General Public

The Project's stakeholders in this category are village committees and individual villagers in the three villages in the study area (5 kilometers radius) in Launglon Townships; namely: Nga Pitat, Sakhanthit, Pan Din In, Nyaung Bin Seik, Veenapin and Maungmagan (see ***Table 9.2-1*** and ***Figure 9.2-1***). Residents in these villages would have concerns on various potential impacts of the Project during construction and operations such as noise, fugitive dust, dredging, wastewater, traffic safety, shoreline erosion, 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

VILLAGES AND COMMUNITY IN THE STUDY AREA

Township	Village	Approx. km from the Project Site
Launglon	Nga Pitat	2.64
	Nyaung Bin Seik	4.18
	Sakhanthit	1.51
	Pan Din In	2.30
	Veenapin	3.44
	Muangmagan	4.38
Total 1 townships	6 villages	

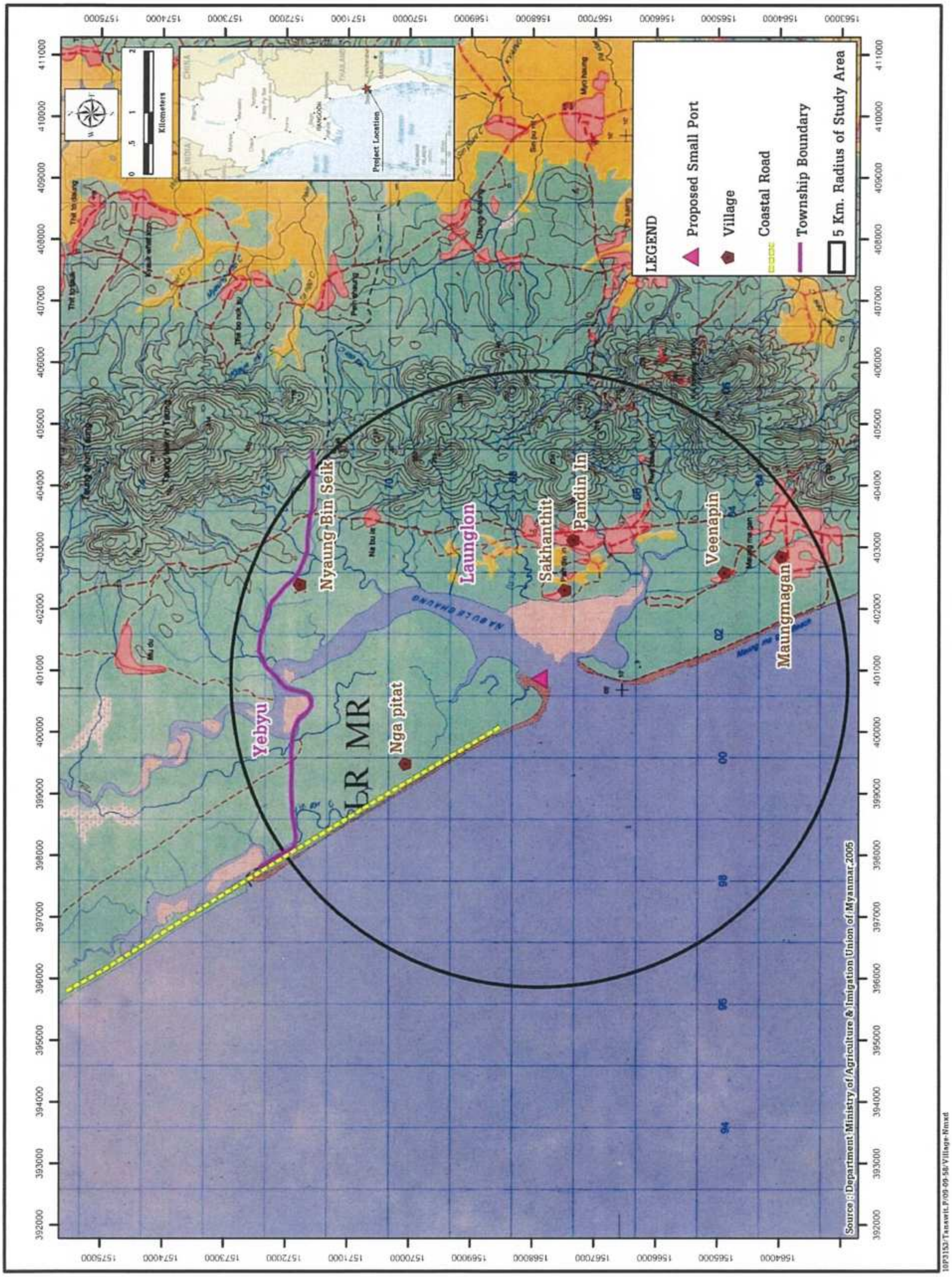


FIGURE 9.2-1 : THE STUDY AREA

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.

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 of meeting, following title include 1) the bridge of Britney Creek (located at the mouth of creek) is in deteriorated condition causing risk for villagers' boats when crossing beneath, 2) new boat yard and 3) relocation for affected households, 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 include 1) 29 to 31 January 2015, 2)5 to 6 December 2015 and 3) 29 March, 2018. The meeting dates, names of persons met, the agencies they represented, and venues are given in ***Table 9.3-1***, ***Table 9.3-2 and Table 9.3-3***. 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	Organization/Name	Position
20 January 2015	**SWB-Support Working Group**	
	1. Mr. U Than Shwe	Secretary
	2. Mr. U Linn Zaw Htwg	Member
	3. Mr. U Thet Oo	Member
	4. Mr. U Aye Lwin	Member
	5. Mr. U Khin My Zaw	Member
22 January 2015	**Government Authorities at National, Regional and Local Levels**	
	1. H.E. U Phone Swe	Deputy Minister of Social Welfare, Relief and Resettlement.
	2. Mr. U Win Swe	Minister of Electricity and Industry for Tanintharyi Region
	3. Mr. U Thein Lwin	Minister of Planning and Economic for Tanintharyi Region
	4. Mr. Htin Aung Kyaw	Chairman of Hluttaw
	5. Head of Launglon Township Administration	
	6. Head of Yebyu Township Administration	
28 January 2015	**Other Interested Parties**	
	Mr. U Win Naing,	Deputy Director of Forestry Department Taninthayi Division (Act in place of Environment Conservation Department for Taninthayi Region)
29 January 2015	Mr. Htun Win Myint,	Regional Fisheries Officer, Taninthayi Region
	Mr. U Soe Min	Staff of Medecins Sans Frontieres (MSF) Dawei Office
30 January 2015	Mr. U Lay Lwin,	Coordinator of Dawei Development Association (DDA)

TABLE 9.3-1

THE FIRST PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS (CONT'D)

Meeting Dates	Organization/Name	Position
	The General Public : Local Community Groups	
23 January 2015, 9:00-11:30 a.m.	1. Nga Pitat village	Village headman, village committee, community leaders and villagers (total of 140 persons)
24 January 2015, 9:00-11:30 a.m.	2. Sakhanthit village	Village headman, village committee, community leaders and villagers (total of 88 persons)
	3. Pan Din In	
24 January 2015, 1:30-3:00 p.m.	4. Nyaung Bin Seik village	Village headman, village committee, community leaders and villagers (total of 54 persons)
30 January 2015, 2:00-4:30 p.m.	5. Maungmagan village	Village headman, village committee, community leaders and villagers (total of 31 persons)
	Focus Group Meeting	
1 February 2015, 9:00-11:00 a.m.	Sakhanthit village	Village headman, village committee and villagers (total of 15 persons)
1 February 2015, 2:00-4:00 p.m.	Nyaung Bin Seik village	Village headman, village committee and villagers (total of 28 persons)
4 February 2015, 9:00-11.30 p.m.	Nga Pitat village	Village headman, village committee and villagers (total of 11 persons)

TABLE 9.3-2

THE SECOND PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates	Organization/Name	Position
26 January 2016 9:00-11:30 a.m.	SWB-Support Working Group Government Authorities at National, Regional and Local Levels	
	1) U Khin Maung Cho	Chairman of SWB Dawei Special Economic Zone ("DSEZ") Management Committee General Administrative Department, Dawei
	2) U Thein Aung	Provincial Governor, General Administrative Department, Dawei
	3) U Hla Win Aung	General Administrative Department, Yebyu
	4) U Thein Win	SWB, General Administrative Department, Tanintharyi
	5) U Aung Hom Than	Management Committee, Assistant Director, General Administrative Department
	6) U Moe Aung	Management Committee, Assistant Engineer, Myanmar Port Authority

TABLE 9.3-2

THE SECOND PERIOD OF CONSULTATION MEETINGS WITH THE PROJECT'S STAKEHOLDERS (CONT'D)

Meeting Dates	Organization/Name	Position
26 January 2016 9:00-11:30 a.m.	SWB-Support Working Group Government Authorities at National, Regional and Local Levels (Cont'd)	
	7) U Thet Oo	Management Committee, Assistant Director, Labour Department
	8) U Than Hla Aung	Management Committee, Officer, Immigration Department
	9) U Ye Win Kyaw	Management Committee, Division Head, Industrial Management Department
	10) U Maung Maung Pa	Management Committee, Ministry of Commerce
	11) U Lai Win Zaw	Officer, Yebyu Administrative Department
	12) U Aung Khin Soe	Deputy Director, Environmental Conservation Department, Dawei
26 January 2016 1:30-3:30 p.m.	Nga Pitat village	Village headman, village committee, community leaders and villagers (total of 57 persons)
27 January 2016 1:30-3:30 p.m.	Nyaung Bin Seik village	Village headman, village committee, community leaders and villagers (total of 43 persons)
28 January 2016 9:00-10:30 a.m.	Sakhanthit and Pan Din In Villages	Village headman, village committee, community leaders and villagers (total of 87 persons)
28 January 2016 1:30-3:30 p.m.	Veenapin and Muangmagan Villages	Village headman, village committee, community leaders and villagers (total of 72 persons)
28 January 2016	Dawei Good View Association (NGOs)	

TABLE 9.3-3

THE THIRD CONSULTATION MEETING WITH THE PROJECT'S STAKEHOLDERS

Meeting Dates/time	Name	Position and Organization	Venue
29 March 2018	**Government Authorities at Regional and Local Levels, Local communities (total of 102 persons)**		
8.00-9.00 hrs.	Dr.Myint San	Vice Chairman-2 of DSEZ Committee	ITD Meeting Hall
	Representative from Environmental Conservation Department (Naypyitaw and Dawei)		
	Karen National Union		
	Representatives from project affected villages		
	Representatives from Myandawei Industrial Estate Company Limited		
	Consultants (TEAM Consulting, Engineering and Management Co., Ltd. and Total Business Solution Co., Ltd.)		

Remark : * Name list is presented in ***Appendix 9A-3***.

Meeting with Government Authorities at National and Regional Levels	**Meeting with SWB of DSEZ**
Meeting with Regional Fishery Officer, Taninthayi Region	**Meeting with the DDA**
Consultation Meeting at Sakhanthit Village	**Consultation Meeting at Nga Pitat Village**
Consultation Meeting at Nyaung Bin Seik Village	**Consultation Meeting at Muangmagan Village**

PHOTO 9.3-1 : MEETING WITH CONCERNED AGENCIES AND THE LOCALS DURING FIRST CONSULTATION MEETING

Meeting with SWB and Regional Government Officials at ITD Hall

Discussion with Dawei Good View

Consultation Meeting at Sakhanthit Village

Consultation Meeting at Nyaung Bin Seik Village

Consultation Meeting at Nga Pitat Village

Consultation Meeting at Veenapin Village

PHOTO 9.3-2 : MEETING WITH CONCERNED AGENCIES AND THE LOCALS DURING SECOND CONSULTATION MEETING

PHOTO 9.3-3: THE THIRD CONSULTATION MEETING WITH CONCERNED AGENCIES, THE LOCALS

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

Results of consultations during project scoping are quite positive to the project development. The stakeholder group of government authorities, government sectors, local based organization and local communities are supporting the project development. A large number of villagers attended the consultation meeting, and showed their interests about the project development. Elaboration is shown below:

Issues identified by the stakeholders during the public consultation meetings can be summarized by group as follows:

(1) Government Authorities

Issues identified by the SWB and government authorities at the national and regional levels:

- **Participation in the ESIA:** The Project must inform the district, township officials about the schedule of the public consultation, including environmental and social survey activities.
- **Land acquisition:** Compensation for land acquisition must follow official guidelines and practices.
- **Submitting the ESIA results:** The Consultant has to submit an official letter to inform the Environment Conservation Department at Naypyidaw directly about the conduct of ESIA study.
- **Nesting of sea turtles:** Currently, there is a conservation area for nesting of leatherback turtle on a small island about 15 km from Muangmagan beach. This islet is guarded by the navy during the nesting period.
- **Wastewater discharge:** Recommendation on wastewater treatment before discharge.

(2) Other Interested Parties

Issues identified by the community based organizations:

- **Correct project information:** Accurate information about the Project plan and situation should be provided to the peoples;
- **Employment opportunities:** Provision of job opportunity to the locals, including relevant vocational training;
- **Compensation:** Fair compensation rate for the project affected people;

- **Environmental management:** The Project must be aware pf environmental impact, marine ecology in particular. Best practices should be employed for environmental management. Environmental monitoring should be conducted by a third party acceptable to the Government authority and NGOs;
- **Roles of NGO:** The NGO should have opportunity to contribute to the ESIA report.
- **Electricity supply to locals:** Electricity from the project should be provided to the locals with a tariff rate as used in Yangon (35 Kyat/unit).

(3) Local Community Groups

Issues identified by villagers in Nga Pitat, Nyaung Bin Seik, Sakhanthit and Mudu communities were described as follow:

Nga Pitat Village

- Concerns on pollutions from air emissions
- Concerns on creek will be closed, and villagers cannot do fishing as before
- Concerns on village road will be closed due to project development
- Concerns on vibration from transportation during construction period will be affected to the houses.
- Concerns on low production such as cashew nut is caused by emission from the project development such as dust, vibration.
- Concerns on declination of marine ecology from project activity
- Suggestion the developer must be take action to resolve problem due to project development
- Suggestion on environmental protection to ensure sustainable use of natural resources.
- The Project should provide electricity supply to the villages.
- If project developer support to village and environment, people agree on the project

Nyaung Bin Seik Village

- Concern on the project will close the creek so that fishing boats of villagers cannot go back and forth, as doing now.
- Concerns on pollutions from air emissions, human health impact, and change livelihoods
- Concerns on losing mangroves forest where is their food and income sources of village.
- Concerns on access road to the sea will be closed by the developer.
- Concerns on relocation of the village and afraid of not having these resources in case of relocation to the other place.
- Concerns on gas leakage from pipeline

- Concern on channels for the villagers to file complaints (grievance redress mechanism)
- If project developer have not effect to village and environment, people agree on the project

Sakhanthit and Pan Din In Village

- Concern on the project will close the estuary during construction and operation of the small port so that fishing boats of villagers cannot go back and forth, as doing now.
- Concerns on gas emissions, smoke and discharge of wastewater which will damage environment.
- Concerns on losing mangroves forest where is their food and income sources of village.
- Concerns on access road to the sea will be closed by the developer.
- Concerns on vibration from transportation during construction period will be affected to the houses.
- Concern on loss of fishing ground area in Sakhanthit Village due to dredging activities
- If project developer have not effect to village and environment, people agree on the project

Veenapin and Muangmagan Village

- Concerns on the project will use creek near Veenapin Area.
- Concern on the project will close the creek at Veenapin village during construction and operation of the small port so that fishing boats of villagers cannot go back and forth, as doing now.
- Concern on wastewater discharge which will damage mangroves.
- Concern on local villagers can participate during monitoring on project

9.4.2 Issues Identified by Stakeholders and Groups Affected by the Project on Second Public Consultation

(1) Government Authorities

Issues identified by the SWB and government authorities at the national and regional levels:

- Concern on size of house and place of resettlement area
- Concern on traffic accident to student and child at Nga Pitat village and must be set clearly symbol to indicate on construction area.
- Concern on detail of dredging activities must be include in construction plan

- Villager can be use coastal road, not only project developer.
- Benefit to both villagers and project developer during project development
- Beside job opportunity, developer should support for basic infrastructure such as electricity, road to affected villages
- Long term sustainable on affected village
- All problem during project implementation must be discuss with SWB and concerned authorities.

(2) Other Interested Parties

Issues identified by the Other Interested Parties (NGOs):

- Concerns on fair compensation to affected land owner
- Concerns on channel between villager to developer and concern authorities
- Concerns on transparent recruitment of worker

(3) Local Community Groups

Issues identified by villagers in Nga Pitat, Nyaung Bin Seik and Mudu communities were described as follow:

Nga Pitat Village

- Concerns on Alternative boatyard and fishing ground area
- The project should be support on local road improvement in Nga Pitat Village
- Concerns on the height of bridge (at km 3 of access road near Britney Creek) will not support the height of fishing boat (approx 8-14 m.)
- Concerns on Job Opportunity
- With supporting to village and environment from the project, people agree on the project

Nyaung Bin Seik Village

- Concerns on Job Opportunity especially for local villager
- Suggestion the worker should wear uniform which can indicate between worker and villagers.
- With supporting to village and environment from the project, people agree on the project

Sakhanthit and Pan Din In Village

- Recommend that all staff and worker should be wear same uniform
- Recommend that project must be setting sign or buoy to indicate offshore construction area

Veenapin and Muangmagan Village

- Recommend that project must be setting sign or buoy to indicate offshore construction area

Minutes of the meetings with participants from the four villages are presented in ***Appendix 9 B.***

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.

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 about the bridge of Britney Creek (located at the mouth of creek) is in deteriorated condition causing risk for villagers' boats when crossing beneath, new boat yard and relocation for affected households were presented prior open forum for recommendation and discussion.

Appendix 9C provides the slides and the handouts of the two periods of meeting.

The information disclosed in the first, second and third meetings included:

- Objectives of ESIA
- Project location
- Project layout
- Generation capacity
- Main project components including:

  - Generator and its facilities
  - Fuel type
  - Waste management system
  - Firefighting system for the entire plant
  - Continuous monitoring system
  - Other related facilities
- Field activities related to environmental survey, including:
  - Air quality/noise
  - Seawater Quality
  - Marine Ecology
  - Fisheries
  - Groundwater Quality
  - Sediment Quality
  - Terrestrial Resources
  - Wildlife Resource and
  - Land Use
- Field activities related to social survey, comprising:
  - Public consultation and
  - Socio-economic survey
- Tentative schedule of the study
- Contact persons
- Open discussion

The additional information disclosed in the second meetings included:

- Results of environmental survey
- Results of socio-economic survey
- Issues raised by the stakeholders during the first meeting
- Major impacts and their mitigation measures

The additional information disclosure in the third meeting included:

- Issues of bridge which located at the mouth of Britney Creek
- New boat yard
- Relocation for affected households

9.7 RECOMMENDATIONS FOR FUTURE CONSULTATIONS

Public consultation will be carried out during the pre-construction, construction and operational phases as part of environmental management of the project phases. Public consultation during the pre-construction and 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 Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan (OEMP) in ***Sections 8.3*** and ***8.4***.

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 100 acres of 2 storage yards and support facilities, length 3km, width 150 m., depth 8 m. of approach channel to support general cargo (approx. 1 vessel per hour), 1.6 km of breakwater, and 8.3 km with 2 lanes and 7 m. width of project coastal road from small port to ITD camp site.

2) None of offshore disposal of dredged material. All of dredged material will be used for reclamation of stockyard area and land filling in other DSEZ projects.

3) The surrounding areas are largely rural and have no environmentally or ecologically sensitive areas. The nearest village is 2.64 km away namely Nga Pitat village and 1.5 km away namely Sakhanthit village.

4) During project pre-construction, major impact will be include 12 households of Nga Pitat village who living within the right of way will be relocated for project coastal road. Resettlement Action Plan and CSR program will be proposed to minimize impact in this stage. Permanent loss of the existing swamp, mangrove ecosystems, and beach forest for small port and project coastal road are another impact during pre-construction phase. Consultation with concerned authorities such as MONREC, Forest Department, and Local Villagers on design and implement a mangrove reforestation program in areas outside DSEZ will be proposed to minimize impact at these stage.

5) During Project constructions, major impact will be on coastal water and marine ecology due to dredging activities. Best design on dredging activities and monitoring program will be proposed to minimize the impact during this situation.

6) During Project operation, dredging maintenance, shoreline erosion, navigation, and increase air emission and noise from vehicle will be main concern in this phase. The mitigation and monitoring program will be proposed to minimize the impact during these stage.

7) During Project decommission, land reclamation and coastal water and marine ecology will be main concern in this phase. The mitigation and monitoring program will be proposed to minimize the impact during these stage.

8) 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 small port operations will be vessel collision. To cope with the consequences of the risks, if occur, an emergency response plan and operational procedures will have to be in place for operation.

9) 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.

10) The national and regional agencies concerned have high expectations of environmental and social management of the Project. Their recommendation on wastewater treatment before discharge, detail of dredging activities, and benefit and support on job opportunity and basic infrastructure to local villagers during project implementation.

11) The villages that public consultation meetings were held did not oppose to the Project. They have concerns on impact from emission, wastewater, navigation, and job opportunity during project implementation and suggestion on environmental protection to ensure sustainable use of natural resources.

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) The Resettlement Action Plan and Mangrove Rehabilitation Plan must be discuss with concerned authorities and local villagers and receive agreement before implementation on the project.

3) Developer should be investigate livelihood of villagers and local fishermen during both construction and operation phases and impact on marine ecology during dredging activities.

4) The proposed tri-partite committee be set up as soon as possible to serve as a means for continuing public consultation and disclosure.

APPENDIX 2A

SUMMARY OF TEAM COMPOSITION FOR ESIA STUDY

TABLE 1

SUMMARY OF TEAM COMPOSITION FOR ESIA OF DAWEI SEZ INITIAL PHASE DEVELOPMENT

	Name of Key Personnel	Firm Acronym	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	33
2.	Mr. Phan Maneeya	TEAM	Environmetal Scientist	Environmental Expert /Resettlement Expert	Project Manajor/ Human Use and Resettlement	National Expert	Thailand	Full Time	B.Sc., M.Sc.	25
3.	Mr. Natt Dumkum	TEAM	Environmetal Scientist	Project Coordinator / Environment Scientist	Project Coordinator	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
4.	Ms. Netchanuk Tapinta	TEAM	Air/Noise/Vibration	Air Quality / Noise / Vibration Expert	Air Quality / Noise / Vibration	National Expert	Thailand	Full Time	M.Sc. Environmental Science, Thammasat University, 2003 B.Sc. Environmental Science, Thammasat University, 1997	16
5.	Mr. Chaloemchai Nakkhwan	TEAM	Risk Assessment	Risk Assessment Specialist	Risk Assessment	National Expert	Thailand	Full Time	B.Sc., M.Sc.	14
6.	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
7.	Mr.Apichai Horcharoensap	TEAM	Terrestrial Ecology	Terrestrial Ecologist	Terrestrial Ecology	National Expert	Thailand	Full Time	B.S. (Agriculture), Rajabha Pranakorn Institute, 2003	10
8.	Mr.Prasit Akkalraisee	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	27
9.	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	34
10.	Mr.Thanaphou Deepunya	TEAM	Land Use	Land Use Expert	Land Use	National Expert	Thailand	Full Time	B.Sc. in Science (Architecture), Rajabhat Phanakhorn University, 2000	13
11.	Mr.Chanchai Gowgirdwibool	TEAM	Transportation	Senior Transportation Engineer	Transportation	National Expert	Thailand	Full Time	B.Eng. (Civil Engineering) Kasetsart University, 1980	33
10.	Dr.Siribuck Sirisup	TEAM	Social/Public Consultation	Senior Socio-Economic Public Consultation Specialist	Socio-Economic / Public Consultation Expert	National Expert	Thailand	Full Time	Ph.D. (Agricultural Geography), Department of Geography, University of Durham, U.K., 2001	40
13.	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	17
14.	Ms.Darchanee 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

APPENDIX 3A

THE DETAIL OF THE CORPORATE GOVERNANCE POLICY, ITALIAN-THAI, 2015

CORPORATE GOVERNANCE ITALIAN-THAI

2015

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Content

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

APPENDIX 4A

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, theDSEZ development management was restructured by the Government of Myanmar in collaboration with the Government of Thailandand 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 TheDawei SEZInitial Phase Development Plan (IPDP) was prepared for implementation. The IPDP will cover the development of 27 km^2industrial 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 aimingat 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 phaseA 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 resettlementhouses 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 tobe carried out in order to get full port service condition. Such construction items are lighting systemon first berth, dredging of the navigation channel, breakwater and revetment, cargo storage yard, officeand 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 upgradedto meet Class 4 Highway Design Standards of the Department of Highways (DOH), Thailand. The road upgrading will cover the entire length of 138 kmwith 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 gas generators. 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 420 MW approximately and provides energy conversion service to the customers in industrial estate insideDSEZ.

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 $40m^2$ 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 servedifferent lifestyles of tenants. Initial Township is designed to accumulate the

workforce generated bythe Initial Industrial Estate and is located between KM 17 and KM 18 south of the Main Road. Another is Residential Area (Northpoint) which is prepared mainly for the accommodation of highlevel managers and executive who come and work in DSEZ. The site location is located the northerntip of DSEZ's coastal area.

Water Reservoir Project

The water reservoir which is designed for providing raw watersupply, water treatment plant, water transmission and distribution facilities collectively called "Waternetworks" for phaseA of the initial industrial estate phaseis The Pa YainByustorage reservoir, the existing.

For the other phases and expansion of the industrial estate, we consider to develop the Ta Laing Gyaarea to build the small regulating weir to supply raw water to the water treatment plant for operatingthe 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 developmentfor 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, TwoLane Road, Small Power Plant, and other supporting Facilities.

APPENDIX 5A

RESULTS OF PLANKTON AND BENTHOS

TABLE 1

RESULT OF PLANKTON STUDY AROUND PROPOSED PROJECT SITE

IN THE WET SEASON (OCTOBER 2014)

Phytoplankton / Zooplankton	Station (cell/cu.m.)				Total (cell/cu. m.)
Division / Class / Order / Suborder / Family / Genus	SW1	SW2	SW3	SW4	
<u>Phytoplankton</u>					
Division Cyanophyta					
Class Cyanophyceae (Blue-Green Algae)					
Order Nostocales					
Family Oscillatoriaceae					
Oscillatoria sp.	3,900	2,700	10,000	8,400	25,000
Division Chromophyta					
Class Bacillariophyceae (Diatom)					
Order Biddulphiales					
Suborder Coscinodiscineae					
Family Thalassiosiraceae					
Thalassiosirasubtilis	1,300				1,300
Family Coscinodiscaceae					
Coscinodiscussp	475,80 0	561,600	338,00 - 0	33,600	1,409,000
Ethmodiscus sp.	2,600	5,400	8,000		16,000
Family Asterolampraceae					
Asterolampramarylandica	1,300				1,300
Asterophalusheptactis		5,400	2,000		7,400
Class Coscinodiscophyceae(Centric Diatom)					
Order Melosirales					
Family Hyalodiscaceae					
Hyalodiscusstelliger	9,100	13,500	4,000		26,600
Order Coscinodiscales					
Family Hemidiscaceae					
Hemidiscuscuneiformis	1,300		2,000		3,300
Suborder Rhizosoleniineae					
Family Rhizosoleniaceae					
Rhizosoleniaalata	1,300				1,300
R. robusta				2,100	2,100
Suborder Biddulphiineae					
Family Chaetoceraceae					
Chaetocerossp.		2,700	2,000		4,700
C. aequatorialis		2,700			2,700
Family Eupodiscaceae					
Odontellamobiliensis	1,300				1,300
O. sinensis	1,300				1,300
Triceratiumfavus	1,300		2,000		3,300
Order Bacillariales (Pennate Diatom)					

Phytoplankton / Zooplankton (Division / Class / Order / Suborder / Family / Genus)	Station (cell/cu.m.)				Total (cell/cu. m.)
	SW1	SW2	SW3	SW4	
Suborder Fragilariineae					
Family Thalassionemataceae					
Thalassionemafrauenfeldii	2,600	5,400	2,000		10,000
T. nitzchioides	6,500	10,800	4,000		21,300
Suborder Bacillariineae					
Family Bacillariaceae					
Bacillariaparadoxa		2,700			2,700
Nitzschialongissima				4,200	4,200
Family Naviculaceae					
Navicula sp.		2,700			2,700
*Pleurosigma*sp.			2,000		2,000
Family Surirellaceae					
*Campyrodiscus*sp.		5,400			5,400
Class Dinophyceae (Dinoflagellates)					
Order Dinophysiales					
Family Dinophysiaceae					
Dinophysiscaudata			2,000		2,000
D. miles			2,000		2,000
Order Gonyaulacales					
Family Ceratiaceae					
Ceratiumbreve	1,300			2,100	3,400
C. deflexum				2,100	2,100
C. extensum	2,600		2,000	2,100	6,700
C. fusus	1,300	2,700			4,000
C. massilliense				2,100	2,100
C. porrectum			2,000		2,000
C. trichoceros	1,300				1,300
C. tripos	2,600		2,000	4,200	8,800
Order Peridiniales					
Family Peridiniaceae					
Peridinium sp.	7,800	5,400	20,000	6,300	39,500
Family Protoperidiniaceae					
*Proroperidinium*sp.	1,300		4,000	2,100	7,400
Family Pyrophacaceae					
Pyrophacushorologium			2,000		2,000
<u>Zooplankton</u>					
Phylum Arthropoda					
Class Crustacea					
Subclass Copepoda					
*Copepod larva (Nauplius)	154,700	477,900	82,000	75,600	790,200
Order Calanoida					
*Unidentified Calanoida	16,900	10,800	14,000	2,100	43,800
Order Cyclopoida					
*Unidentified Cyclopoida	111,800	126,900	20,000	18,900	277,600
Order Harpacticoida					
*Unidentified		5,400	4,000		9,400

Phytoplankton / Zooplankton						Station (cell/cu.m.)				Total (cell/cu. m.)
Division	Class	Order	Suborder	Family	Genus	SW1	SW2	SW3	SW4	
Harpacticoida										
Phylum Protozoa										
Class Ciliata										
Subclass Spirotricha										
Order Tintinnida										
Family Codonellidae										
Tintinnopsissp.							5,400	2,000		7,400
T. gracilis								2,000		2,000
Codonelopsisostenfeldi									4,200	4,200
Family Cyttarocylidae										
Favella campanula						1,300			2,100	3,400
Family Rhabdonellidae										
Rhabdonellacuspidata								4,000		4,000
Family Tintinnidae										
Eutintinnussp.								2,000		2,000
Phylum Mollusca										
Class Gastropoda										
Order Thecosomata										
Family Limacinidae										
Limacinasp.						1,300	2,700		2,100	6,100
Class Bivalvia										
Pelecypodlaevae						1,300		4,000		5,300
Total density										
Phytoplankton						**527,800**	**629,100**	**412,000**	**69,300**	**1,638,200**
Zooplankton						**288,600**	**634,500**	**134,000**	**105,000**	**1,162,100**
Total						**816,400**	**1,263,600**	**546,000**	**174,300**	**2,800,300**
Total diversity										
Phytoplankton						**20**	**14**	**19**	**11**	**35**
Zooplankton						**7**	**7**	**9**	**6**	**13**
Total						**27**	**21**	**28**	**17**	**48**
Ratio of Phytoplankton : Zooplankton						**1.83**	**0.99**	**3.07**	**0.66**	**Avg.=1.64**
Diversity Index						**1.37**	**1.37**	**1.57**	**1.93**	**Avg.=1.56**

Density : Cell / cu.m.

Remark: SW1 : Mangrove near Pan Tin In Village, Dawei, Myanmar (47P 401988E 1568691N)

SW2 : Estuary near proposed project site, Dawei, Myanmar (47P 401514E 1567039N)

SW3 : North from proposed project site, Dawei, Myanmar (47P 400514E 1566603N)

SW4 :Muangmagan beach, Dawei, Myanmar (47P 401000E 1564086N)

Source: -TEAM Consulting Engineering and Management Co., Ltd., 19 October 2014.

-Plankton identification by Kasetsart University, Thailand

TABLE 2

RESULTS OF BENTHIC ANIMAL STUDY AROUND PROPOSED PROJECT SITE IN THE WET SEASON (OCTOBER 2014)

Phylum / Class / Order / Family	Station (number/m²)				Total (number./m²)
	SW1	SW2	SW3	SW4	
Phylum Annelida					
Class Polychaeta					
Order Phyllodocida					
Family Glyceridae	22				**22**
Family Nereididae	22			132	**154**
Phylum Arthropoda					
Class Malacostraca					
Order Amphipoda					
Family Ampithoidae			132	88	**220**
Order Decapoda					
Family Luciferidae					
Lucefer sp.			22		**22**
Family Paguroidae					
Clibanarius sp.		22			**22**
Phylum Mollusca					
Class Bivalvia					
Order Veneroida					
Family Tellinidae					
Tellina sp.			22		**22**
Family Solenidea					
Siliqua sp.	22			22	**44**
Total diversity	**3**	**1**	**3**	**3**	**7**
Total density (number./m²)	**66**	**22**	**176**	**242**	**506**

Remark: W1 : Mangrove near Pan Tin In Village, Dawei, Myanmar (47P 401988E 1568691N)

W2 : Estuary near proposed project site, Dawei, Myanmar (47P 401514E 1567039N)

W3 : North from proposed project site, Dawei, Myanmar (47P 400514E 1566603N)

W4 :Muangmagan beach, Dawei, Myanmar (47P 401000E 1564086N)

Source: -TEAM Consulting Engineering and Management Co., Ltd., 19 October 2014.

-Benthic animal identification by Kasetsart University, Thailand

TABLE 3

RESULTS OF PLANKTON SAMPLINGS AND ANALYSIS

Phytoplankton/Zooplankton (Division / Class / Order / Suborder / Family / Genus)	Station SW 1	SW 2	SW 3	SW 4	Total (Cell/m^3)
<u>Phytoplankton</u>					
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 3(CONT'D)

Phytoplankton/Zooplankton (Division / Class / Order / Suborder / Family / Genus)	SW 1	SW 2	SW 3	SW 4	Total (Cell/m^3)
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
<u>Zooplankton</u>					
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 3 (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
Totaldiversity										
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 4

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

TABLE 5

RESULT OF PLANKTON STUDY AROUND PROPOSED PROJECT SITE

ON DRY SEASON (JANUARY 2015)

Phytoplanton/Zooplankton	Density (cell / cu.m.)				Total
	SW 1	SW 2	SW 3	SW 4	
Phytoplankton					
Division Cyanophyta					
Class Cyanophyceae (Blue-Green Algae)					
Order Nostocales					
Family Oscillatoriaceae					
*Oscillatoria*sp.	3,250	5,200		4,400	12,850
Division Chromophyta					
Class Bacillariophyceae (Diatom)					
Order Biddulphiales (Centric Diatom)					
Suborder Coscinodiscineae					
Family Coscinodiscaceae					
Coscinodiscussp	35,750	46,800	38,250	6,600	127,400
Family Heliopeltaceae					
Actinoptychussplendens		5,200	4,500		9,700
Arachnoidiscussp.				2,200	2,200
Class Coscinodiscophyceae					
Order Melosirales					
Family Hyalodiscaceae					
Hyalodiscusstelliger	3,250		2,250		5,500
Order Coscinodiscales					
Suborder Rhizosoleniineae					
Family Rhizosoleniaceae					
Rhizosoleniaalata	3,250		2,250		5,500
Suborder Biddulphiineae					
Family Chaetoceraceae					
Bacteriastrumfurcatum			2,250	15,400	17,650
B. hyalinum				22,000	22,000
Family Biddulphiaceae					
Biddulphiabiddulphiana		15,600			15,600
Family Eupodiscaceae					
Odontellamobiliensis		2,600			2,600
Triceratiumfavus	6,500	7,800	9,000	4,400	27,700
Order Bacillariales (Pennate Diatom)					
Suborder Fragilariineae					
Family Thalassionemataceae					
Thalassionemafrauenfeldii	3,250				3,250
Family Fragilariaceae					
Fragilaria sp.	3,250				3,250
Suborder Bacillariineae					
Family Bacillariaceae					
Nitzschia sigma		5,200	2,250		7,450
Family Naviculaceae					
Amphora obtusa			2,250		2,250
*Pleurosigma*sp.		5,200	4,500	8,800	18,500

Phytoplanton/Zooplankton	Density (cell / cu.m.)				Total
	SW 1	SW 2	SW 3	SW 4	
Family Eunotiacea					
Eunotiaflexuosa		2,600	2,250		4,850
Family Rhopalodiaceae					
Epithemiarobusta				2,200	2,200
E. gigantea				2,200	2,200
Class Dinophyceae (Dinoflagellates)					
Order Gonyaulacales					
Family Ceratiaceae					
Ceratium breve	3,250				3,250
C. deflexum	3,250			4,400	7,650
C. extensum					
C. furca			2,250	4,400	6,650
C. fusus		2,600	2,250		4,850
C. porrectum		2,600			2,600
C. tripos			2,250		2,250
Order Peridiniales					
Family Peridiniaceae					
Peridinium sp.	22,750	33,800	24,750	13,200	94,500
Family Protoperidiniaceae					
*Proroperidinium*sp.	3,250			2,200	5,450
Family Pyrophacaceae					
Pyrophacushorologium	3,250	5,200		2,200	10,650
<u>Zooplankton</u>					
Phylum Arthropoda					
Class Crustacea					
Subclass Copepoda					
*Copepod larva (Nauplius)	29,250	59,800	69,750	24,200	183,000
Order Calanoida					
*Unidentified Calanoida	13,000	2,600	11,250	2,200	29,050
Order Cyclopoida					
*Unidentified Cyclopoida	6,500	10,400	20,250	11,000	48,150
Order Harpacticoida					
*Unidentified Harpacticoida	3,250			4,400	7,650
Phylum Chordata					
Class Larvacea					
Order Copelata					
Family Oikopleuridae					
Oikopleuradioica		2,600			2,600
O. fusiformis				8,800	8,800
Phylum Protozoa					
Class Ciliata					
Subclass Spirotricha					
Order Tintinnida					
Family Codonellidae					
Tintinnopsis radix	6,500	7,800	38,250	15,400	67,950
T. butchlii				2,200	2,200
T. mortensenii				2,200	2,200
Codonelopsisostenfeldi			2,250		2,250

Phytoplanton/Zooplankton	Density (cell / cu.m.)				Total
	SW 1	SW 2	SW 3	SW 4	
Family Cyttarocylidae					
Favella campanula		2,600		4,400	7,000
Family Rhabdonellidae					
Rhabdonellacuspidata	3,250				3,250
Family Tintinnidae					
Leprotintinnusnordguisti	6,500	10,400	13,500		30,400
Class Sarcodina					
Subclass Rhizopoda					
Order Foraminiferida					
Family Codonellidae					
Globorotaliainflata		10,400	4,500		14,900
G. tumida		2,600			2,600
Phylum Mollusca					
Class Gastropoda					
Order Thecosomata					
Family Limacinidae					
*Limacina*sp.				2,200	2,200
Total Density					
Phytoplankton	**94,250**	**140,400**	**101,250**	**94,600**	**430,500**
Zooplankton	**68,250**	**109,200**	**159,750**	**77,000**	**414,200**
total	**162,500**	**249,600**	**261,000**	**171,600**	**844,700**
Total Diversity					
Phytoplankton	**12**	**13**	**14**	**14**	**28**
Zooplankton	**7**	**9**	**7**	**10**	**16**
total	**19**	**22**	**21**	**24**	**44**
Diversity Index	**2.49**	**2.50**	**2.36**	**2.84**	

Remark: SW1 : Mangrove near Pan Tin In Village, Dawei, Myanmar (47P 401988E 1568691N)

SW2 : Estuary near proposed project site, Dawei, Myanmar (47P 401514E 1567039N)

SW3 : North from proposed project site, Dawei, Myanmar (47P 400514E 1566603N)

SW4 :Muangmagan beach, Dawei, Myanmar (47P 401000E 1564086N)

Source: -TEAM Consulting Engineering and Management Co., Ltd., 22 January 2015.

-Plankton identification by Kasetsart University, Thailand

TABLE 6

RESULT OF BENTHIC ANIMAL STUDY AROUND PROPOSED PROJECT SITE ON DRY SEASON (JANUARY 2015)

BENTHIC ORGANISM	Density (individual / sq.m.)			
	SW1	SW2	SW3	SW4
Phylum Annelida				
Class Polychaeta				
Subclass Scolecida				
Family Capitellidae			44	
Phylum Arthropoda				
Class Malacostraca				
Superorder Peracarida				
Order Amphipoda				
Suborder Gammaridea				
Family Ampithoidae		22		
Class Insecta				
Order Diptera				
Family Chironomidae				
Chironomus sp.		88		
Order Coleoptera				
Family Elmidae				
Oulimnius sp.		22		
Phylum Mollusca				
Class Bivalvia				
Subclass Heterodonta				
Order Veneroida				
Family Donacidae				
Donax sp.		22		
Total (individuals)	0	154	44	0
Total Species	0	4	1	0

Remark: SW1 : Mangrove near Pan Tin In Village, Dawei, Myanmar (47P 401988E 1568691N)

SW2 : Estuary near proposed project site, Dawei, Myanmar (47P 401514E 1567039N)

SW3 : North from proposed project site, Dawei, Myanmar (47P 400514E 1566603N)

SW4 :Muangmagan beach, Dawei, Myanmar (47P 401000E 1564086N)

Source: -TEAM Consulting Engineering and Management Co., Ltd., 22 January 2015.

-Benthic animal identification by Kasetsart University, Thailand

APPENDIX 5B

MARINE SPECIES IN MYEIK ARCHIPELAGO

APPENDIX 5B

MARINE SPECIES IN MYEIK ARCHIPELAGO

The most useful information on endangered marine species in the country and Tanintharyi Region was results of the surveys conducted by the Department of Fisheries in collaboration with the Wildlife Conservation Society (WCS) in 2005. The surveys were carried out in connection with research and conservation of endangered marine faunas in Myeik (or Mergui) Archipelago in Tanintharyi region. ***Figure 1*** shows a map of Myeik Archipelago. It consists of more than 800 islands, varying in size from very small to hundreds of square kilometres, all lying in the Andaman Sea off the western shore of the Malay Peninsula near its landward (northern) end where it joins the rest of Indochina. ***Figures 2 and 3*** are maps of cetacean surveys carried out between February and March 2005. The surveys found 30 cetaceans groups listed in ***Table 1*** with estimated population size for each group.

TABLE 1: CETACEAN GROUPS FOUND IN MYEIK ARCHIPELAGO IN THE SURVEYS BETWEEN FEBRUARY AND MARCH 2005

Identified Cetacean Groups	Estimated Population Size
Indo-Pacific bottlenose dolphin (Tursiops truncates)	225

1) Indo-Pacific bottlenose dolphin (*Tursiops truncates*)-225
2) Indo-Pacific humpback dolphin (*Sausachinensis*)-37
3) Pantropical spotted dolphin (*Stenellaattenuata*)
4) Irrawaddy dolphin (*Orcaellabrevirostris*)-12
5) Finless porpoises (*Neophocaenaphocaenoides*)-6
6) Bryde's whales (*Balaenopteraedeni*)-3
7) Long-snouted Spinner dolphin (*Stenellalongirostris*)-495
8) Unidentified baleen whale-1
9) Unidentified Delphinid-1

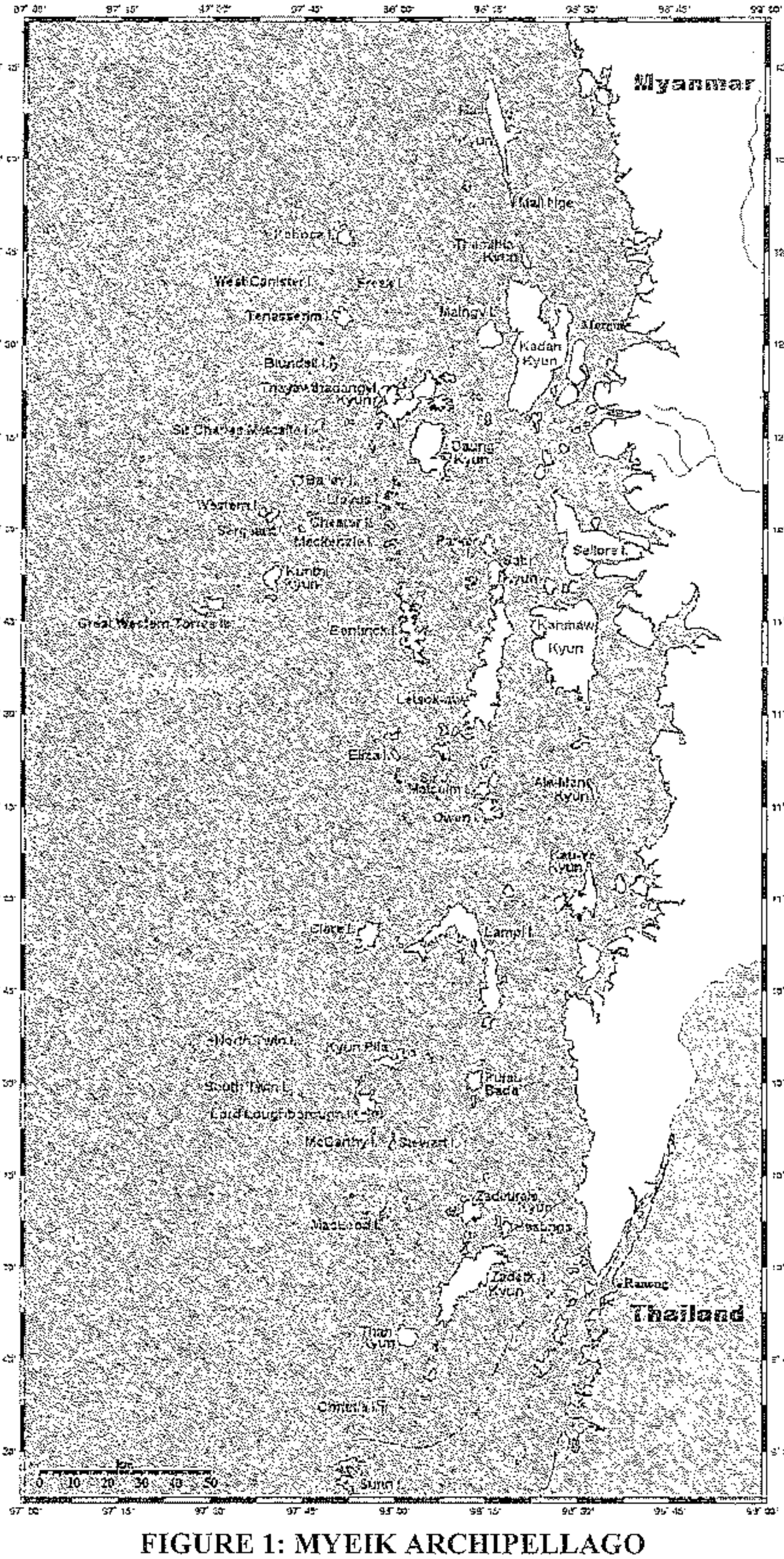
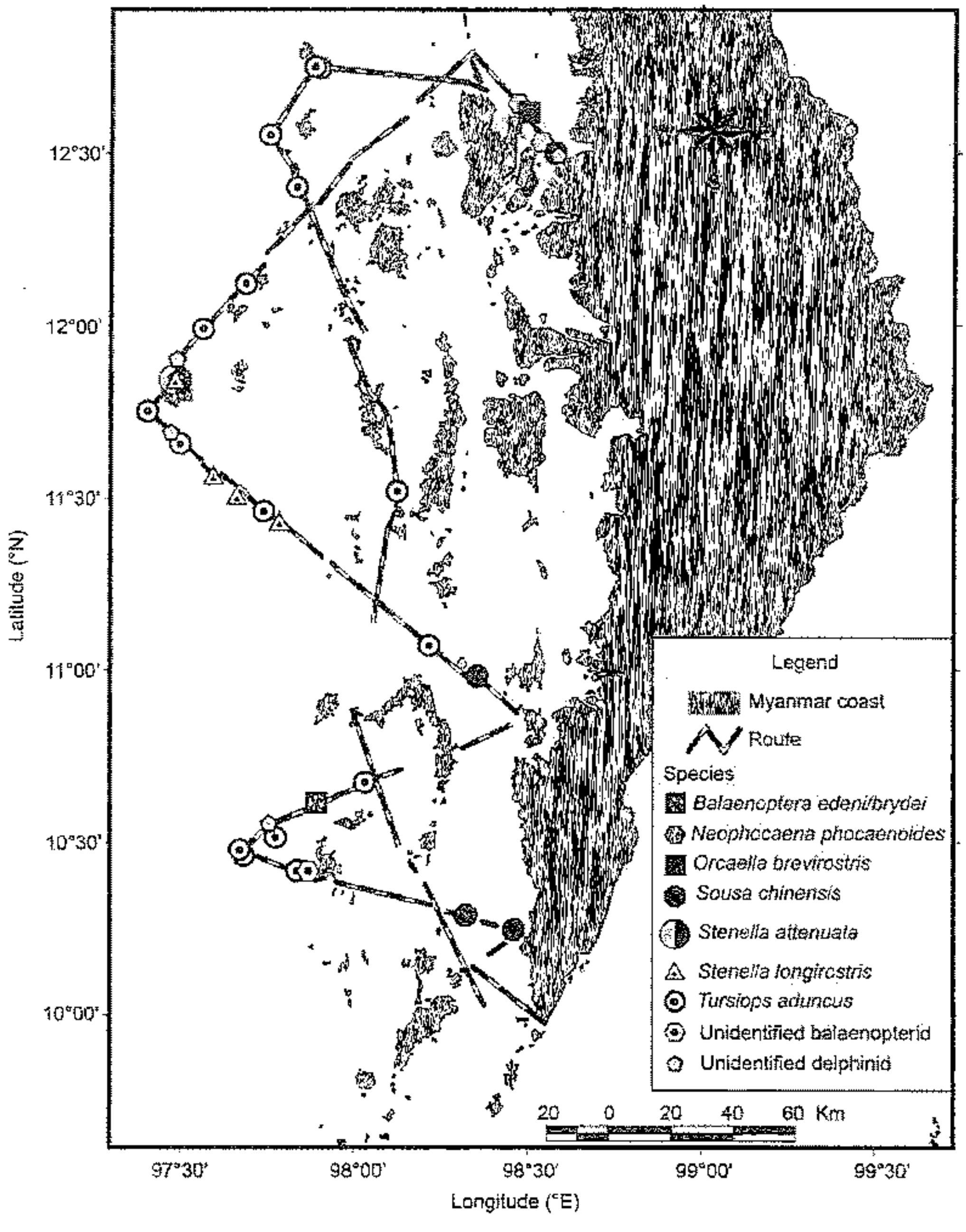


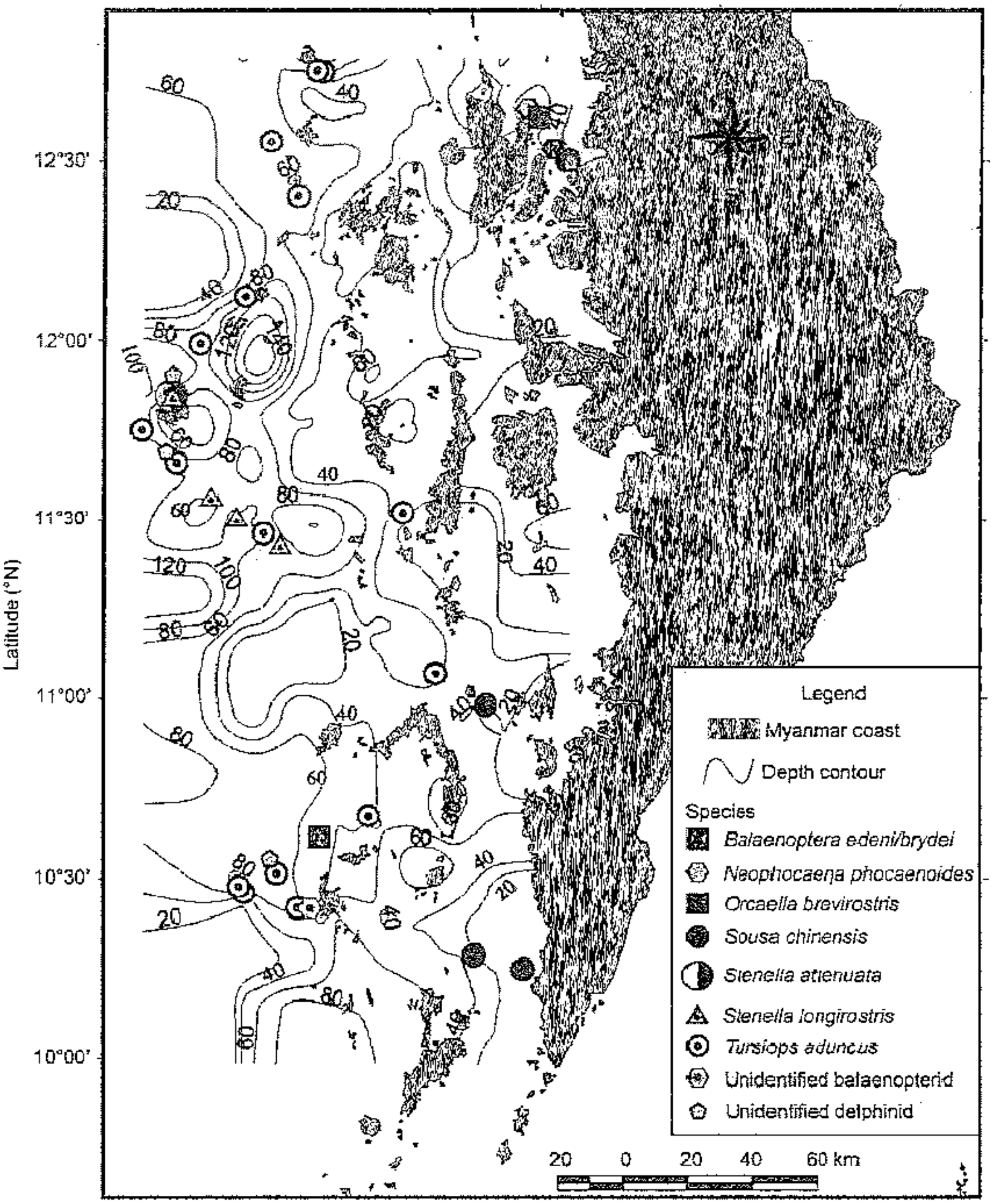
FIGURE 1: MYEIK ARCHIPELLAGO

In addition, theDepartment of Fisheries in collaboration with international scientists conducted surveys of Dugong and seagrass bed at the Mergui Archipelago between December 2006 to January 2007. ***Figure 4*** is a map summarizing the survey results.



Source : Department of Fisheies, Myanmar and WCS, 2005

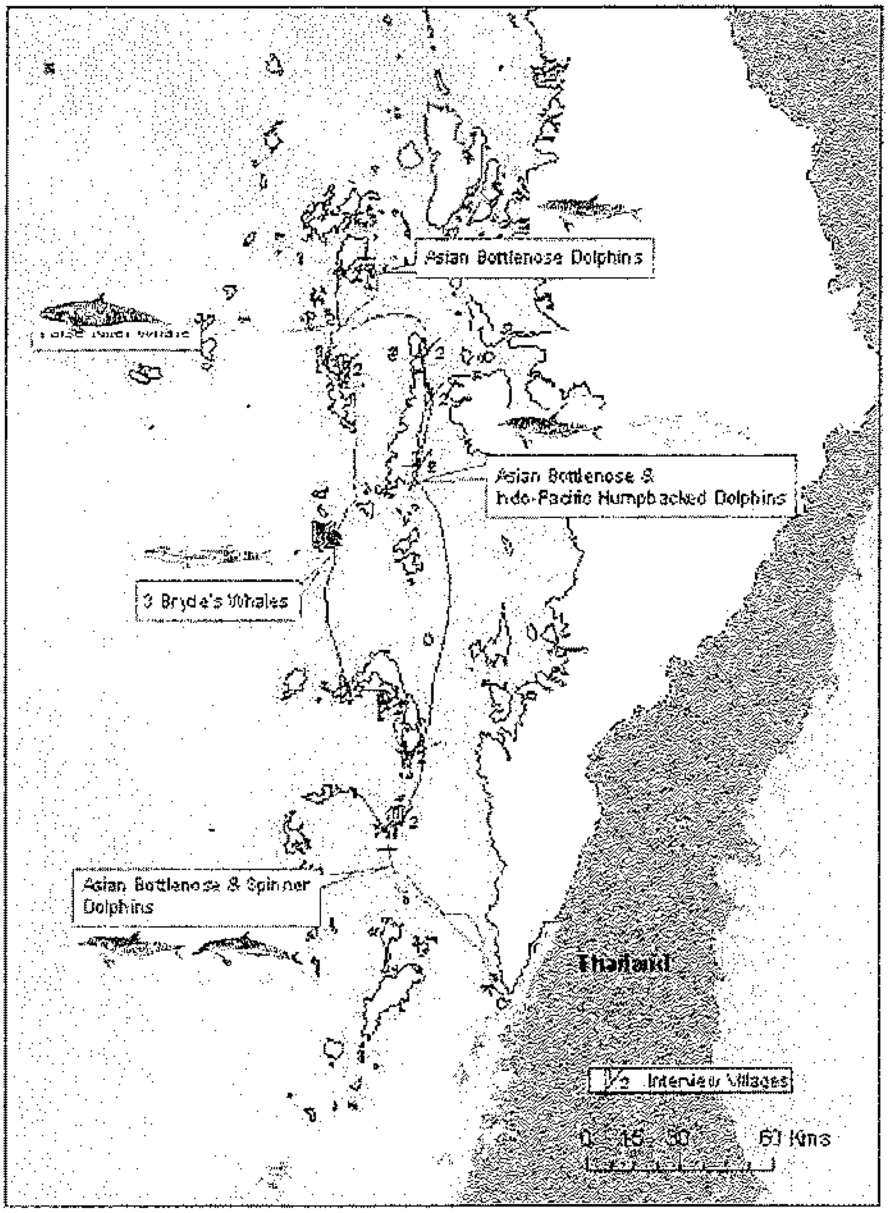
FIGURE 2: MERGUI ARCHIPELAGO CETACEAN SURVEY MAP (CRUISE ROUTE AND SIGHTING) BETWEEN FEBRUARY-MARCH, 2005



Source : Department of Fisheies, Myanmar and WCS, 2005

FIGURE 3: MERGUI ARCHIPELAGO CETACEAN SURVEY MAP (DEPTH WISE AND SIGHTING)(FEBRUARY-MARCH, 2005)

Myeik Archipelago Dugong Survey Track , Position and Marine Mammal Species Sighting Position.



Source : Department of Fisheies, Myanmar and WCS, 2005

FIGURE 4: MYEIK ARCHIPELAGO DUGONG SURVEY TRACK, POSITION AND MARINE MAMMAL SPECIES SIGHTING POSITION

Sea Turtles

In addition to the surveys conducted by the Department of Fisheries, some surveys were carried out by individuals for research and conservation purposes. According to Zockler et al., 2013, many species of marine turtles were found along the Myanmar coast. Five species regularly breed on beaches in Myanmar as indicated in ***Figure 5***. They are:

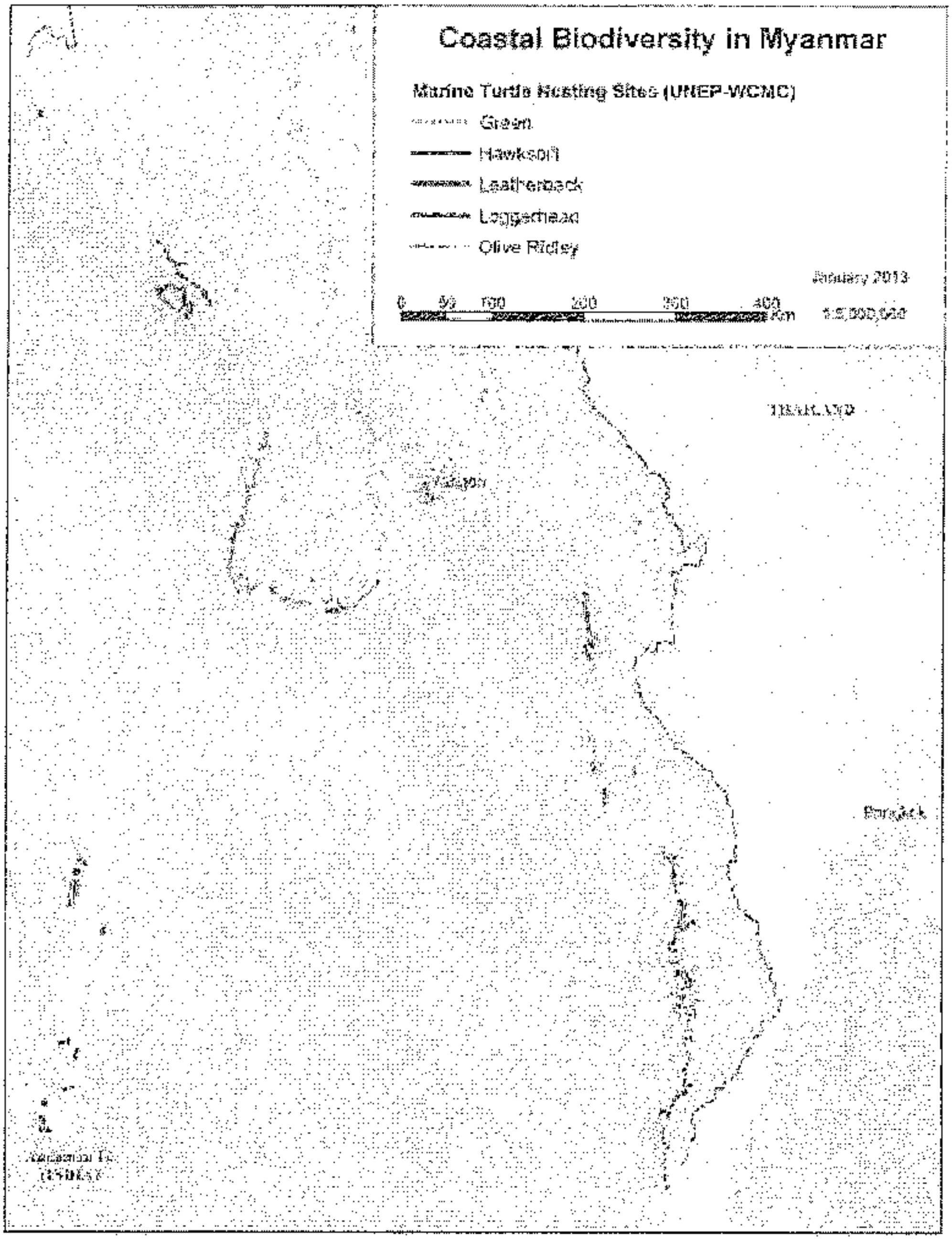
- Olive Ridley Turtle (*Lepoidochelyolivacea*) (In Myanmar -LeikLyaung)
- Loggerhead Turtle (*Carettacaretta*) (In Myanmar – LeikKhway)
- Green Turtle (*Cheloniamydas*) (In Myanmar – PyinThaLeik)
- Hawksbill Turtle (*Eretmochelysimbricata*) (In Myanmar – LeikKyetTuYway)
- Leatherback Turtle (*Dermochelyscoreacea*) (In Myanmar – LeikZaungLyar)

The two species of Hawksbill Turtle and Leatherback Turtle are considered extremely rare. They were occasionally reported by fishermen at some parts of Rakhine and Tanintharyi coastal areas while none had been found in the Ayeyarwaddy Delta coastal areas.

According to the Bay of Bengal Report, an investigation of the "turtle banks" of coastal areas in Myanmar was conducted as part of a review under the Burmese Fisheries Act of 1902. At that time, 1.5 million Olive Ridley Turtle eggs and 1.6 million Green Turtle eggs were harvested annually. Based on this egg harvest and several assumptions regarding female fecundity, the report estimated a nesting population of 5,000 Green Turtles and 3,750 Olive Ridley Turtles. According to the data from the Department of Fisheries, the total number of nests in the region is currently about 300 annually. This indicates a drastic reduction in regional turtle populations during the 20th century. Most nesting is by Olive Ridley Turtles (70%), followed by Loggerhead Turtles (20%) and Green Turtles (10%).

The Department of Fisheries initiated the conservation of turtles and biodiversity of marine ecosystems in 1905 by promulgation of "The Fisheries Act". This act has theoretically protected all species of sea turtle. However, enforcement is difficult and at places impossible.

Protection for turtles and their hatching areas was included in the Fisheries Act (111-1905) and those who trespassed on those areas without official consent were effectively penalized. In 1924, the Government of Burma, Agriculture (Forest Department) Notification No.1 made an official announcement, not to trespass within a three mile radius of the turtle hatching areas. In 1991, Myanmar drafted a new "Freshwater Fisheries Law" due to the greatly changing conditions. In 1993, the Department of Fisheries enacted "Notification No 2/93 for Sea Turtle Conservation".



Source :Zöckler*et al.*, 2013. Sustainable Coastal Zone Management in Myanmar.

FIGURE 5: DISTRIBUTION OF SEA TURTLE NESTING SITES ACCORDING TO UNEP : WCMC DATABASE

Coral reef

The Marine Science Department, Myanmar reported that 65 species of coral reef were found in Myeik Archipelago (***Table 2***).

TABLE 2
SYSTEMATIC LIST OF CORALS IN THE MYEIK ARCHIPELAGO

Phylum	Class	Subclass	Order	Family	
Coelenterata	Hydrozoa	-	Hydeocorallina	Milleporina	*Millepora*
	Anthozoa (Seaanemones, Coralsetc)	Alcyonariaor Octocorallia (Soft Coral)	Stolonifera	Tubiporidae (Organpipecorals)	*Tubiporamusica*
			Coenothecalia	Helioporidae (Indo-Pacificbluecoral)	*Heliopora coerulea*
		Zoanthariaor Hexcorallia	Madreporariaor Scleractinia (all stony corals, reef building corals)	Acroporidae (branching, staghorncorals)	*Acropora pharaonis*
					A. brueggemanni
					A.concinna
					A. rubicinaria
					A. variabilis
				Thamnasteriidae	*A. MontiporaA. efflorescens*
					M.informis
					M.laevis
					M.solanderi
					M.striata
					Asteropora ocellata
				Pocilloporidae	*Psammocora contigua*
					Seriatopora hystrix
					Pocillopora damicornis
					P.verrucosa
				Siderastreidae	*Pseudosiderastrea tayamai*
				Portidae	*Poritesconvexa*
					P.lutea
					P.nigrescens Alveoporaexcelasa
					Goniopora columna
				Agariciidae	*Pavonacrassa*
					P. frondifera
				Mussidae	*Lobophyllia hemprichii*
					Symphyllia nobilis
				Fungiidae	*Polyphyllia talpina*
					Herpolithalimax
					Podobaciacrustacea
					Fungia fungitessolitary (mushroomcoral)
					F.actiniformis
					F.repanda
					F.echinata
				Pectinidae	*Oxypora lacera*
					G.fructicosa
					G.lobata
					G.malaccensis
					G.stuchburyi -
					Pectinialactuca
				Euphyllidae	*Euphyllia glabrescens*
					Plerogyrasinuosa
				Caryophyllidae	*Paracyathusstokesi*
				Faviidae	*Goniastrearetiformis*
					G.benhami
					G.pectinata
					Favias peciosa
					Platygera lamellina
				Merulinidae	*Hydnophora exea*
					H.rigida
					Favites abdita
					Leptoria phrygia
				Trachyphyllidae	*Trachyphyllia geoffroyi*

Source : Marine Science Department, Myanmar

APPENDIX 5C

METHOD FOR IDENTIFICATION AND TAXONOMY REFERENCE FOR TERRESTRIAL ECOLOGY

TABLE 1

METHOD FOR IDENTIFICATION AND TAXONOMY REFERENCE FOR TERRESTRIAL ECOLOGY

Type	Item	Method	Reference
Flora	Forest, vegetation and habitat	- Select study areas based on the estimated habitats. - Interview local people for obtaining information about exact characteristics of each habitat. - Use GPS to navigate and mark coordinated between sample plots in each habitat. - Set up and observe quadrants in varying size 30x30 m to obtain essential data for predicting the forest value. - Measure and record tree height (H) and diameter at breast height (DHB) for all sampling trees in the quadrants.	- Loetsch and Haller, 1964 - Satit, 1982 - IUCN Red List (2013)
Fauna	Mammal	- Binocular was used to detect the diurnal squirrels and other day-active small mammals. - During the daytime, more ground searches were conducted to detect tracks and other signs of existing mammals such as track in soft soils and craw marks, feeding signs, dropping, quills, and etc.	- Tun Yin (1996) - Lekagul and McNeely (1977) - Corbet and Hill (1992) - IUCN Red List (2013)
	Birds	- Binoculars were also utilized for observing birds in the daytime. - All species seen were systematically recorded for their identities, the numbers seen and the prevailing behaviors observed.	- Lekagul and Round (1991) - King *et al.* (1995) - Welty and Baptista (1988) - IUCN Red List (2013)

TABLE 1
METHOD FOR IDENTIFICATION AND TAXONOMY REFERENCE FOR TERRESTRIAL ECOLOGY (CONT'D)

Type	Item	Method	Reference
Fauna (Cont'd)	Reptile/Amphibian	- These two groups of cold-blooded animals were studied together since they require the same surveying techniques and share the same natural habitats. - In the daytime, efforts were spent on the cruising method, i.e., searching randomly throughout their preferred habitats on the forest floor among litter, under stones and logs, along the streams and around the stagnant pools.	**Reptile** - Taylor (1963, 1965, 1970), Cox (1991), Matsui (1996), and Cox et al. (1998) for identification and using Pough et al. (1998) for taxonomic arrangement. - -IUCN Red List (2013) **Amphibian** - Taylor (1962), Inger (1966), Berry (1975), Frost (1985), and Matsui (1996) for mature frog identification, using Smith (1916), Smith (1917), and Inger (1966) for tadpole identification, and using Pough et al. (1998) for taxonomic arrangement. - IUCN Red List (2013)

Forest Resources

- Sampling plot size: the suitable temporary sampling plots for the forest area within South-Eastern of Asia region are Stratified Random Sampling. The three sizes of temporary sampling plots will be used, with the following purposes: (***Figure 1***).

- The rectangular sampling plot of 10 x 10 m. (area of 100 m^2) was used for collecting data on tree diameter with over 1.30 m (for terrestrial forest) and 20 cm. for mangrove forest or girth over 30 cm at breast height (DBH or GBH respectively).

- The rectangular sampling plot of 4 x 4 m. (area of 16 m^2) covered with sampling plot of 10 x 10 m was used for studying the sampling which are those small trees higher than 1.30 m and having the GBH less than 30 cm. Species and number were recorded for sapling density and other natural generation.

- The rectangular sampling plot of 1 x 1 m. (area of 1 m^2) covered with sampling plot of 4 x 4 m was used for studying the seedling which comprising these lower than 1.30 m in height and underground tree (annual, creeper, and climbing plants). They are used as an indicator of the natural regeneration of the ecosystem.

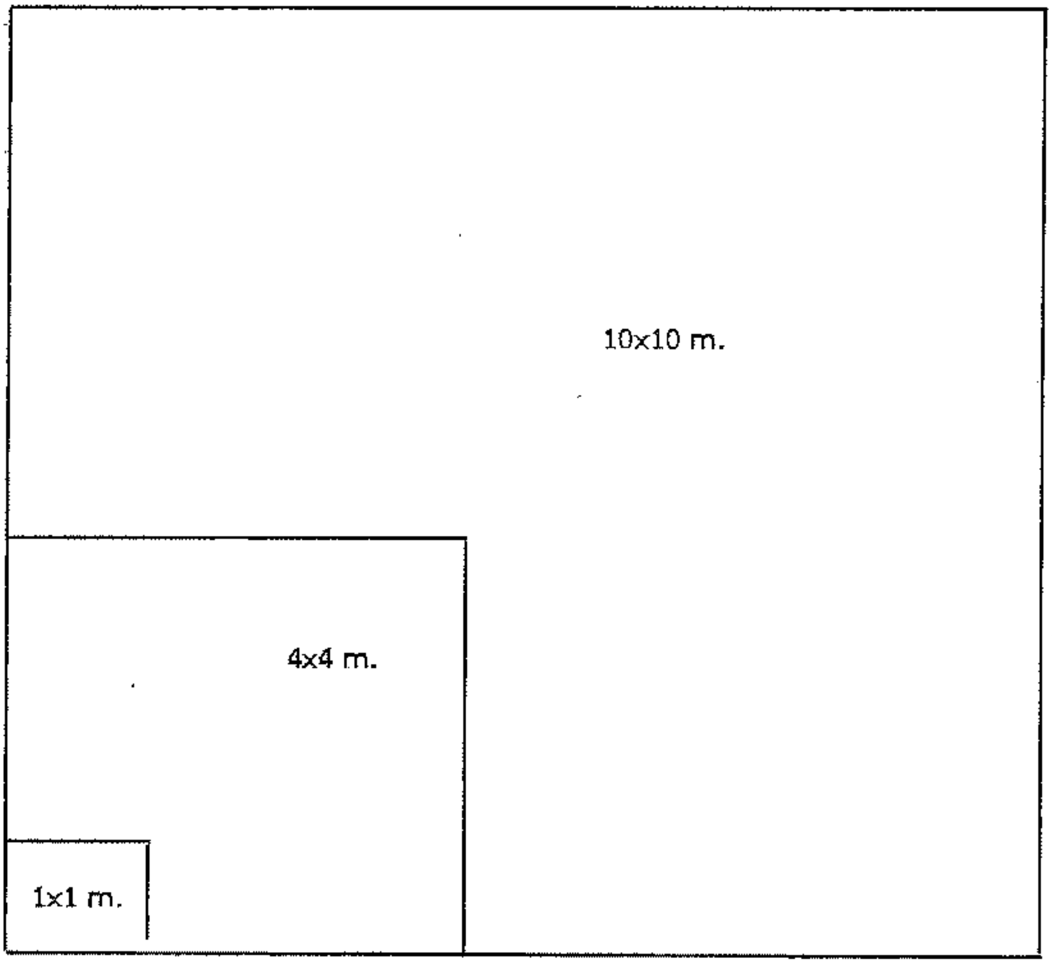


FIGURE 1: TEMPORARY SAMPLING PLOT SIZES

Wildlife

- Population size: each wildlife species obtained from both direct and indirect methods will be evaluated in term of relative abundance using calculation formulated by Pettingill (1970) as following formula:

Relative abundance = (Number of seen x 100) / Number of survey

Relative abundance of each species is classified into three levels using the criteria:

Percentage range	67-100	standing for very common
	34-66	standing for common
	1-33	standing for less common

- Status: wildlife status in this study is status for conservative concerns as the details below:

Status for Concerned Conservation: Species whose population and distribution have highly declined that International Union for Conservation of Nature and

Natural Resources (IUCN) A.D. 2013 (2013 IUCN Red List of Threatened Species, www.redlist.org) evaluates them as threatened, which categories will be used criteria version3.1 A.D. 2001. The threatened species, then, are separated into three categories depending on degree of threat:

- Critically Endangered (CR): this category includes species, which are facing and extremely high risk of extinction in the wild in the immediate future.

- Endangered (EN): this category includes species, which are facing a very risk of extinction in the wild in the near future.

- Vulnerable (VU): this category includes species, which are facing high risk of extinction in the wild in the medium-term future.

In addition, IUCN (2013) also evaluates those species, which do no satisfy the criteria for any of the categories as mentioned above, but which are also closed to qualifying for vulnerable. Species included in this subcategory are classified as near threatened (NT).

APPENDIX 5D

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 households	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 5E

RESULTS OF V/C RATIO CALCULATION

Types of vehicles	PCE	Numbers of vehicles and direction							
		23 Jan 2015 (workday)				24 Jan 2015 (holiday)			
		Into small port		Out from small port		Into small port		Out from small port	
		Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day
Bicycle	0.33	-	-	1	0.33	1	0.33	1	0.33
Motorcycle	0.33	7	2.31	7	2.31	12	3.96	11	3.63
Passenger Car	1.00	-	-	1	1	-	-	-	-
Light Truck	1.00	12	12	9	9	12	12	10	10
Heavy Truck	2.50	1	2.50	1	2.50	3	7.5	4	10
Trailer	2.50	-	-	-	-	-	-	1	2.50
Other	1.30	-	-	-	-	1	1.30	-	-
Total in each lane		20	16.81	19	15.14	29	25.09	27	26.46
Total car/day in both lane		39				56			
Total PCU/day in both lane		31.95				51.55			
PCU/Hr in each lane*		1.40		1.26		2.09		2.21	
PCU/Hr. in both lane*		2.66				4.30			
Carrying Capacity		2,000							
V/C Ratio		0.001				0.002			
Traffic Condition		Very high traffic flow				Very high traffic flow			

Remark: estimate 12 hours

TABLE 1: THE CALCULATION ON V/C RATIO AT EXISTING SMALL PORT

Types of vehicles	PCE	Numbers of vehicles and direction															
		25 Jan 2015 (holiday)								26 Jan 2015 (workday)							
		From Nga Pitat to Small Port		From Small Port to Nga Pitat		From Nga Pitat to ITD Camp Site		From ITD Camp Site to Nga Pitat		From Nga Pitat to Small Port		From Small Port to Nga Pitat		From Nga Pitat to ITD Camp Site		From ITD Camp Site to Nga Pitat	
		Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day	Car/day	PCU/day
Bicycle	0.33	5	1.65	6	1.98	2	0.66	4	1.32	8	2.64	6	1.98	10	3.30	3	0.99
Motorcycle	0.33	32	10.56	23	7.59	14	4.62	35	11.55	11	5.28	12	3.96	36	11.88	36	11.88
Light Bus	1.50	-	-	-	-	1	1.50	-	-	-	-	-	-	-	-	-	-
Light Truck	1.00	10	10	3	3	10	10	2	2	20	20	11	11	3	3	11	11
Medium Truck	2.10	1	2.10	-	-	1	2.10	-	-	4	8.40	3	6.30	-	-	3	6.30
Heavy Truck	2.10	6	12.60	1	2.10	1	2.10	3	6.30	5	10.5	7	14.7	-	-	-	-
Trailer	2.50	-	-	-	-	-	-	-	-	1	2.50	1	2.50	-	-	-	-
Total in each lane		54	39.61	33	14.67	29	20.98	44	21.17	49	49.32	40	40.44	49	18.18	53	30.17
Total car/day in both lane		87				73				89				102			
Total PCU/day in both lane		54.28				42.15				89.76				48.35			
PCU/Hr in each lane		3.30		1.22		1.75		1.76		4.11		3.37		1.52		2.51	
PCU/Hr in both lane		4.52				3.51				7.48				4.03			
Carrying capacity		2,000															
V/C Ratio		0.002				0.002				0.004				0.002			
Traffic Condition		Very high traffic flow				Very high traffic flow				Very high traffic flow				Very high traffic flow			

Remark: estimate 12 hours

TABLE 2: THE CALCULATION ON V/C RATIO AT NGA PITAT VILLAGE

APPENDIX 6A

CALCULATION OF DISPERSION OF FUGITIVE DUST (SMALL PORT)

APPENDIX 6A

CALCULATION OF DISPERSION OF FUGITIVE DUST (SMALL PORT)

(1) Small Port

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)

= 234 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

= 100 acres

Q = the quantity of dust dispersion into ambient air = 1388,888.9 milligrams per sec

as follows:

Principle: United States Environmental Protection Agency (U.S. EPA) studied and collected information about emission factor (AP-42 U.S. EPA. 2005). This information can summarized that concentration of dust diffusion during construction period depends on soil condition, moisture content in soil, and wind speed and direction. U.S. EPA. has set the Emission Factor for common project during construction activities at 1.2 tons/acres/month

Assume that the period of project construction is 30 days/month with 8 working hours per day

Area of onshore small port = 100 acres

Q = 100 acres x 1.2 ton/acre/ month
= 120 ton/month

Calculate in case of working period is 30 days/month with 8 working hours per day

Therefore: Q = 120 ton/month

$= 120 \times 10^9$ milligram/(1 month =

30 day x 8 hour x 60 minute x 60 second)

$= 120 \times 10^9$ milligram / 864,000 second

= 1388,888.9 milligram / second

Therefore; C = (1388,888.9)/ (234*2.1*1,500)

= 0.188426 mg/m^3

= 188.43 $\mu g/m^3$

The calculations were made in two cases-No Control Case and Control Case. The background ambient TSP of 110.81 $\mu g/m^3$ and 79.28 $\mu g/m^3$ was used in the calculations. This background TSP was 24-hr average TSP measured at Nga Pitat and Sakhanthit 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, $\mu g/m^3$	Total TSP combined with Sakhanthit Village, $\mu g/m^3$
No Control	188.43	299.24	267.71
Control 75% suppression	47.11	157.92	126.39

It can be seen that even without control the total ambient TSP level will be much higher than the control target of not exceeding 230 $\mu g/m^3$ in both Nga Pitat and Sakhanthit Villages. Therefore, the mitigation measure to control fugitive dust must be implement such as water spraying can be reduce 75% efficiency. With control target, TSP level will be much higher than the control target of not exceeding 230 $\mu g/m^3$ (157.92 and 126.93 $\mu g/m^3$, respectively).

As the nearest receptors in Nga Pitat and Sakhanthit Villages are about 2.64 and 1.51 km away to the north and 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 LEVESL AT THE RECEPTORS DURING SITE PREPARATION (SMALL PORT)

APPENDIX 6B

PREDICTED NOISE LEVELS AT THE RECEPTORS DURING SITE PREPARATION (SMALL PORT)

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, 2,640 m (for Nga Pitat Village), 1,510 m (for Sakhanthit village), 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:

Total noise level $Lp_{total} = 10 \log\left(\sum_{i=1}^{n} 10^{Lpi/10}\right)$ ....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 ambient noise level at Sakhathit Village measured during January 25-28 January, 2015 and October 18-21, 2014 was 56.8-64.9 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 41.5 to 71.4 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

1) Nga Pitat Village

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). 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 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.) low and high combine noise. Therefore, the mitigation measure should be proposed to protect impact from noise level during site preparation.

2) Sakhanthit Village

Table 2 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

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).

2) Sakhanthit 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 70-80 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 Small Port Site. This requirement will have to be prescribed in the contract. ***Table 2*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

TABLE 1

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR AT NGA PITAT VILLAGE

Nga Pitat village

Receptor, r2	2,640	m	
Noise source,r1	15	m	
Log (r2/r1)	2.25		
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			
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	44.9	25.1	30.1	35.1	40.1	45.1	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.4	1.5	1.5	1.6	1.7	
Combined Noise Level	60.8	60.7	60.7	60.7	60.7	60.8	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	49.5	47.6	47.7	47.8	48.3	49.5	
Increase	1.9	0.0	0.1	0.2	0.7	1.9	3.0

TABLE 2

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR AT SAKHANTHIT VILLAGE

Sakhanthit village

Receptor, r2		1,510	m	
Noise source,r1		15	m	
Log (r2/r1)		2.00		
Noise level at r2, Lp1	Source-20x(Log(r2/r1))			
Ambient noise level,Lp2		64.9 dB(A) Leq-24 hr.		
-Low		41.5 dB(A) Leq-1 hr.		
-High		71.4 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 operatio

PARTICULARS	NO CONTROL	CONTROL LEVEL					STANDARD
Impact-Leq-24 hr.							
LP0-ambient	64.9	64.9	64.9	64.9	64.9	64.9	
LP1-Source	89.8	70.0	75.0	80.0	85.0	90.0	
LP2-Effect of Source	49.7	29.9	34.9	39.9	44.9	49.9	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.7	1.5	1.5	1.6	1.7	1.7	
Combined Noise Level	65.0	64.9	64.9	64.9	64.9	65.0	70.0
Impact-Leq-1 hr							
High Combined Noise Level	71.4	71.4	71.4	71.4	71.4	71.4	
Increase	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	50.3	41.8	42.4	43.8	46.6	50.5	
Increase	8.8	0.3	0.9	2.3	5.1	9.0	3.0

APPENDIX 6C

CALCULATION OF DISPERSION OF FUGITIVE DUST (PROJECT COASTAL ROAD)

APPENDIX 6C

CALCULATION OF DISPERSION OF FUGITIVE DUST (PROJECT COASTAL ROAD)

(1) Project Coastal Road

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)

= 27 m.

w = average wind speed = 2.1 m/s.

m = average Daytime Mixing Height = 1,500 m

A = area of construction activities

= 46.39 acres

= 11.6 acres / month (calculate in case of 4 months for land clearance and land filling activities).

Q = the quantity of dust dispersion into ambient air = 16,111.11 milligrams per sec

as follows:

Principle: United States Environmental Protection Agency (U.S. EPA) studied and collected information about emission factor (AP-42 U.S. EPA. 2005). This information can summarized that concentration of dust diffusion during construction period depends on soil condition, moisture content in soil, and wind speed and direction. U.S. EPA. has set the Emission Factor for common project during construction activities at 1.2 tons/acres/month

Assume that the period of project construction is 30 days/month with 8 working hours per day

Area of project coastal road per month with 20 m. ROW = 11.6 acres

Q = 11.6 acres x 1.2 ton/acre/ month
= 13.92 ton/month

Calculate in case of working period is 30 days/month with 8 working hours per day

Therefore: Q = 13.92 ton/month

$=13.92 \times 10^9$ milligram/(1 month =

30 day x 8 hour x 60 minute x 60 second)

$= 13.92 \times 10^9$ milligram / 864,000 second

= 16,111.11 milligram / second

Therefore; C = (16,111.11)/ (25*2.1*1,500)

= 0.18943 mg/m^3

= 189.43 $\mu g/m^3$

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 Village 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	189.43	300.24
Control 75% suppression	47.36	158.17

It can be seen that even without control the total ambient TSP level will exceed than the control target of not exceeding 230 $\mu g/m^3$ in Nga Pitat Village. With control target by water spraying can be reduce 75% efficiency, TSP level will be within the control target of not exceeding 230 $\mu g/m^3$ (158.17 $\mu g/m^3$).

APPENDIX 6D

PREDICTED NOISE LEVELS AT THE RECEPTORS DURING SITE PREPARATION (PROJECT COASTAL ROAD)

APPENDIX 6D

PREDICTED NOISE LEVELS AT THE RECEPTORS DURING SITE PREPARATION (PROJECT COASTAL ROAD)

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 100 m, respectively

The resulting ambient noise level will be the net effect of the noise level given by Equation (1) and the background noise level without the Project. The resulting ambient noise level can be calculated using the following equation:

$$\text{Total noise level} \quad Lp_{total} = 10 \log \left(\sum_{i=1}^{n} 10^{Lpi/10} \right) \quad \text{.....................2)}$$

The ambient noise level 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). 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 not met the standard in case noise level at 24 hr. (Leq 24 hr.). In addition, in case both of high and low combine noise also 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-50,55,60, 64 and 65 dB(A). The figures clearly indicate that the noise levels at the site perimeter will have to be reduced to meet the standard until noise level approximate 64 dB(A). Therefore, 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 project coastal road. 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 AT NGA PITAT VILLAGE

Nga Pitat village

Receptor, r2		100	m	
Noise source,r1		15	m	
Log (r2/r1)		0.82		
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	50.0	55.0	60.0	64.0	65.0	
LP2-Effect of Source	73.3	33.5	38.5	43.5	47.5	48.5	
LOG(LP0)	1.8	1.8	1.8	1.8	1.8	1.8	
LOG(LP2)	1.9	1.5	1.6	1.6	1.7	1.7	
Combined Noise Level	73.5	60.7	60.7	60.8	60.9	61.0	70.0
Impact-Leq-1 hr High Combined Noise Level	76.0	72.7	72.7	72.7	72.7	72.7	
Increase	3.3	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	73.3	47.8	48.1	49.0	50.6	51.1	
Increase	25.7	0.2	0.5	1.4	3.0	3.5	3.0

APPENDIX 6E

PORT WASTE MANAGEMENT

APPENDIX 6E
PORT WASTE MANAGEMENT

1 Port Waste Management Plan

1.1 Objective

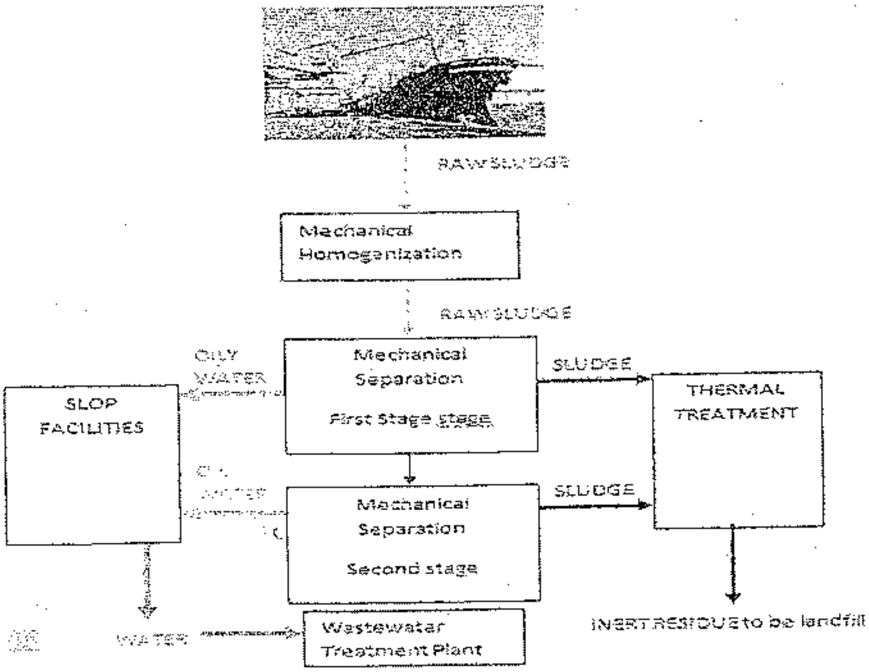
Estimate the amount of ship waste related to the expected number and types of ship calls and the anticipated impact, direct and indirect on Small Port. Chart direction with a view to eventually complying with relevant MARPOL as part of "Green Port" initiative in Small Port.

1.2 Types of Ships' Waste

- Ship Garbage both liquid and solid waste
- Sludge generated from heavy fuel oil consumption
- Cargo bilge which varies according to vessels

1.3 Means of Treating Ship Garbage

- Solid
- Incineration
- Landfill



1.4 Methodology

- Investigate availability of waste reception facilities both publicly and privately owned currently available in Dawei.
- Develop and formulae to estimate quantities of waste generated from vessels in Dawei.
- Identify the types of reception facilities that need to be developed or need participation by private investors.
- Determine the suitability of public or private undertaking in providing reception facilities from each type of waste.
- With respect to public undertaking, study feasibility of streamlining responsibilities among the government authorities, departments, agencies, etc, with a view to provide one-stop centre for port users.
- Study current structure of tariff, fees and charges and to propose restructuring with a view to providing reliable services to port users, including optimal usage of reception facilities, protecting the coastal environment and increasing revenue.

1.5 List of Harmful/Hazardous Substances Generated in the Port Area

(1) Port generated

Typically depends on the associated industries within the port area. Unless otherwise specified, no harmful/hazardous substances are envisaged in the port area.

(2) Ship generated

Shipboard generated hazardous substances include the following:

MARPOL Annex	Type	Remark
III	Harmful substances in packaged form	This is very rare and comes about only when there are packaged dangerous goods, containerized or otherwise, that have been damaged and need to be disposed of ashore.
V	Garbage	Domestic waste including the following: • Clinical waste • Used batteries • Expired fluorescent tubes

1.6 Ship Discharge Control and Provision of Reception Facilities for Ship Residues and Oily Mixtures According to MARPOL

(1) Brief introduction to MARPOL Conventions

Wastes and residues from ships include the following, which are generated during the service of the ship, and as categorized under the respective MARPOL Annexes as follows:

MARPOL Annex	Reception facilities for	Regulation for reception facilities
I	Oil	38
II	Noxious liquid substances in bulk	18
III	Harmful substances in packaged form	None
IV	Sewage	12
V	Garbage	7
VI	Ozone depleting substances & exhaust gas cleaning residue	None

Tabulated below are brief descriptions of the regulations

MARPOL Annex	Reception Facilities (RF) Description of port's responsibilities
I	Port's responsibilities covering: • RF outside special areas • RF within special areas • General requirements
II	RF and cargo unloading terminal arrangement
IV	Port's responsibility to provide facilities for reception of sewage, without causing delay to ships.
V	Port's responsibility to provide facilities for reception of garbage, without causing delay to ships.

Myanmar ratifies only the bare minimum of Annexes I and II, which are mandatory in any case.

Annex I : Oily effluents

Sources

The sources of oily effluents generated from ships consist mainly of the following:

- Impurities removed from bunker fuel oil
- Tank cleaning (bunker and cargo)
- Oily effluent water
- Lubricants and greases

Sludge (oil residue)

- MARPOL Annex I Regulation 12 requires every ship of 400 GT and above to be provided with sufficient tanks for receiving sludge.
- In accordance with requirements of Annex I, sludge can only be disposed of by:
  - Discharge to shore reception facilities through standard discharge connection;
  - Onboard incineration;
  - Burning in an auxiliary boiler suitable for burning sludge;
  - Other approved means as shown on the supplement to IOPP (International Oil Pollution Prevention) Certificate.
- Following will not be permitted on board:
  - Discharge from a sludge tank into the sea either directly or via oil filtering equipment;
  - Direct suction from the sludge tank to the oil filtering equipment;
  - Use of a sludge tank, as provided under Regulation 12, as an oily bilge water holding tank.

Bilge water

- Tanks for oily bilge water, if fitted, collects and allows the bilge water to settle and separate before being passed to the oil filtering equipment;
- From the oily water separator, the "clean" water will be discharged overboard and oil stored for subsequent disposal in bilge water tanks;
- Transfer from an oily bilge water tank to a sludge tank is permissible, but not vice versa;
- It is a statutory requirement for all vessels to keep on board "Oil Record Books", which document discharge and disposal of all oily water and waste.

Good practices for reception in ports include:

- Minimum speed of onboard pump delivery = 7.5 m^3/hour
- Waste oils shall be heated to temperature of up to 60°C
- Solid waste oils shall be packed in marked bags or non-returnable containers
- Tank-carrying vehicles and barges provided alongside the vessel to receive bilge water, sludge and solid waste oils shall be appropriately marked.
  - Sludge generated from heavy fuel oil and marine diesel oil / marine gas oil consumption
  - Bilge water from cargo holds and engine room

Annex II: Noxious liquid substances (NLS) in bulk

Definition of NLS-NLS means:

- Any substance indicated in the Pollution Category column of chapter 17 or 18 of the International Bulk Chemical Code; or
- Provisionally assessed under the provisions of regulation 6.3 of MARPOL Annex II, as falling into category X, Y or Z.

Categorization of NLS

Per Regulation 6, NLS discharged into the sea from tank cleaning or de-ballasting operations are divided into 3 categories as follows:

Category	Level of hazard #	Restriction on discharge into the marine environment
X	Major hazard	Prohibition
Y	Hazard	Limitation on the quality and quantity
Z	Minor hazard	Less stringent restrictions on the quality & quantity

: Hazard deemed to be presented to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea.

Other regulations directly and indirectly relevant to waste reception:

Regulation	Page	Description
12	226	Pumping, piping, unloading arrangements and slop tanks
13	228	Control of discharges of residues of NLS
16	234	Measures of control

Annex IV : Sewage

Sewage includes:

- Drainage (black water) and other wastes from any form of toilets, urinals, and lavatory scuppers;
- Drainage (grey water) consisting of wastewater from showers, sinks, laundry and galleys including contaminants such as dental and medical wastes, cooking oil and grease, pesticides, detergents, metals, and cleaners from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises;
- Drainage from spaces containing living animals;
- Other waste waters when mixed with the drainage defined above.

Vessel disposing of sewage in port shall have a pump delivery rate of 7.5 m^3/hour or higher.

Black water

Black water includes all raw sewage produced on board. Under MARPOL Annex IV:

- Discharge of raw sewage (black) on the "high seas" is permitted;
- Only treated sewage may be discharged within 12 nautical miles of land;
- No discharges whatsoever are allowed within 4 nautical miles of land.

Grey water

- Grey water consists of wastewater from showers, sinks, laundry and galleys.
- Present in the wastewater may be contaminants such as dental and medical wastes, cooking oil and grease, pesticides, detergents, metals and cleaners.
- With the exception of the EU and some other countries, MARPOL does not restrict grey water discharges.

Annex V: Garbage

Garbage means all kinds of victual, domestic and operational waste, generated during the normal operation of the ship and liable to be disposed of continuously or periodically. It includes the following:

- Maintenance waste (such as soot, machinery deposits, scraped paint, deck sweeping, wiping wastes, rages etc.).
- Dry garbage including domestic wastes such as paper products, textiles, glass, rags, bottles, plastics, etc.
- Wet garbage including food waste.
- Cargo associated waste, which refers to materials such as dunnage, pallets, shoring, lining and packing materials, plywood, paper, cardboard, wire and steel strapping etc. General cargo ships generate the most cargo associated waste because they usually need a lot of wood to secure the cargo.
- Cargo residues or the remnants of any cargo remaining on board, in cargo holds or tanks after unloading procedures and completion of cleaning operations including excesses and spillage.

Means of treating ship's garbage:

- Incineration
- Landfill

Food waste

- Ships are not allowed to discharge food waste of any sort when:
  - Within 12 nautical miles of land in Special Areas
  - Within 3 nautical miles of land in all other areas

Per MARPOL Annex V Regulation 1 (3) definition, special area means a sea area where for recognized technical reasons in relation to the oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required, and shall include those listed in Regulation 5.

Food waste discharge requirements per MARPOL Annex V:

Type	Disposal outside special areas	Disposal within special areas
Not comminuted or ground	>12 nautical miles from nearest land	>12 nautical miles from nearest land
Comminuted or ground	>3 nautical, miles from nearest land	>12 nautical miles from nearest land

Three broad management systems on board ships:

- Incineration;
- Diversion of food commuter output to a suitable sewage treatment plant or a holding tank for subsequent discharge to shore or sea;
- Retention of untreated or partially treated food waste onboard in storage facilities.

1.7 Daily Generation Rate

(1) Sludge

- Heavy fuel oil: about 2% of daily consumption
- Marine diesel oil: about 0.5% of daily consumption

(2) Food and domestic waste: About 3 kg per person

(3) Cargo associated waste

Vessel type	Daily generation rate (kg/day)
Bulk carriers / OBO-carriers	8.2
Containerships	1.4
Passenger ferries	2 / person
General cargo ships	49.3
Reefer carriers	22.2
Tankers	0.01

APPENDIX 6F

CONTINGENCY PLAN

APPENDIX 6F

CONTINGENCY PLAN

Detailed plans for oil spill and other emergencies include the following:

1. Risk assessment
2. Response strategy
   - Address all discharges regardless of severity
   - Rope in outside contractors for assistance as necessary
3. Distribution of responsibilities
   - Designate a qualified oil discharge Response Coordinator (RC)
4. Response activities

4.1 In the event of a spill, the first priority is to:

- Stop the flow
- Shut off all ignition sources
- Contain, control and mitigate the discharge

Actions to be performed to respond to an oil spill are broken into different phases as described below.

4.2 Discharge Discovery and Source Control

4.3 Assessment and Notifications

Control and Recovery

The initial actions taken will depend on whether the oil has reached water. All effort will be made to prevent oil from reaching water.

4.4 Disposal of Recovered Product and Contaminated Response Material

- The RC ensures that all contaminated materials classified as hazardous waste are disposed of in accordance with all applicable solid and hazardous waste regulations.

4.5 Termination

The RC ensures that cleanup has been completed and that the contaminated area has been treated or mitigated according to the applicable regulations.

5. Discharge notification

- Instructions and phone numbers for reporting to the National Response Center and other authorities are to be displayed at:
  - Prominent and strategic locations at the site
  - Storage shed containing the emergency response equipment

- Any discharge to water must be reported immediately to the National Response Center. The Response Coordinator must ensure that details of the discharge are fully recorded.

6. Response resources and preparedness activities

6.1 Equipment, Supplies, Services and Manpower

6.2 Communications and Control

- A central coordination center needs to be set up in the event of a spill. To ensure continuous communication with responders, authorities and other interested parties, a variety of fixed and mobile communication equipment (telephone, fax, cell phones, two-way radios, and computers) will be necessary.

6.3 Training Exercises and Updating Procedures

Ongoing training program is to be established and maintained to ensure that personnel responding to oil spills are properly trained and that all necessary equipment is available to them. The program includes on –the-job training on the proper deployment of response equipment and periodic practice drills.

Proposed Spill Control Equipments

The primary equipment for first line oil spill response includes:

- Oil containment boom

Cost effective type is available in a range of sizes from 15 cm to 90 cm in diameter. There are also air-inflated and self-inflating types.

- Oil skimmers

It normally comes complete with pump, thrusters, deployment crane and diesel hydraulic power packs, with capacity of up to 250 m^3/hour.

- Response boats

Emergency response boast come in a variety of sizes and towing capacities. Modern boats are manufactured from long lasting 100% marine grade aluminum and have a low draft profile for superior maneuverability. The flat deck design maximizes cargo capacity and equipment accessibility, while the full opening bow ramp makes deployment and retrieval of equipment simple and efficient. High-powered,

efficient gasoline or diesel engines minimize response time and maximize towing capacity. Most are equipped with davit cranes, skimmers, towable tanks and containment boom for a complete oil spill response package.

Proposed Detection Systems for Ship Emission

Under current technology, there is no detection system for ship emissions. There is however ways and means of monitoring and controlling ship emissions.

- **Carbon dioxide (CO_2)**

Both IMO and BIMCO have agreed on EEDI (Energy Efficiency Design Index), it serves as mandatory fuel-efficiency too at design stage of new ships requiring all new ships, that run on diesel engines, above 400 GT built globally after a certain date to meet a minimum level of fuel efficiency related to a reference line. It is a complex formula that takes into account:

- Emissions of both main and auxiliary engines;
- Power take in;
- Power reduction of both main and auxiliary engines due to innovative and efficient technology;
- Transport work

This formula can be simplified into EEDI = CO_2 emission/transport work

- **Sulfur oxide (SO_x)**

There are two methods of controlling SO_x emission, namely input and output.

> **Input**

Sulfur content is highest (upto 4%) in IFO, lower in MDO and lowest in MGO (down to as little as 0.1%). Some regions, including North America and Europe, have already set SECA (Sulfur Emission Control Areas) mandating use of LSF (low sulfur fuel), or MDO and MGO.

> **Output**

There are devices that can be installed in funnel uptake to filter out SO_x. Its drawback includes large footprint and high costs of capital outlay, maintenance and waste disposal. Thus input control by sulfur content is still the better option and widely practices.

- **Nitrogen oxide (NO_x)**

NO_x is produced through chemical reaction with nitrogen in the air and cannot be reduced through use of "clean" fuel. New technology is available to improve engine design and install special devices in the engines to reduce NO_x emission.

APPENDIX 6G

CALCULATION OF DISPERSION OF FUGITIVE DUST DURING DECOMMISSION

APPENDIX 6G

CALCULATION OF DISPERSION OF FUGITIVE DUST DURING DECOMMISSION

(1) Small Port

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)

= 234 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

= 124 acres

Q = the quantity of dust dispersion into ambient air = 1388,888.9 milligrams per sec

as follows:

Principle: United States Environmental Protection Agency (U.S. EPA) studied and collected information about emission factor (AP-42 U.S. EPA. 2005). This information can summarized that concentration of dust diffusion during construction period depends on soil condition, moisture content in soil, and wind speed and direction. U.S. EPA. has set the Emission Factor for common project during decommission activities at 1.2 tons/acres/month

Assume that the period of project decommission is 30 days/month with 8 working hours per day

Area of onshore small port = 100 acres

Q = 100 acres x 1.2 ton/acre/ month
= 120 ton/month

Calculate in case of working period is 30 days/month with 8 working hours per day

Therefore: Q = 120 ton/month

$= 120 \times 10^9$ milligram/(1 month =

30 day x 8 hour x 60 minute x 60 second)

$= 120 \times 10^9$ milligram / 864,000 second

= 1388,888.9 milligram / second

Therefore; C = (1388,888.9)/ (234*2.1*1,500)

= 0.188426 mg/m^3

= 188.43 $\mu g/m^3$

The calculations were made in two cases-No Control Case and Control Case. The background ambient TSP of 110.81 $\mu g/m^3$ and 79.28 $\mu g/m^3$ was used in the calculations. This background TSP was 24-hr average TSP measured at Nga Pitat and Sakhanthit 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 Nga Pitat Village, $\mu g/m^3$**	**Total TSP combined with Sakhanthit Village, $\mu g/m^3$**
No Control	188.43	299.24	267.71
Control 75% suppression	47.11	157.92	126.39

It can be seen that even without control the total ambient TSP level will be much higher than the control target of not exceeding 230 $\mu g /m^3$ in both Nga Pitat and Sakhanthit Villages. Therefore, the mitigation measure to control fugitive dust must be implement such as water spraying can be reduce 75% efficiency. With control target, TSP level will be much higher than the control target of not exceeding 230 $\mu g /m^3$ (157.92 and 126.93 $\mu g /m^3$, respectively).

As the nearest receptors in Nga Pitat and Sakhanthit Villages are about 2.64 and 1.51 km away to the north and south of the decommission site, the impact of fugitive dust on the receptors will be smaller than the level at the perimeter of the decommission and land reclamation on the 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, 2,640 m (for Nga Pitat Village), 1,510 m (for Sakhanthit village), 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:

Total noise level $Lp_{total} = 10 \log\left(\sum_{i=1}^{n} 10^{Lpi/10}\right)$ ....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 ambient noise level at Sakhathit Village measured during January 25-28 January, 2015 and October 18-21,2014 was 56.8-64.9 dB(A) Leq.-24 hr. The ambient noise level in Leq.-1hr varied from 41.5 to 71.4 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

1) Nga Pitat Village

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.

2) Sakhanthit Village

Table 2 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 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

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).

2) Sakhanthit 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 70-80 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 Small Port Site. This requirement will have to be prescribed in the contract. ***Table 2*** presents data on noise reduction effectiveness of various materials conventionally used in construction.

TABLE 1

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR AT NGA PITAT VILLAGE

Nga Pitat village

Receptor, r2	2,640	m
Noise source,r1	15	m
Log (r2/r1)	2.25	
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		

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	47.9	47.9	44.9	25.1	30.1	35.1	40.1	45.1	
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	1.5	1.6	1.7	
Combined Noise Level	60.9	60.9	60.8	60.7	60.7	60.7	60.7	60.8	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	50.7	50.7	49.5	47.6	47.7	47.8	48.3	49.5	
Increase	3.1	3.1	1.9	0.0	0.1	0.2	0.7	1.9	3.0

TABLE 2

CALCULATIONS OF AMBIENT NOISE LEVELS AT THE RECEPTOR AT SAKHANTHIT VILLAGE

Sakhanthit village

Receptor, r2	1,510	m
Noise source,r1	15	m
Log (r2/r1)	2.00	
Noise level at r2, Lp1	Source-20x(Log(r2/r1)	
Ambient noise level,Lp2	64.9 dB(A) Leq-24 hr.	
-Low	41.5 dB(A) Leq-1 hr.	
-High	71.4 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	52.7	52.7	49.7	29.9	34.9	39.9	44.9	49.9	
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	1.5	1.5	1.6	1.7	1.7	
Combined Noise Level	61.3	61.3	61.0	60.7	60.7	60.7	60.8	61.1	70.0
Impact-Leq-1 hr									
High Combined Noise Level	71.5	71.5	71.4	71.4	71.4	71.4	71.4	71.4	
Increase	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Low Combined Noise Level	53.0	53.0	50.3	41.8	42.4	43.8	46.6	50.5	
Increase	11.5	11.5	8.8	0.3	0.9	2.3	5.1	9.0	3.0

APPENDIX 8A

SUB-PLAN FOR CEMP

APPENDIX 8A

SUB-PLANS FOR CEMP

APPENDIX 8A-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. **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

Element	Content
	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. • 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).
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	• Onshore and offshore areas within the project site.
Responsible Agency	• Project developer and construction contractor.
Estimate Cost	• Include on pre-construction and construction cost

APPENDIX 8A-2

MANGROVE 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

Element	Content
	• Consider and monitor on mangrove rehabilitation area due to clearance activities for proposed project site - Frequency : 2 times/month during pre-construction/construction phase
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
Estimate Cost	• Approx. 6,000 USD Lumpsump for Flora and Fauna species investigate before land clearance

APPENDIX 8A-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 leaving the project site are following the measures prescribed to reduce dust emissions.</td></tr>
</table>

Element	Content
	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. **Vessel** • Regularly maintain engines in good conditions. • Use low sulfur diesel fuel

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 (closest sensitive receptors include Nga Pitat and Sakhanthit Villages) 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.
	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 Port Authorities Department.
Area	• Project sites. • Closest villages (sensitive receptors include Nga Pitat and Sakhanthit Villages).
Responsible Agency	• Project developer. • Air quality monitoring agency • Construction contractor.
Estimate Cost	• 800 USD/station/time

APPENDIX 8A-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 Small Port 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>Small Port</th></tr>
<tr><td>Site Development</td><td>Removal of vegetation, top soil, engineered filling, site compaction, mechanical works and dredging 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 and 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
<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>
</td></tr>
</table>

Element	Content
	U.S. EPA Standard: Noise level not higher than 70 dB(A) $L_{eq\text{-}24\ hour}$
Mitigation Measures	**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.
Monitoring	• Undertake local, 1 time per three months monitoring of noise level in the vicinity of construction sites and Villages (closest sensitive receptors include Nga Pitat and Sakhanthit Villages) for the duration of construction works, and in response to complaints, based on the following parameters: - L_{max}, - $L_{eq\ 1\ hr}$,

Element	Content
	- $L_{eq\ 24\ hr}$, - 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 Port Authorities Department.
Area	• Project sites. • Closest villages (sensitive receptors include Nga Pitat and Sakhanthit Villages).
Responsible Agency	• Project developer • Contractor • Sub-contractors
Estimate Cost	• 700 USD / station/time

APPENDIX 8A-5

DREDGING AND DISPOSAL MANAGEMENT PLAN

Element	Content
Objective	To ensure that dredging activities do not create or minimize impact to both coastal water and marine ecology.
Performance Indicators	Qualities of the coastal water during dredging activities compared with the applicable coastal water quality standards.
Sources	• Dredged material (about 5.2 million cu.m.).
Applicable Standards	**Coastal Water Quality Standard:** • Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008 - DO = >4 mg/L - Suspended solid = < 50 mg/L - Nitrate-Nitrogen = <60 µg/L
Mitigation Measures	**Design Concept** The Contractor will prepare detailed design of dredging and disposal activities. The proposed design concept is based on the principle dredging and disposal activities of as briefly described below: • **Vessel for Dredging Activities** • Disposal vessels should be equipped with accurate positioning systems, e.g. with AIS (Automatic Identification System), which shall be switched on during disposal operations. Disposal vessels and operations should be inspected regularly to ensure that the conditions of the disposal permit are being complied with, and that the crews are aware of their responsibilities under the permit. Ships' records and automatic monitoring and display devices (e.g. black-boxes), where these have been fitted, should be inspected to ensure that the disposal is taking place at the specified site. • The following typical methods are available to reduce plume generation when dredging with a HD (Hopper Dredger): - Optimize trailing velocity, suction mouth and pump discharge rates. This results in less spillage from the drag head. - Limit overflow and/hopper filling. This is sometimes imposed on dredging operations but slows the dredging process, and increases costs significantly. - Reduce intake water. This results in more in-situ material being taken into the dredge. This increases costs as the fuel requirement per m^3 rises. The effect on the production rate is controlled by pumping at a higher rate. - Reduce air content in the overflow mixture. • The following typical methods are available to reduce plume generation when dredging with a CSD (Cutting Suction

Element	Content
	Dredger): - Optimize cutter speed, swing velocity and suction discharge. This reduces the spill rates at the cutter head, as more in situ material is taken up at the cutter head. This method will also optimize production rates and it should be the most cost effective method of dredging with a CSD. - Optimize cutter head design. This method requires a high level of detail of the soil characteristics to be removed. The method also optimizes production rates and it should be the most cost effective method of dredging with a CSD. • **Dredging** • Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments; • Contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities. • The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time. • Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea. • In case of damage on sediment pipe, the dredging activities must be stopped. • Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area. • Check and maintenance all machine and equipment to prevent oil leakage into sea. • Check and maintenance HD and CSD to ensure that no sediment overflow into the sea. • Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area. • The monitoring results on coastal water quality must be sent to all concerned agencies. • **Disposal** • Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology. • Use the dredged materials for on-land disposal within the Early Industrial to the maximum extent.

Element	Content
	• **Marine Ecology** ➢ Apply the same mitigation measures as recommended for coastal water quality. ➢ Provide information on the construction schedule and construction area to local fishermen living near the port. ➢ Coordinate with local authorities to protect coral and other marine resources.
Monitoring	• Once a month collection of 10 sampling stations of coastal water and marine ecology at location around access channel especially during dredging activities • Once a month collection of 10 sampling stations (same as for coastal water). The Parameter includes Plankton, Benthos, fishery and marine protected species
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on dredging and disposal management, and submit to MONREC and Port Authorities Department.
Area	• Project sites. • Closest villages (sensitive receptors).
Responsible Agency	• Project developer • Contractor • Sub-contractors
Estimate Cost	• 500 USD /station/time for coastal water quality measurement • 1,000 USD/station/time for marine ecology and protected species.

APPENDIX 8A-6

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. • The Contractor will propose methods of waste transport and disposal. • The Contractor will then prepare an action plan for waste

Element	Content
	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. **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,

Element	Content
	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 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.
Monitoring	Monitoring of the waste management performance will be carried out through quick daily site inspections and detailed

Element	Content
	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 Port Authority 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 8A-7

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 273 persons at peak of construction, estimated volume about 41 m^3/d. • Construction wastewater, estimated volume about 42 m^3/d. • Storm water with a return period of 5 years at small port approx. 84,218 m^3.
Applicable Standards	**Effluent quality standards:** • General Guideline of Site Runoff and Wastewater Discharges (construction phase), National Environmental Quality (Emission) Guidelines, 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 Small Port 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 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

Element	Content
	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. - 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. • **Construction Wastewater** - Construction wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into the retention pond.
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 Port Authorities Department.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (wastewater management company)
Estimate Cost	• 600 USD/station/time

APPENDIX 8A-8

HAZARDOUS WASTE MANAGEMENT PLAN

Element	Content
Objectives	• To minimize all types of hazardous wastes generated at the construction sites, particularly the Small Port 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.
Reporting	• Report immediately to the relevant authorities any incident where harmful waste material is accidentally released to the environment.

Element	Content
	• 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 Port Authorities Department.
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 8A-9

NAVIGATION MANAGEMENT PLAN

Element	Content
Objective	• To minimize potential impacts from navigation activities to the local fishermen during pre-construction/construction phases
Performance indicators	• Number of navigation accident in the identified impact areas • Number of vessels during the construction period.
Sources	• Navigation disturbances could be caused by haulage of construction materials, equipment, and dredging activities. • Potential impact area: - Small Port area
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential navigation impacts on navigation route of local fishermen near the worksites. • Minimize as far as reasonably practicable, potential navigation disruptions to the operation of the navigation route due to the transport of materials to and dredging activities.
Mitigation Measures	**Design Concept** **1) Vessel Traffic Management** A comprehensive Vessel Traffic System and Management Information System (VTS MIS) will be required for this port. This will include: □ computing hardware □ communications (voice and data) equipment □ surveillance technology □ technical support infrastructure such as power, environmental □ conditioning, security, and Human Machine Interfaces (HMI) □ the VTS MIS systems functionality, including command and control □ capability, COP generation and management, integrated sensor control, □ disaster recovery, and record and replay, both for training purposes and □ legislated incident analysis and reporting requirements All elements of port and landside logistics, security, and traffic management will be provided for through: □ detailing location and functionality of a central control room/tower □ sensor implementation, inclusive of radar, AIS, CCTV, telephone, radios, AIS AtoN's, and MetOcean equipment

Element	Content
	□ multi-sensor fusion VTS system to provide the Common Operating Picture □ Port Management Information System for logistics/scheduling and implementation and management of charging mechanisms □ associated IT infrastructure □ Integration as necessary with other tools such as Portable Pilotage Units, Laser Docking Systems, Mooring Management Systems, Quick Release Hooks, etc. **2) Sea Traffic** • Install signs and warning signs that can be clearly seen (200 meter from the construction area) to show the boundary of offshore construction areas. • All vessels operating in nighttime must receive special permits. • All concerned safety rules have to follow the laws related to transportation section of Myanmar. • Provide information on the boundaries of offshore construction areas to all fishing boat operators. • Train all concerned crew on navigation safety in the offshore construction areas. • Carry out routine check and maintenance of vessels to follow safety instructions. • Prepare and maintain readiness for implementing an emergency plan related to marine accidents.
Monitoring	• Monitor number of vessel and boat two times per year at small port area. • Monitor navigation accident situation related to the project every day at / or nearby the Small Port area.
Reporting	• Monthly report on navigation conditions, including any accidents. • Twice a year reporting on navigation performance, and submission to MONREC and Port Authorities Department.
Area	• Project sites (especially at the Small Port area)
Responsible Agency	• Project developer
Estimate Cost	• 500 USD/station/time for monitoring number of vessel and boat at small port area throughout pre-construction and construction phase • Cost for monitoring navigation accident situation related to the project include on cost for pre-construction and construction

APPENDIX 8A-10

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; - Investigate the capacity of intersections on haulage routes to minimize impact on intersection operations by heavy vehicles

Element	Content
	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. **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;

Element	Content
	• 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) small port area and 2) at Nga Pitat 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 Port Authorities Department.
Area	• Local roads (at Nga Pitat Village) and Small Port 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 8A-11
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 OHS 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 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

Element	Content
	management. • Develop emergency response procedures, and implement in the event of accidents and emergencies. • Provide fire and life safety measures, including ventilation, smoke extraction and firefighting systems for the duration of the construction phase. **During Construction** • The implementation of the 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.
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. • 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

Element	Content
	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 Port Authorities.
Area	• Project sites.
Responsible Agency	• Project developer • Construction workers • Sub-contractors (waste management)
Estimate Cost	• include on cost for pre-construction and construction

APPENDIX 8A-12

NATURAL RESOURCE USED MONITORING PLAN

Element	Content
Objective	To ensure that villagers (PAPs) 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 cause of livelihood affect to Villagers
Applicable Standards	All complaints about construction about 15 months period
Mitigation Measures	**Pre-Construction** • 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
Monitoring	• Report community consultation's activities and on consultation. • Training and promotion household account record. • Survey to collect information on local concerns, issues, and problems of the communities at least 1 time per 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 Port 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	• 200,000 USD lump sump throughout pre-construction/construction phase

APPENDIX 8A-13

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.

Element	Content
	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. **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.

Element	Content
	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.
Monitoring	• 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 8A-14

LAND ACQUISITION MANAGEMENT PLAN

Element	Content
Objectives	• To obtain the land for development proposal. • To document and inform project stakeholders about how the land acquisition will be proceed and used for development purpose. • To address policy, process, regulatory, etc. related to land acquisition. • To ensure that all PAPs are fairly compensated for land expropriation.
Performance Indicator	• Number of land owners (understand about policy, process and regulatory) who legally follow the process of land acquisition.
Mitigation Measures	• All Project Affected Persons (PAPs) perceive and understand about land acquisition process. • All PAPs transfer their own land to the Project developer prior to construction phase. • All PAPs are fairly compensated based on government price of land.
Monitor	• Visit PAPs and question about land acquisition for project development. • Inspect all PAPs who transfer the land for project development, showing certificate, or transaction documents.
Reporting	• Results of inspections will be included in the environmental monitoring reports and submitted to MONREC and Local/Provincial Authorities Department (Land Department).
Area	• Land of PAPs.
Responsible Agency	• Project developer's representative (for operating land acquisition process). • Land Department and other related authorities.
Estimate Cost	• Follow to cost that recommend by Committees.

APPENDIX 8A-15

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.
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.

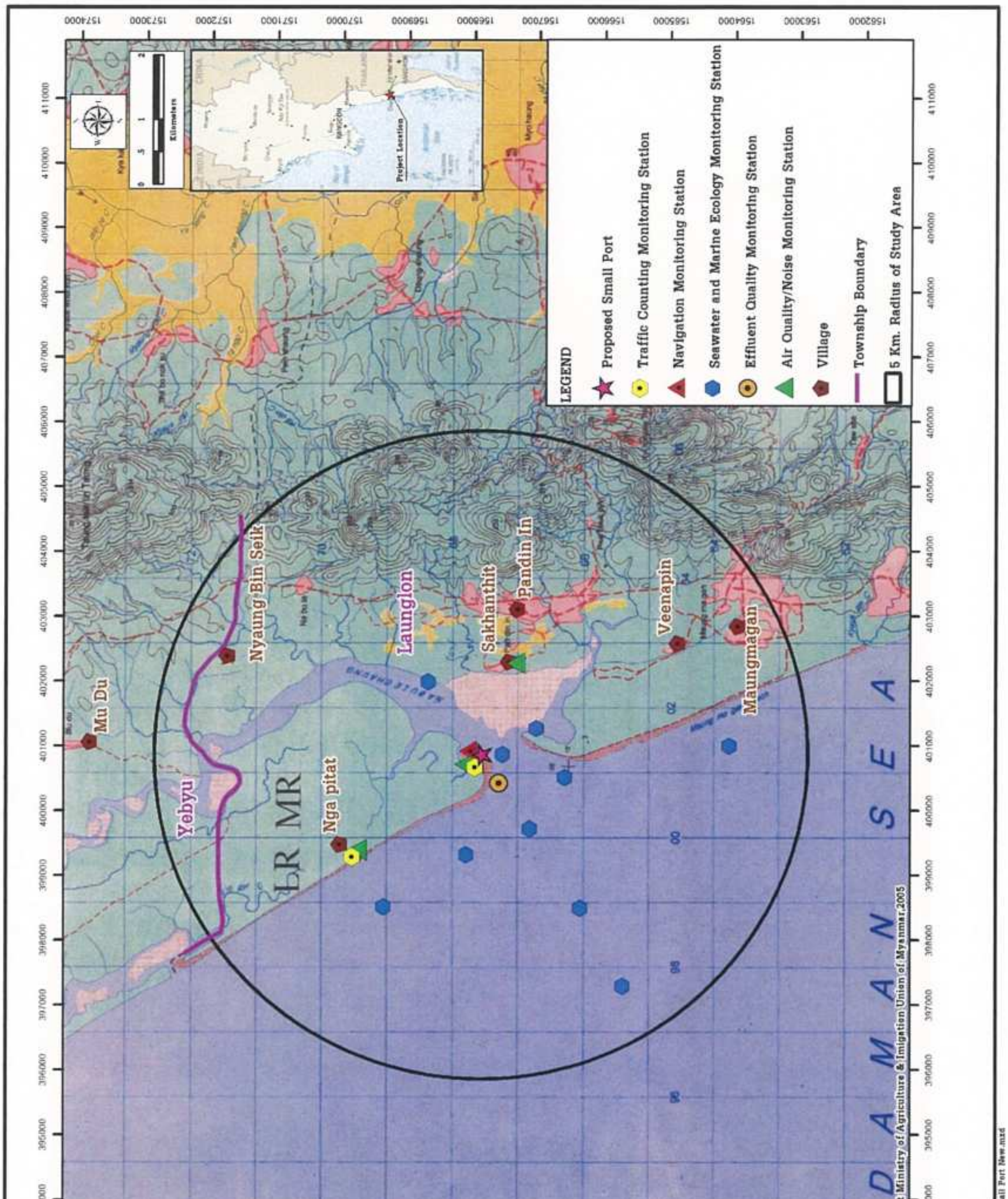


FIGURE 1 : MONITORING STATION DURING PRE-CONSTRUCTION / CONSTRUCTION PHASE

APPENDIX 8B

SUB-PLAN FOR OEMP

APPENDIX 8B

SUB-PLANS FOR OEMP

APPENDIX 8B-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	• Approx. 200,000 USD lump sump for planting and maintenance in reforestation area during 1st-10th of operation phases. • 1,500 USD / year for support local villagers (from Nga Pitat, Sakhanthit and Nyua Binseik Villages) in rehabilitation activities (during 1st-10th years during operation phase, total cost 15,000 USD)

APPENDIX 8B-2

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

Element	Content
Objectives	• 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.
Performance Indicators	• 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.
Sources	The construction could adversely affect local air quality in and near the construction sites. The issues will be: • Exhaust emissions from Small Port Carrier by diesel engines/vehicles.
Applicable Standards	Applicable ambient air quality standards related to exhaust emissions are as follows: **Table 1 –Air Quality Goals** (see below)
Mitigation Measures	• Use low sulfur diesel fuel • Check and maintenance vehicle regularly to minimize the exhaust emission. • Speed reductions by vessels approaching a port can result in significant reductions in nitrogen oxide emissions. • Control and formulate monitoring program on air quality throughout operation period.
Monitoring	**Ambient Air Quality** • Undertake local, 2 times per year monitoring of ambient air quality in Villages (closest sensitive receptors include Nga Pitat and Sakhanthit 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 (SO_2) - Nitrogen Dioxide (NO_2) - Carbon Monoxide (CO)
Reporting	• Twice a year reports for submission to MONREC and Port Authorities Department.
Area	• Closest sensitive receptors include Nga Pitat and Sakhanthit villages
Responsible Agency	• Project developer (Monitoring Team)
Estimate Cost	• 800 USD/station/time

Table 1 –Air Quality Goals

Pollutant	Not to be Exceeded
PM-10	150 $\mu g/m^3$ (24 hr average)
	50 $\mu g/m^3$ (annual average)
SO_2	125 $\mu g/m^3$ (24 hr average)
NO_2	150 $\mu g/m^3$ (24 hr average)
CO	200 $\mu g/m^3$ (1 hr average)
	43,200 $\mu g/m^3$ (1 hr average)

APPENDIX 8B-3

NOISE MANAGEMENT PLAN

<table>
<tr><th>Element</th><th>Content</th></tr>
<tr><td>Objective</td><td>To minimize noise level of operation phase.
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 operation activities compared to the targets.
Net ambient noise level compared to the applicable ambient noise standards.</td></tr>
<tr><td>Sources</td><td>Operation activities creating noise at the Small Port site are shown in the table below:
<table>
<tr><th>Operation Activities</th><th>Small Port</th></tr>
<tr><td>Operation of heavy operation equipment/materials/tools/ships/cargo boats</td><td>Transportation of equipment and materials for related projects in initial phase development.</td></tr>
</table></td></tr>
<tr><td>Applicable Standards</td><td>Noise performance will be evaluated the following standards:
National Ambient Noise Level Standards:
- Ambient noise level standard, Myanmar National Environment Quality (Emission) Guidelines, (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.
<table>
<tr><th></th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr>
<tr><td>Receptor Daytime</td><td>Daytime
07:00 - 22:00</td><td>Nighttime
22:00 - 07:00</td></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>Small Port
Implemented to control noise level at lower than 85 dB (A) at 1 m from the noise sources and lower than 70 dB (A) at the port fence line.
Project Access Road/Navigation
Limit speed of vehicles at the Project site at 40 km/hr. and speed of ships.
Install temporary noise barriers, if necessary, to minimize noise impacts on sensitive areas
Transportation shall be carried out only during the day time.
Always maintain road surface in good condition.</td></tr>
</table>

Element	Content
Monitoring	• Undertake local, 2 time per year monitoring during 1st – 5th year of noise level in at Villages (closest sensitive receptors include Nga Pitat and Sakhanthit 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: - 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 vehicle noise level. • The Developer is to implement measures to receive and respond to complaints about noise made at any time during the operation phase of the Project. Such measures may include a complaints management and correction action system developed and incorporated in this OEMP. 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 operation activities 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 project developer 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 Port Authorities Department.
Area	• Closest sensitive receptors include Nga Pitat and Sakhanthit villages
Responsible Agency	• Project developer (Monitoring Team)
Estimate Cost	• 700 USD/station/time.

APPENDIX 8B-4

MAINTENANCE DREDGING AND DISPOSAL MANAGEMENT PLAN

Element	Content
Objective	To ensure that maintenance dredging activities are not create or minimize impact to both coastal water and marine ecology.
Performance Indicators	Qualities of the coastal water during maintenance dredging activities compared with the applicable coastal water quality standards.
Sources	• Dredged material during maintenance period
Applicable Standards	**Coastal Water Quality Standard:** • Marine water quality criteria for the ASEAN Region for aquatic life protection, 2008 - DO = >4 mg/L - Suspended solid = < 50 mg/L - Nitrate-Nitrogen = <60 µg/L
Mitigation Measures	**Design Concept** The Developer will prepare detailed design of maintenance dredging and disposal activities. The proposed design concept is same as during operation phase as described below: • **Vessel for Dredging Activities** • Disposal vessels should be equipped with accurate positioning systems, e.g. with AIS (Automatic Identification System), which shall be switched on during disposal operations. Disposal vessels and operations should be inspected regularly to ensure that the conditions of the disposal permit are being complied with, and that the crews are aware of their responsibilities under the permit. Ships' records and automatic monitoring and display devices (e.g. black-boxes), where these have been fitted, should be inspected to ensure that the disposal is taking place at the specified site. • The following typical methods are available to reduce plume generation when dredging with a HD: - Optimize trailing velocity, suction mouth and pump discharge rates. This results in less spillage from the drag head. - Limit overflow and/hopper filling. This is sometimes imposed on dredging operations but slows the dredging process, and increases costs significantly. - Reduce intake water. This results in more in-situ material being taken into the dredge. This increases costs as the fuel requirement per m^3 rises. The effect on the production rate is controlled by pumping at a higher rate. - Reduce air content in the overflow mixture.

Element	Content
	• The following typical methods are available to reduce plume generation when dredging with a CSD: - Optimize cutter speed, swing velocity and suction discharge. This reduces the spill rates at the cutter head, as more in situ material is taken up at the cutter head. This method will also optimize production rates and it should be the most cost effective method of dredging with a CSD. - Optimize cutter head design. This method requires a high level of detail of the soil characteristics to be removed. The method also optimizes production rates and it should be the most cost effective method of dredging with a CSD. • The following typical methods are available to reduce plume generation when dredging with a Backhoe dredge. - Use of a visor over the bucket. This is a relatively cost effective method, but does reduce production rates and thus increase overall Project costs. - Use of a silt screen. Silt screen scan under certain conditions can be used to minimize the impact of spilled dredge materials. They need to be moved carefully, and can considerably slow down production rates. If they are not used correctly, they are ineffective. • **Dredging** • Use techniques to minimize adverse impacts on aquatic life from the re-suspension of sediments; • The project developer/contractor must establish the baseline coastal water quality around the dredging and disposal area by conducting daily monitoring program at least 3 months prior to dredging activities. • The dredging activities must be stopped if total suspended solid exceeds 50 mg/L at any time. • Check and maintenance sediment transfer pipe daily to ensure proper condition and prevent pipe damage cause of sediment spill into sea. • In case of damage on sediment pipe, the dredging activities must be stopped. • Prepare wave gauge, tide gauge, and anemometer to establish long term environmental information in this project area. • Check and maintenance all machine and equipment to prevent oil leakage into sea. • Check and maintenance HD and CSD to ensure that no sediment overflow into the sea.

Element	Content
	• Project Engineering should strictly control and prohibit contractor to dispose sediment from dredging activities into the sea and outside designated disposal area. • The monitoring results on coastal water quality must be sent to all concerned agencies. • **Disposal** • Avoid off shore disposal activities to prevent impact on coastal water quality and marine ecology. • Use the dredged materials for on-land disposal within the Early Industrial and for beach nourishment to the maximum extent. • **Marine Ecology** • Apply the same mitigation measures as recommended for coastal water quality. • Provide information on the operation schedule and area to local fishermen living near the small port. • Coordinate with local authorities to protect coral and other marine resources.
Monitoring	• Twice a year collection of 10 sampling stations of coastal water and marine ecology at location around access channel especially during maintenance dredging activities • Twice a year collection of 10 sampling stations (same as for coastal water). The Parameter include Plankton, Benthos, fishery and marine protected species
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on maintenance dredging and disposal, and submit to MONREC and Port Authorities Department.
Area	• Project site
Responsible Agency	• Project developer (maintenance Team)
Estimate Cost	• 500 USD /station/time for coastal water quality measurement • 1,000 USD/station/time for marine ecology and protected species.

APPENDIX 8B-5
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 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

Element	Content
	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 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.

Element	Content
	• 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.
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 Port Authority Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management company)
Estimate Cost	• Include of operation cost.

APPENDIX 8B-6

WASTEWATER (FROM ONSHORE AREA AND VESSELS) 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 2.4 m^3/d. • Storm water with a return period of 5 years at small port approx. 84,218 m^3.
Applicable Standards	**Effluent quality standards:** • General Guideline of Site Runoff and Wastewater Discharges (operation phase), National Environmental Quality (Emission) Guidelines (Final Draft), 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 Small Port 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: • **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 operation site should be surrounded by temporary fences to limit the amount of sediment that could be washed from the operation 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 operation 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 operation, the retention pond will be retained and used for wastewater management during the operational phase. • **Domestic Wastewater**

Element	Content
	- 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** - Operation wastewater will be mainly wash water. It may contain oil and grease and chemicals. The wash water that contains oil will be treated in a simple oil removal tank before combining with wash water from other sources. The wash water will be discharged into the retention pond. • **Ship Wastes** - The port operation office will need to enforce appropriate controls on the discharge of ship wastes in line with MARPOL. - In addition, the port operation office will need to prepare a contingency plan and establish an organization for implementing the plan including reporting system to effectively handle oil and chemical spillage incidents from ships.
Monitoring	• 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.
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on wastewater performance, and submit to MONREC and Port Authorities Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste 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 operation sites, particularly the Small Port 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.
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

Element	Content
	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 Port Authorities Department.
Area	• Project site
Responsible Agency	• Sub-contractor (Waste management company)
Estimate Cost	• include on operation cost

APPENDIX 8B-8

NAVIGATION MANAGEMENT PLAN

Element	Content
Objective	• To minimize potential impacts from navigation activities to the local fishermen during operation phase
Performance indicators	• Number of navigation accident in the identified impact areas • Number of vessels during the operation phase.
Sources	• Navigation disturbances could be caused by haulage of materials, equipment for related project in Early Industrial Phase, and maintenance dredging activities. • Potential impact areas: the area situated nearby small port
Management guidelines	• Take reasonable and practicable measures to avoid, or mitigate and manage the potential navigation impacts on navigation route of local fishermen near the worksites. • Minimize as far as reasonably practicable, potential navigation disruptions to the operation of the navigation route due to the transport of materials to and maintenance dredging activities.
Mitigation Measures	• The port will have a vessel traffic management system to ensure navigation safety and keep records of vessels calling at the port. • The navigation area will have adequate number of buoys and signs to clearly indicate the navigation channel and the port boundary.
Monitoring	• Monitor number of vessel and boat two time per year at small port area. • Monitor navigation accident situation related to the project every day at Small Port.
Reporting	• Monthly report on navigation conditions, including any accidents. • Twice a year reporting on navigation performance, and submission to MONREC and Port Authorities Department.
Area	• Project site (offshore area)
Responsible Agency	• Project developer
Estimate Cost	• 500 USD/station/time for monitoring number of vessel and boat at small port area throughout operation phase • Cost for monitoring navigation accident situation related to the project include on cost for operation.

APPENDIX 8B-9

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 Small Port 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 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.
Monitoring	• 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.
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 Port 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 8B-10

SHORELINE EROSION

Element	Content
Objective	To minimize erosion and accretion impact on the beach along two breakwaters.
Performance Indicators	Erosion and accretion rate of beach along two breakwaters.
Mitigation Measures	• Recheck and reclaim sand (bleach nourishment) on the eroded beach on the shoreline of Project site every year. • Based on limited physical and environmental information available, as well as engineering judgment, Regular shoreline monitoring is recommended to gain the necessary information and prepare the setback line or beach erosion protection with hard structure such as groynes if high erosion on the shoreline.
Monitoring	• Twice a year monitor on beach profile and bathymetric survey at 1 km north and south of beach along the port development • Monthly checking shoreline erosion at 5 km of beach along the port development
Reporting	• The results of monitoring will be presented in the monitoring reports. • Twice a year reporting on beach erosion, and submit to MONREC and Port Authorities Department.
Area	• Project site (shoreline)
Responsible Agency	• Project developer
Estimate Cost	• 750,000 USD lump sump (approx. 10,000 USD / year) for shoreline erosion control throughout operation phase • 10,000 USD / time for beach profile monitor yearly throughout operation phase

APPENDIX 8B-11

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	OHS 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 Small Port 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

Element	Content
	• Safety measures for the Small Port'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 Small Port 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.
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. • 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. 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

Element	Content
	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 8B-12

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 noise, air quality, navigation 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, education, health, religions, and occupation promotion 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.
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 Port

Element	Content
	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	• 240,000 USD lump sump for group interview or village forum at 5 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 8B-13

VESSEL TRAFFIC AND SAFETY MANAGEMENT SYSTEM

Element	Content
Objective	• To establish and develop a vessel traffic system, to build safe working condition of the environment and less effect on other vessel of traffic flow. • To prevent and minimize unexpected incidents/accident during operation phase of Small Port Project.
Performance Indicator	• Record of incidents/accidents.
Mitigation Measures	• Provide a training program/workshop.
Monitoring	• Monitor on traffic system (effectiveness and safety) within the small port and other vessel traffic system connected to the project area.
Reporting	• Results will be included in the environmental monitoring reports and submitted to MONREC and Port Authorities Department.
Area	• Within offshore area (project site and other vessel traffic system)
Responsible Agency	• Project developer (Navigation/traffic Team)
Estimate Cost	• include on operation cost

APPENDIX 8B-14

OPERATION STAFFMANAGEMENT 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 Small Port 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 Port Authorities Department.
Area	• Project site/or outside.
Responsible Agency	• Project developer (HR Team)
Estimate Cost	• include on operation cost

APPENDIX 8B-15

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 offshore).
Responsible Agency	• Project developer • Operation staff
Estimate Cost	• include on operation cost

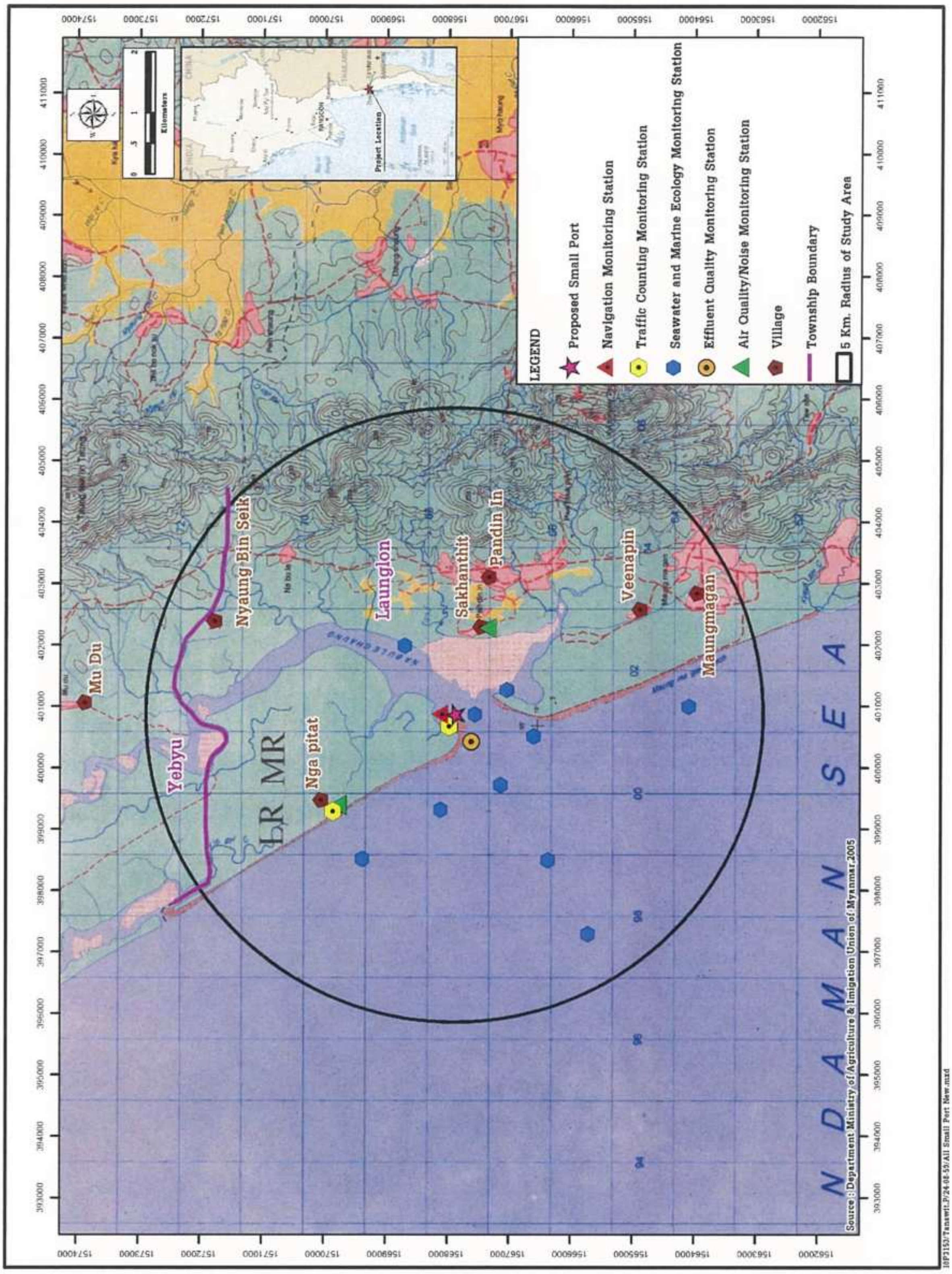


FIGURE 1 : MONITORING STATION DURING OPERATION PHASE

APPENDIX 8C

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATION

APPENDIX 8C

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATIOIN

A. Annual Budget during 15 months of Pre-construction and Constrution 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 (3 stations)	800	Station	1 time/three months (5 time during pre-construction/construction Phase)	3 stations at project site, Nga Pitat and Sakhanthit Village	12,000
	noise measurement (3 stations)	700	Station	1 time/three months (5 time during pre-construction/construction Phase)	3 stations at project site, Nga Pitat and Sakhanthit Village	10,500
	coastal water measurement (10 stations)	500	Station	1 time/ months (15 time during pre-construction/construction Phase)	10 stations at proposed approach channel and 1 km radius	75,000
	marine ecology measurement (10 stations)	1,000	Station	1 time/ months (15 time during pre-construction/construction Phase)	10 stations at proposed approach channel and 1 km radius	150,000
	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	2 station at project access road near Nga Pitat Village and Small Port Area	2,000
	navigation flows measurement (1 stations)	500	Station	2 times per year during pre-construction/operation phase	1 station at access channel	1,000
	flora and fauna field survey	6,000	Lumpsum	1 time before site clearance	100 acre of proposed project site and 42 acres at Project Access Road	6,000
2	OHS Management Plan	-	Include Construction Cost	Every day	Cosntruction Site and Surrounding Area	a
3	For natural resource used management and Village Forum	200,000	Lumpsum	Every day	At 5 affected villages	200,000
	TOTAL					**465,500**
	CONTINGENCY (APPROX. 10%)					**46,550**
	GRAND TOTAL					**512,050**

Remark : a = include on construction cost prepared by sub-contractor

APPENDIX 8C

PRELIMINARY ENVIRONMENTAL AND SOCIAL COST ESTIMATIOIN (CONT'D)

B. Annual Budget during Operation Phase (75 years, 50 years operation plus 25 years extensions)

No.	COST ITEMS	Unit Cost		Frequency	Sampling Station	Annual Budget During Operation Phase (US$)	
		US$	Units			From year 1 to year 5 of operaiton	From year 6 and throughout operation (total 70 years)
1	Environmental monitoring during the operation period						
	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 Village near Project Access Road and at Sakhanthit near Small Port Project	16,000	112,000
	noise quality (2 station)	700	Station	twice a year during 1st-5th year of operation phase and 1 time per year throughtout operation phase	at Nga Pitat Village near Project Access Road and at Sakhanthit near Small Port Project	14,000	98,000
	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
	coastal water measurement (10 stations)	500	Station	twice a year throughtout operation phase during dredging activities and after complete maintenance	10 stations at proposed approach channel and 1 km radius	5,000	70,000
	marine ecology measurement (10 stations)	1,000	Station	twice a year throughtout operation phase during dredging activities and after complete maintenance	10 stations at proposed approach channel and 1 km radius	10,000	140,000
	navigation flows measurement (1 stations)	500	Station	twice a year throughtout operation phase	1 station at access channel	5,000	70,000
	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 reforestation, rehabilitation and maintenance program (10 year	200,000	Lumpsump	during 1st-10th year of operation phase	at reforestation area	100,000	100,000
	support local villagers in rehabilitation activities (10 years)	1,500	time	during 1st-10th year of operation phase	at reforestation area	7,500	7,500
	Shoreline Erosion	750,000	Lumpsump	everyday	5 km of breakwater	50,000	700,000
	Beach Profile	10,000	time	Monthly	beach in front of project site and 5 km of breakwater	100,000	1,400,000
2	OSH 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	2,000	time	During 1st-5th of opration phase	at five affected village	10,000	-
3.2	Development Fund during 6th to throughout opeartion phase	1,000	time	During 6th-throughout opration phase	at five affected village	-	70,000
3.3	Village forum	3,000	Lumpsum	2 times per year during 1st-5th of opration phase and once a year throughout operation	at five affected village	30,000	210,000
	TOTAL					358,500	3,089,500
	CONTINGENCY (APPROX. 10%)					35,850	308,950
	GRAND TOTAL					394,350	3,398,450
							3,792,800

Remark : b = include operation cost prepared by project proponent

APPENDIX 9A

LIST OF PARTICIPANT

APPENDIX 9A-1

LIST OF PARTICIPANT DURING FIRST PUBLIC CONSULTATION

Name list of Concerned Authorities

Public Consultation Attendance List

Date 20 / 1 / 2017

စဉ်	အမည်	ဌာန	ရာထူး/တာဝန်	လက်မှတ်
1	U Thein Han	SWB	Sec...	
2	U. LINN ZAW HTWE	SWB	Member	
3	U Thet Oo	SWB	"	
4	U Aye Lwin	"	AIO	
5	U Khin Mg Zaw	"	S.O/DICA	
6	Mr. [illegible]	ITD		
7	Mr. Min Kyaw [illegible]	ITD	CTR	
8	Mr. [illegible]	TEAM		
9	[illegible]	TEAM		
10	Ms. Rattiya Ngampradit	TEAM	Socio-economic	Rattiya
11	Mr. [illegible]	TEAM	Environmental [illegible]	
12	Mr. Natt Dumkum	TEAM	Environmental Scientist	
13	Ms. Supichaya [illegible]	TEAM	Environmental Scientist	Supichaya
14	Sai Kyaw Tun Oo	TBS/TEAM	Socio-Economic	
15	Mr. Kritt Sammamchit	ITD.	Civil Engineer	
16	Mr. Phaiboon Nitchamnan	ITD	Project Engineer	Road Cable Section
17	Mr. Jeerayut [illegible]	ITD	Civil Eng	
18	Mr. Apichat [illegible]	ITD	project coordinator	
19	Mr. Khajonsak Pongpaworn	LNG+	Supervisor/Operator	
20	Ms. Kutravee [illegible]	LNG+	Supervisor/Coordinator	

Certificated by ....

Position..

Name list of Villagers who Attended the Consultation Meeting in Nga Pitat

Nga Pitat

Public Consultation Attendance List

Date 23/1/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
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Position

Nga Pilat

Public Consultation Attendance List

Date 23/1/2015

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Position

Nga Pitat

Public Consultation Attendance List

Date 23/1/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
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Position

Nga Pitat

Public Consultation Attendance List

Date 23/1/2016

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Position..........

Nga Pitat

Public Consultation Attendance List

Date 23/1/2015

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
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Position ....

Nga Pitat

Public Consultation Attendance List

Date 23/11/2015

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120	[illegible]			[illegible]
121	[illegible]			[illegible]
122	[illegible]			[illegible]
123	[illegible]			[illegible]
124	[illegible]			[illegible]
125	[illegible]			[illegible]
126	[illegible]			[illegible]
127	[illegible]			[illegible]
128	[illegible]			[illegible]
129	[illegible]			[illegible]

Certificated by [illegible]

Position ....

Nga Pitat

Public Consultation Attendance List

Date 13/1/2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
130	[illegible]			[illegible]
131	[illegible]			[illegible]
132	[illegible]			[illegible]
133	[illegible]			[illegible]
134	[illegible]			[illegible]
135	[illegible]			[illegible]
136	[illegible]			[illegible]
137	[illegible]			[illegible]
138	[illegible]			[illegible]
139	[illegible]			[illegible]
140	[illegible]			[illegible]

Certificated by [signature]

Position

Name list of Villagers who Attended the Consultation Meeting in Sakhanthit

Sakhanthit - Pan Din In

Public Consultation Attendance List

Date 24. 1. 2015

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	〃	[illegible]
3	[illegible]	[illegible]	〃	[illegible]
4	[illegible]	[illegible]	〃	[illegible]
5	[illegible]	〃	〃	[illegible]
6	[illegible]	〃	〃	[illegible]
7	[illegible]	〃	〃	[illegible]
8	[illegible]	〃	〃	[illegible]
9	[illegible]	〃	〃	[illegible]
8	[illegible]	〃	[illegible] 〃	[illegible]
9	[illegible]	〃	〃	[illegible]
10	[illegible]	〃	〃	[illegible]
11	[illegible]	〃	〃	[illegible]
12	[illegible]	〃	〃	[illegible]
13	[illegible]	〃	〃	[illegible]
14	[illegible]	〃	〃	[illegible]
15	[illegible]	〃	〃	[illegible]
16	[illegible]	〃	〃	[illegible]
17	[illegible]	〃	〃	[illegible]
18	[illegible]	〃	〃	[illegible]
19	[illegible]	〃	〃	[illegible]
20	[illegible]	〃	〃	[illegible]

Certificated by [signature]

Position

Sakhanthit - Bon Din In

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
21	မနှင်းရွှေ	[illegible]	ရွာသား	[illegible]
22	မအေးအေးခိုင်	〃	〃	[illegible]
23	[illegible]	〃	〃	[illegible]
24	မနီနီဖြူ	〃	〃	[illegible]
25	မလှ	〃	〃	[illegible]
26	မခင်သာဝင်း	〃	〃	[illegible]
27	မလှလှဝင်း	〃	〃	[illegible]
28	မသက်သက်ခိုင်	〃	〃	[illegible]
29	မရီ	〃	〃	[illegible]
30	ဒေါ်မြင့်ရီ	〃	〃	[illegible]
31	ဒေါ်ဝင်းကြည်	〃	〃	+
32	ဒေါ်အေးလဲ	〃	〃	[illegible]
33	[illegible]	〃	〃	[illegible]
34	[illegible]	〃	〃	[illegible]
35	ဒေါ်တင်ဝါ	〃	〃	[illegible]
36	ဒေါ်ကျင်ခိုင်	〃	〃	[illegible]
37	ဒေါ်တင်ဦး	〃	〃	[illegible]
38	မစိုးလှ	〃	〃	[illegible]
39	ဒေါ်စန်းမြင့်	〃	〃	[illegible]
40	မအေးအေးမိုး	〃	〃	[illegible]
41	မချိုဝင်း	〃	〃	[illegible]
42	မမိုးခိုင်			[illegible]

Certificated by ....

Position..............................

Sakhanthit - Pan Din In

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
43	[illegible]	[illegible]	[illegible]	[illegible]
44	[illegible]	〃	〃	[illegible]
45	[illegible]	〃	〃	[illegible]
46	[illegible]	〃	〃	[illegible]
47	[illegible]	〃	〃	[illegible]
48	[illegible]	〃	〃	[illegible]
49	[illegible]	〃	〃	[illegible]
50	[illegible]	〃	〃	[illegible]
51	[illegible]	〃	〃	+
52	[illegible]	〃	〃	[illegible]
53	[illegible]	〃	〃	[illegible]
54	[illegible]	〃	〃	+
55	[illegible]	〃	〃	+
56	[illegible]	〃	〃	[illegible]
57	[illegible]	〃	〃	+
58	[illegible]	〃	〃	[illegible]
59	[illegible]	〃	〃	X
60	[illegible]	〃	〃	[illegible]
61	[illegible]	〃	〃	X
62	[illegible]	〃	〃	[illegible]
63	[illegible]	〃	〃	[illegible]
64	[illegible]	〃	〃	[illegible]

Certificated by [illegible]

Position ....

Sakhanthit - Pan Din In

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၄	[illegible]	စခန်းသစ်	ရွာသား	[illegible]
၂၅	[illegible]	"	"	[illegible]
၂၆	[illegible]	"	"	[illegible]
၂၇	[illegible]	"	"	[illegible]
၂၈	[illegible]	"	"	[illegible]
၂၉	[illegible]	"	"	+
၃၀	[illegible]	"	"	[illegible]
၃၁	[illegible]	"	"	+
၃၂	[illegible]	"	"	+
၃၃	[illegible]	"	"	[illegible]
၃၄	[illegible]	"	"	[illegible]
၃၅	[illegible]	"	"	[illegible]
၃၆	[illegible]	"	"	[illegible]
၃၇	[illegible]	"	"	[illegible]
၃၈	[illegible]	"	"	[illegible]
၄၀	[illegible]	"	"	[illegible]
၄၁	[illegible]	"	"	[illegible]
၄၂	[illegible]	"	"	[illegible]
၄၃	[illegible]	[illegible]	[illegible]	[illegible]
၄၄	[illegible]	[illegible]	[illegible]	[illegible]
၄၅	[illegible]		[illegible]	[illegible]
၄၆	[illegible]	"	[illegible]	[illegible]

Certificated by [illegible]

Position..........

Sakhanthit - PanDin In

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ရပ်ရွာ	လက်မှတ်
[illegible]	[illegible]	[illegible]	[illegible]	[signature]
[illegible]	[illegible]	〃	[illegible]	[signature]

Certificated by [signature]

Position..........

Name list of Villagers who Attended the Consultation Meeting in Nyaung Bin Seik

Nyaung Bin Seik

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	ဦးဆွေဝင်း	ညောင်ပင်ဆိပ်	ရွာသား	[illegible]
2	ဦးစောခိုင်	〃	〃	[illegible]
3	ကိုဖိုးကျွန်	〃	〃	ဖိုးကျွန်
4	ကိုဘိုးကျ	〃	〃	ဘိုးကျ
5	ကိုကျော်သိန်း	〃	〃	[illegible]
6	ဦးဖိုးရွှေ	〃	〃	ဖိုးရွှေ
7	ဦးစောဖြူ	〃	〃	[illegible]
8	ကိုဝေဆွေ	〃	〃	[illegible]
9	ဦးဖိုးရွှေ	〃	〃	ဖိုးရွှေ
10	ဒေါ်ကြူနင်	〃	〃	[illegible]
11	ဒေါ်တင်ဖြူ	〃	〃	[illegible]
12	ဒေါ်ဖွားသာ	〃	〃	+
13	ဒေါ်အေးမြင့်	〃	〃	[illegible]
14	ဒေါ်နင်မို	〃	〃	[illegible]
15	ဒေါ်ခယ်ဂျီ	〃	〃	[illegible]
16	ဒေါ်မိုသိ	〃	〃	+
17	ဒေါ်မသိ	〃	〃	[illegible]
18	မဝင်းကြို	〃	〃	ဝင်းကြို
19	မသိကာ	〃	〃	[illegible]
20	မနင်ခိုင်ကြို	〃	〃	[illegible]
21	ဒေါ်ကျင်နု	〃	〃	+
22	မမိုးမြင့်	〃	〃	[illegible]

Certificated by [illegible]

Position ....

Pyaung Bin Seik

Public Consultation Attendance List

Date 24.1.2015

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
24	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	〃	〃	X
26	[illegible]	〃	〃	[illegible]
27	[illegible]	〃	〃	[illegible]
28	[illegible]	〃	〃	[illegible]
29	[illegible]	〃	〃	
30	[illegible]	〃	〃	+
31	[illegible]	〃	〃	[illegible]
32	[illegible]	〃	〃	[illegible]
33	[illegible]	〃	〃	[illegible]
34	[illegible]	〃	〃	[illegible]
35	[illegible]	〃	〃	[illegible]
36	[illegible]	〃	〃	[illegible]
37	[illegible]	〃	〃	[illegible]
38	[illegible]	〃	〃	[illegible]
39	[illegible]	〃	〃	[illegible]
40	[illegible]	〃	〃	+
41	[illegible]	〃	〃	+
42	[illegible]	〃	〃	[illegible]
43	[illegible]	〃	〃	[illegible]
44	[illegible]	〃	〃	[illegible]
45	[illegible]	〃	〃	[illegible]

Certificated by [illegible]

Position

Nyaung Bin Seik

Public Consultation Attendance List

Date 24-1-2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
46	[illegible]	ညောင်ပင်ဆိပ်	ရွာသား	[illegible]
47	[illegible]	〃	〃	[illegible]
48	[illegible]	〃	〃	[illegible]
49	[illegible]	〃	-	[illegible]
50	[illegible]	〃	[illegible]	[illegible]
51	[illegible]	〃	ရွာသား	[illegible]
52	[illegible]	〃	〃	[illegible]
53	[illegible]	〃	〃	[illegible]
54	[illegible]	〃	〃	[illegible]

Certificated by [illegible]

Position

Name list of Villagers who Attended the Consultation Meeting in Muangmagan and Vee Napin

[illegible]

Public Consultation Attendance List

Date 30.1.2015

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
၁	[illegible]	[illegible]	ရွာသား	[illegible]
၂	[illegible]	"	"	[illegible]
၃	[illegible]	"	"	[illegible]
၄	[illegible]	"	"	[illegible]
၅	[illegible]	"	"	[illegible]
၆	[illegible]	"	"	[illegible]
၇	[illegible]	"	"	[illegible]
၈	[illegible]	"	"	[illegible]
၉	[illegible]	"	"	[illegible]
10	[illegible]	"	"	[illegible]
11	[illegible]	"	"	[illegible]
12	[illegible]	"	[illegible]	[illegible]
13	[illegible]	"	ရွာသား	[illegible]
14	[illegible]	"	[illegible]	[illegible]
15	[illegible]	"	ရွာသား	[illegible]
16	[illegible]	"	"	[illegible]
17	[illegible]	"	"	[illegible]
18	[illegible]	"	"	[illegible]
19	[illegible]	"	"	[illegible]
20	[illegible]	"	"	[illegible]
21	[illegible]	"	"	[illegible]
22	[illegible]	"	"	[illegible]

Certificated by [illegible]

Position [illegible]

Public Consultation Attendance List Date ....

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
25	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	〃		[illegible]
27	[illegible]	〃		[illegible]
28	[illegible]	[illegible]	〃	[illegible]
29	[illegible]	〃	〃	[illegible]
30	[illegible]	〃	〃	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]

Certificated by ....[illegible]..........

Position..........[illegible]..........

Name list of Villagers who Attended the Focus Group Meeting in Nyaung Bin Seik

[illegible]

[illegible]

Public Consultation Attendance List Date 1/2/2015 (Focus Group)

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	ဦး [illegible]	[illegible]	[illegible]	[illegible]
2	ဦး [illegible]	〃	[illegible]	[illegible]
3	ဦး [illegible]	〃	〃	[illegible]
4	ဦး [illegible]	〃	〃	[illegible]
5	ဒေါ် [illegible]	〃	〃	[illegible]
6	ဒေါ် [illegible]	〃	〃	[illegible]
7	ဦး [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]	〃	〃	+
15	ဒေါ် [illegible]	〃	〃	[illegible]
16	ဒေါ် [illegible]	〃	〃	[illegible]
17	ဒေါ် [illegible]	〃	〃	[illegible]
18	ဒေါ် [illegible]	〃	〃	[illegible]
19	ဒေါ် [illegible]	〃	〃	[illegible]
20	ဒေါ် [illegible]	〃	〃	[illegible]
21	ဒေါ် [illegible]	〃	〃	[illegible]
22	ဒေါ် [illegible]			[illegible]

(Nyan Bin Sich)

Certificated by [illegible]

Position

Public Consultation Attendance List Date 1/2/ 2015 (Focus Group)

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
23.	[illegible]	-	-	[illegible]
24.	[illegible]	-	-	[illegible]
25.	[illegible]	-	-	[illegible]
26.	[illegible]	-	-	[illegible]
27.	[illegible]	-	-	[illegible]
28.	[illegible]	-	-	[illegible]

Certificated by ....

Position..............................

Name list of Villagers who Attended the Focus Group Meeting in Nga Pitat

[illegible]

Public Consultation Attendance List

Date 4 / 2 / 2015

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1)	ဦးဖေထွန်း	ပေါ်ကန်	ဥက္ကဌ	[illegible]
2	ဒေါ်မော်မော်	"	ရွာသူ	[illegible]
3	ဦးထိုက်မိုး	"	[illegible]	ဦးထိုက်မိုး
4	ဦးစော	"	"	ဦးစော
5	ဦးမြင့်ဆွေ	"	"	[illegible]
6	ဒေါ်ခင်ခင်မိုး	"	ဈေးရောင်း	[illegible]
7	ဒေါ်မာမာကျင်	"	"	[illegible]
8	ဒေါ်ကြူကျင်	"	"	[illegible]
9	ဦးအောင်မြင့်	"		[illegible]
10	ဦးမြင့်ဟန်	"	"	[illegible]
11	ဦးညွန့်ဝင်း	"	သမား	[illegible]

Certificated by [illegible]

Position..........

Name list of Villagers who Attended
the Focus Group Meeting in Sakhanthit

(Focus Group)
Scann Tae

ဘက်စုံ ... [illegible]

Public Consultation Attendance List Date 1/2/2015

စဉ်	အမည်	နေရပ်	အလုပ်အကိုင်/ရာထူး	လက်မှတ်
1	ဖိုးမြင့်ချမ်း	[illegible]	[illegible]	[illegible]
2	မြိုင်ဇော်လတ်	〃	〃	[illegible]
3	ဦးရဲဝင်း	〃	〃	ရဲ
4	ဦးဝင်းဆိုင်	〃	〃	ဝင်း
5	ဦးမြင့်မေ	〃	〃	[illegible]
6	ဦးခန့်ဦး	〃		[illegible]
7	ဦးတင်ဇော်ဇွေ	〃	〃	[illegible]
8	ဦးထွန်းမြင့်	〃	〃	[illegible]
9	ဦးနေထွန်း	〃	〃	ထွန်း
10	ဦးဇော်ဝေ	〃	〃	ဇော်ဝေ
11	ဦးဘကြီး	〃	〃	[illegible]
12	ဦး[illegible]	〃	[illegible]	[illegible]
13	ဦး[illegible]	〃	[illegible]	[illegible]
14	ဦးလှကြည်	〃	〃	[illegible]
15	ဦးဝင်းအောင်			[illegible]

Certificated by [illegible]

Position ....

APPENDIX 9A-2

LIST OF PARTICIPANT DURING SECOND PUBLIC CONSULTATION

Name list of Concerned Authorities

မြစ်ဝှမ်းဒေသ [illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 26.1.16

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	[signature]
၂	ဦး [illegible]	"	[illegible]	[signature]
၃	ဦး [illegible]	[illegible]	[illegible]	[signature]
၄	ဦး [illegible]	SWB	[illegible]	[signature]
၅	ဦး [illegible]	M.C [illegible]	[illegible]	[signature]
၆	ဦး [illegible]	M.C [illegible]	A.E (MPA)	[signature]
၇	[illegible]	M.C [illegible]	[illegible]	[signature]
၈	ဦး [illegible]	"	[illegible]	[signature]
၉	ဦး [illegible]	"	[illegible] (dist)	[signature]
၁၀	ဦး [illegible]	"	[illegible]	[signature]
၁၁	ဦး [illegible]	[illegible]	[illegible]	[signature]
၁၂	PLIAN MAREETA	TEAM Consultants	Botanist	[signature]
13	U Ag Khine Soe	ECD	Deputy Dir	[signature]
14	Daw Thet Htar Myint	TBS Yangon	Social Safeguards Specialist (TBS)	[signature]
15	N&H Dumhum	TEAM Consultant	Scientist	[signature]

Certificated by ....

Position..

Name list of Villagers who Attended the Consultation Meeting in Nga Pitat

[illegible] တက်ရောက်သူစာရင်း

Date 26.7.16

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1.	[illegible]	ပေါ်တော်		[illegible]
2.	[illegible]	〃		[illegible]
3	[illegible]	〃		[illegible]
4	[illegible]	〃		[illegible]
5.	[illegible]	〃		[illegible]
6.	[illegible]	〃		
7.	[illegible]	〃		[illegible]
8.	Lwin	〃		Lwin
9.	[illegible]	〃		[illegible]
10.	[illegible]	〃		[illegible]
11.	[illegible]	〃		[illegible]
12.	[illegible]	〃		[illegible]
13.	[illegible]	〃		[illegible]
14.	[illegible]	〃		[illegible]
15.	[illegible]	〃		[illegible]
16	[illegible]	〃		[illegible]
17.	[illegible]	〃		[illegible]
18.	[illegible]	〃		[illegible]
19	[illegible]	〃		[illegible]
20	[illegible]	〃		[illegible]
21	[illegible]	〃		[illegible]
22	[illegible]	〃		[illegible]

Certificated by ....

Position..

[illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 26. 1. 2016

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	[illegible]	[illegible]		[illegible]
၂၄	[illegible]	။		[illegible]
၂၅	[illegible]	။		[illegible]
၂၆	[illegible]	။		[illegible]
၂၇	[illegible]	။		[illegible]
၂၈	[illegible]	။		[illegible]
၂၉	[illegible]	။		[illegible]
၃၀	[illegible]	။		[illegible]
၃၁	[illegible]	။		[illegible]
၃၂	[illegible]	။		[illegible]
၃၃	[illegible]	။		[illegible]
၃၄	[illegible]	။		[illegible]
၃၅	[illegible]	။		[illegible]
၃၆	[illegible]	။		[illegible]
၃၇	[illegible]	။		[illegible]
၃၈	[illegible]	။		[illegible]
၃၉	[illegible]	။		[illegible]
၄၀	[illegible]	။		[illegible]
၄၁	[illegible]	။		[illegible]
၄၂	[illegible]			[illegible]
၄၃	[illegible]	။		[illegible]
၄၄	[illegible]	။		[illegible]

Certificated by ....

Position..

[illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 26.1.2016

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	မစိုးမြင့်	ပေါက်ကန်		မစိုးမြင့်
46	ဦးအေးမောင်	〃		အေးမောင်
47	ဒေါ်[illegible]	〃		[illegible]
48	ဒေါ်မြိုင်			မြိုင်
49	မစိုးဝင်း	〃		မစိုးဝင်း
50	ဦးလှဝင်း	〃		လှဝင်း
51	ဒေါ်ရီလှ	〃		ရီလှ
52	ဒေါ်ငြိမ်းသန်း	〃		[illegible]
53	ဒေါ်ခင်ချို	〃		[illegible]
54	ဒေါ်စိုးစိုးဝေ	〃		[illegible]
55	မင်းမောင်	〃		[illegible]
56	ဒေါ်မိုဝင်း			[illegible]
57	ဒေါ်ရီချို			ရီချို

Certificated by ....

Position..

Name list of Villagers who Attended the Consultation Meeting in Sakhanthit

ပြည်သူ့လွှတ်တော် [illegible] တက်ရောက်သူစာရင်း

Date 28 . 01 . 2016

စဉ်	အမည်	နေရပ်	[illegible]/ရာထူး	လက်မှတ်
1	ဒေါ်[illegible] လှ	[illegible]		[signature]
2	ဦး[illegible]	။	[illegible]	[signature]
3	ဦး[illegible]	[illegible]	[illegible]	[signature]
4	ဦး[illegible]	။	[illegible]	[signature]
5	ဦး[illegible]	။	။	[signature]
6	ဦး[illegible]	။		[signature]
7	ဦး[illegible]	။		[signature]
8	ဦး[illegible]	။		[signature]
9	[illegible]	။		[signature]
10	ဒေါ်[illegible]	။		[signature]
11	ဒေါ်[illegible]	။		[signature]
12	ဒေါ်[illegible]	။		[signature]
13	[illegible]	။		[signature]
14	[illegible]	။		[signature]
15	ဒေါ်[illegible]	။		[signature]
16	ဒေါ်[illegible]	။		[signature]
17	[illegible]	။		[signature]
18		။		[signature]
19		။		[signature]
20		။		[signature]
21		။		[signature]
22		။		[signature]

Certificated by .... [signature]

Position............

[illegible] ၃၃ [illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 28 · 01 · 2016.

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	။		[illegible]
25	[illegible]	။		[illegible]
26	[illegible]	။		[illegible]
27	[illegible]	။		[illegible]
28	[illegible]	။		[illegible]
29	[illegible]	။		[illegible]
30	[illegible]	။		[illegible]
31	[illegible]	။		[illegible]
32	[illegible]	။		[illegible]
33	[illegible]	။		[illegible]
34	[illegible]	။		[illegible]
35	[illegible]	။		[illegible]
36	[illegible]	။		[illegible]
37	[illegible]	။		[illegible]
38	[illegible]	။		[illegible]
39	[illegible]	။		[illegible]
40	[illegible]	။		[illegible]
41	[illegible]	။		[illegible]
42	[illegible]	။		[illegible]
43	[illegible]	။		[illegible]
44	[illegible]	။		[illegible]

Certificated by [illegible]

Position..

[illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date ....

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
45	ဒေါ်စိုးချို	ဝစ်ဖိုးကင်း		[signature]
46	ဒေါ်မဝင်း	″		[signature]
47	မမြိုဝ	″		[signature]
48	မစိုးအေး	″		[signature]
49	ဒေါ်နွဲ့ကြည်	″		[signature]
50	[signature]	″		[signature]
51	ဒေါ်ဖယ်ဒွိ	″		[signature]
52	ဒေါ်စိုးရီ	″		[signature]
53	ဒေါ်ခွန်းဖြူ	″		[signature]
54	ဒေါ်ရီချို	″		[signature]
55	ဒေါ်ဝိုင်းမြ	″		[signature]
56	ဒေါ်ခင်မြိုင်	″		[signature]
57	မအုန်မြင့်	″		[signature]
58	မစိုးစိုးအေး	″		[signature]
59	မဖြူဖြူမြ	″		[signature]
60	ဒေါ်တင်အောင်	″		[signature]
61	ဒေါ်ကျင်ဝင်း	″		[signature]
62	ဒေါ်ထွေးရှင်	″		[signature]
63	ဒေါ်နှင်းအေး	″		[signature]
64	မရီ	″		[signature]
65	အေးမိုင်	″		[signature]
66	လှလှမိုး	″		[signature]

Certificated by ....

Position..

ပြည်သူလူထု ဥဒ္ဒနိုး ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 28· 1· 2016·

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
67·	ဒေါ်မြအေး	စခကြီးဘဝ		မြအေး
68·	ဒေါ်သင်းရှိုင်	〃		သင်းရှိုင်
69·	မောင်မျိုးဝေ	〃		[illegible]
70·	[illegible]	〃		[illegible]
71·	လဲ့ဝေထွန်း	〃		[illegible]
72·	ဦးကျော်မြင့်	〃		ကျော်မြင့်
73·	မိုးမိုးအေး	〃		[illegible]
74·	ဦးဇော်ဦး	〃		[illegible]
75·	ဒေါ်မြခိုင်	〃		မြခိုင်
76	ဒေါ်ဝေမြ	〃		[illegible]
77	ဒေါ်သဉ္စဝေ	〃		[illegible]
78	ဒေါ်သန်းလှ	〃		သန်းလှ
79·	ဦးမိုးမြင့်	〃		ဦးမိုးမြင့်
80·	မသသဝေ	〃		သဝေ
81·	ဒေါ်မာကြီး	〃		မာကြီး
82·	ဒေါ်ဆွေဝင်း	〃		[illegible]
83·	မြင့်မူ	〃		မြင့်မူ
84				[illegible]
85	ဒေါ်အောင်ရှိန်			[illegible]
86	ဦးသိန်းဦး			[illegible]
87·	ဒေါ်[illegible]လာဆာ			[illegible]

Certificated by ....

Position ....

Name list of Villagers who Attended the Consultation Meeting in Nyaung Bin Seik

[illegible] ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 27 - 1 - 2016

စဉ်	အမည်	နေရပ်	ဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1	[illegible]	[illegible]		[illegible]
2	[illegible]	〃		[illegible]
3	[illegible]	〃		[illegible]
4	[illegible]	〃		[illegible]
5	[illegible]	〃		[illegible]
6	[illegible]	〃		[illegible]
7	[illegible]	〃		[illegible]
8	[illegible]	〃		[illegible]
9	[illegible]	〃		[illegible]
10	[illegible]	〃		[illegible]
11	[illegible]	〃		[illegible]
12	[illegible]			[illegible]
13	[illegible]	〃		[illegible]
14	[illegible]	〃		[illegible]
15	[illegible]	〃		[illegible]
16	[illegible]	〃		[illegible]
17	[illegible]	〃		[illegible]
18	[illegible]	〃		[illegible]
19	[illegible]	〃		[illegible]
20	[illegible]	〃		[illegible]
21	[illegible]	〃		[illegible]
22	[illegible]	〃		[illegible]

Certificated by [illegible]

Position

မြဘော်ဂူရွာ ဥဒိန်း ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 27 - 1 - 2016

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	ဒေါ်မြအေး	ရေချမ်းအိုင်		မြအေး
၂၄	မခင်ကာဝင်	〃		[illegible]
၂၅	ဒေါ်မြသာ	〃		မြသာ
၂၆	ဒေါ်ဝင်ရှိ	〃		ဝင်ရှိ
၂၇	ဒေါ်ခင်ရီ	〃		ခင်ရီ
၂၈	ဒေါ်ရွှေမိ	〃		ရွှေမိ
၂၉	ဒေါ်ခါမြင့်	〃		ခါမြင့်
၃၀	မမြိချို	〃		မြိချို
၃၁	ဒေါ်ကာဆိုင်	〃		[illegible]
၃၂	ဒေါ်ချိုသင်	〃		ချိုသင်
၃၃	မနီလယ်	〃		နီလယ်
၃၄	ဦးမောင်ဆိုင်	〃		[illegible]
၃၅	ဦးကျိုလယ်	〃		[illegible]
၃၆	ဦးခင်ငွေ	〃		ခငွေ
၃၇	ဒေါ်မမြေ	〃		မမြေ
၃၈	ဒေါ်ခင်ကြည်	〃		ခင်ကြည်
၃၉	မသာမြ	〃		[illegible]
၄၀	မမြိချို	〃		မြိချို
၄၁	မခင်မော်ရို	〃		[illegible]
၄၂	မကာကာဝင်	〃		[illegible]
၄၃	ဒေါ်ပုလုသင်	〃		[illegible]

Certificated by [illegible]

Position

Name list of Villagers who Attended the Consultation Meeting in Muangmagan and Vee Napin

မြစ်ဆုံဒေသ ... တွေ့ဆုံဆွေးနွေး တက်ရောက်သူစာရင်း

Date 28.1.2016.

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
1.	ဦးသန့်ဇင်မိုး	ဦး နှမ်းပင်(ရွာရပ်ကွက်)	ဆည်မြောင်းရုံး	[signature]
2.	ဒေါ်စီမြ	ရွာရပ်ကွက်		[signature]
3.	ဒေါ်မြင့်အေး	″		[signature]
4	ဒေါ်နီနီချို	″		[signature]
5.	မနှင်းဝေ	″		[signature]
6.	ဒေါ်သန့်ချို	″		[signature]
7.	ဒေါ်သန့်ငွေ	″		[signature]
8.	ဒေါ်မြမိုင်	″		[signature]
9.	ဒေါ်နုနုဝေ	″		[signature]
10.	မခင်မာဝေ			[signature]
11.	မဝင်းဝင်း	″		[signature]
12.	မယုယုသွယ်	″		[signature]
13.	ဒေါ်မြင့်မြင့်	″		[signature]
14.	မနီနီဝေ	″		[signature]
15.	မသက်သက်မော်	″		[signature]
16.	ဒေါ်ခင်မာလဲ	″		[signature]
17.	ဒေါ်အေးအေးသက်	″		[signature]
18.	မသက်သက်ခိုင်	″		[signature]
19.	ဒေါ်စုစုနွယ်	″		[signature]
20.	ဒေါ်လဲလဲချို	″		[signature]
21	ဒေါ်မီမီဝေ	″		[signature]
22.	ဒေါ်ခင်စိုး	″		[signature]

Certificated by [signature]

Position ....

ပြည်သူ့ရေးရာ ၃၁ ရှိ ဒေသ ဆွေးနွေး တက်ရောက်သူစာရင်း

Date 28 . 1 . 2016

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၂၃	ဒေါ်ခင်ဝေ	ရှမ်းမြောက် (ကွတ်ခိုင် ...)		ဒေါ်ခင်ဝေ
၂၄	မနှင်းနှင်း	〃		နှင်းနှင်း
၂၅	ဒေါ်ငွေဝေ	〃		ဒေါ်ငွေဝေ
၂၆	ဒေါ်မီကျင်	〃		မီကျင်
၂၇	ဒေါ်မြင့်	〃		မြင့်
၂၈	ဒေါ်သီတာခိုင်	〃		သီတာခိုင်
၂၉	မအိအိမိုး	〃		အိအိမိုး
၃၀	မအိအိအေး	〃		အိအိအေး
၃၁	မအိမြင့်အေး	〃		အိမြင့်အေး
၃၂	ဒေါ်မေသဉ်	〃		မေသဉ်
၃၃	ဒေါ်အေးသန်း	〃		အေးသန်း
၃၄	မဟာမြ	〃		ဟာမြ
၃၅	ဒေါ်အေးသန်း	〃		အေးသန်း
၃၆	ဒေါ်မိုးမိုး	〃		မိုးမိုး
၃၇	ဒေါ်မြင့်သန်း	〃		မြင့်သန်း
၃၈	ဒေါ်သက်သက်မော်	〃		သက်မော်
၃၉	မပြီးယာ	〃		ပြီးယာ
၄၀	ဒေါ်ခင်ငွေ	〃		ခင်ငွေ
၄၁	ဒေါ်သက်ဝေ	〃		သက်ဝေ
၄၂	မသက်ဆွိ	〃		သက်ဆွိ
၄၃	ဒေါ်ခင်အေး	〃		ခင်အေး
၄၄	ဒေါ်အေးဝေ	〃		အေးဝေ

Certificated by ....

Position..................................

ပြည်သူ့ကျန်းမာရေး ဒေသန္တရ ဆွေးနွေးပွဲ တက်ရောက်သူစာရင်း

Date 28 · 1 · 2016

စဉ်	အမည်	နေရပ်	ဖုန်းနံပါတ်/ရာထူး	လက်မှတ်
45	[illegible]	ရွာပေါ်ကွက် (မြို့ [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]
63	[illegible]	"		[illegible]
64	[illegible]	"		[illegible]
65	[illegible]	"		[illegible]
66	[illegible]	"		[illegible]

Certificated by [signature]

Position

မြဝတီသူငယ်တော် ၃ဒီ ရှိုး သွားရွေး တက်ရောက်သူစာရင်း

Date ....

စဉ်	အမည်	နေရပ်	အဖွဲ့အစည်း/ရာထူး	လက်မှတ်
၆၇.	ဒေါ်မိုးကျင်	ရွာသစ်ကျောက် (မြို့နယ်ဝင်)		မိုးကျင်
၆၈	ဒေါ်ဇော	။		[signature]
၆၉.	ဒေါ်မိုးမြင့်ဇော	။		[signature]
၇၀	ဒေါ်နွယ်ချို	။		နွယ်ချို
၇၁.	ဦးကျော်ခိုင်	။		[signature]
၇၂.	ဦးကျော်နိုင်မိုး	။		[signature]

Certificated by ....

Position..

APPENDIX 9A-3

LIST OF PARTICIPANT DURING THIRD PUBLIC CONSULTATION

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	[illegible]	၃၃		[illegible]	[illegible]	[illegible]
၂	[illegible]	၆၉	KNU	[illegible]	0976685[illegible]	[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 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
1	[illegible]	၄၆		[illegible]	[illegible]	[signature]
2	[illegible]	၄၈		[illegible]	09250466[illegible]	[signature]
3	[illegible]	[illegible]	[illegible]	[illegible]	၀၉/၄၀၀-၄၈၉၉၂၁	[signature]
4	[illegible]	[illegible]	[illegible]	[illegible]	၀၉.422208702	[signature]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[signature]
6	[illegible]	[illegible]	[illegible]	[illegible]	09254694952	[signature]
7	[illegible]	[illegible]	"	"	09422190544	[signature]
8	[illegible]	[illegible]	"	[illegible]	[illegible]	[signature]
9	[illegible]	[illegible]	"	[illegible]	[illegible]	[signature]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[signature]
11	[illegible]	40	ECD.	AD	[illegible]	[signature]

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	[illegible]	၂၈	ECD	[illegible]	09-457793[illegible]585	[signature]
၂	[illegible]	၃၃	[illegible]	[illegible]	09-259035202	[signature]
၃	[illegible]	၄၉	ECD	[illegible]	09-444032390	[signature]
၄	[illegible]	၄၃		[illegible]	09-788750698	[signature]
၅	[illegible]	၅၃		"	09 776833858	[signature]
၆	[illegible]	၆၀	[illegible]	[illegible]	09501 1945	[signature]
၇	[illegible]	၅၅	[illegible]	[illegible]	09-2677734[illegible]	[signature]
၈	[illegible]	၃၉	[illegible]		09, 250334263	[signature]
၉	[illegible]		[illegible]		09 788174860	[signature]
၁၀	[illegible]		[illegible]		[illegible] 45364[illegible]	[signature]
၁၁	[illegible]	၃၂	[illegible]		09444965967	[signature]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအစမ်းအနားသို့ 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	[illegible]	[illegible]	[illegible]	[illegible]	
၁၃	[illegible]	[illegible]	[illegible]	[illegible]	
၁၄	[illegible]	[illegible]	[illegible]	[illegible]	
၁၅	[illegible]	[illegible]	[illegible]	[illegible]	
၁၆	[illegible]	[illegible]	[illegible]	[illegible]	
၁၇	[illegible]	[illegible]	[illegible]	[illegible]	
၁၈	[illegible]	38	[illegible]	09[illegible]5 9700368	
၁၉	[illegible]	56	[illegible]	—	
၂၀	[illegible]	45	[illegible]	0977406112	
၂၁	[illegible]	35	[illegible]	0979346680[illegible]	
၂၂	[illegible]	45	[illegible]	09786611424	

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]	၃၆	[illegible]	[illegible]	[signature]
၂	ဦး [illegible]	၄၁	[illegible]	[illegible]	[signature]
၃	ဦး [illegible]	၃၇	"	—	[signature]
၄	ဦး [illegible]	၆၁	[illegible]	[illegible]	[signature]
၅	ဦး [illegible]	၅၁	"	[illegible]	[signature]
၆	ဦး [illegible]	၄၈	[illegible]	[illegible]	[signature]
၇	ဦး [illegible]	၆၁	"	[illegible]	[signature]
၈	ဦး [illegible]	၃၈	[illegible]	[illegible]	[signature]
၉	ဦး [illegible]	၃၅	"	[illegible]	[signature]
၁၀	ဦး [illegible]	၅၀	[illegible]	[illegible]	[signature]
၁၁	ဦး [illegible]	၄၃	[illegible]	[illegible]	[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
၂၃	ဦးစိုးမြင့်	49	ကညွန့်သာယာအောင်	09899731418	[signature]
၂၄	ဦးအောင်နိုင်စိုး	45	နဘူလေ	0945225 [illegible]	[signature]
၂၅	ဦးဘဝင်း	53	မယင်းကြီး	0925388 4574	[signature]
၂၆	ဦးသန့်ဇော်မြင့်	50	လဲကျောင်း	09 —	[signature]
၂၇	ဦးဦးစိန်	55	မာရဇော်	09 —	[signature]
၂၈	ဦးကျော်ဝင်း	40	ပုလော်ကျွန်း	09402448578	[signature]
၂၉	ဦးချိုဝင်း	30	ထိုက်ရို		[signature]
၃၀	ဦးအေး	41.	လဲကျောင်း	094238 71218	[signature]
၃၁	ဦးမြင့်	53	ဘတိ		[signature]
၃၂	ဦးဝေမှုးအောင်	37		09.444706922	[signature]
၃၃	ဦးမိုး ကျော်မိုးခိုင်	40	[illegible]	09 [illegible]	[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
	ဦးကြည်ဝင်း	56	လဲချောင်း	09-788717209	
	ဦးမိုးမြင့်	49	[illegible]	—	
	ဦးအောင်ရွှေမြင့်	76	ငပိဒဲ	—	
	ကိုဖြိုးဖို	23	ရွှေတောင်ဆိပ်	—	
	ဦးဆွေမိုးမြင့်	49	မကြော်ကျွန်း	09-260280663	
	ဦးအောင်ဝင်း	63	ရလိုင်	09-788167105	
	ဦးခင်မောင်အောင်	51	ညိုကြီး	09-250771474	
	ဦးဝင်းမြ	41	"	09-780456737	
	ဦးမိုး	49	"	09-253811296	
	ကိုဝင်းမြင့်ဦး	30	"	09-773842088	
	[illegible]	30	"	09781484884	

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
	[illegible]	61	[illegible]	09-250[illegible]1924	[illegible]
	[illegible]	29	[illegible]	09-400012863	[illegible]
	[illegible]	36	〃	09-260191906	[illegible]
	[illegible]	42	[illegible]	09-422361006	[illegible]
	[illegible]	59	〃	–	[illegible]
	[illegible]	32	[illegible]	–	[illegible]

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် ဖေဖော်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးမောင်မြင့်	၄၅	တမိုး၊သာ		
	ဦးမောင်ညို	42	ကကယုံ၊ဘာ	၀၉ 250128141	

Local Community

ဒေသခံများ

တတိယအကြိမ်လူထုတွေ့ဆုံပွဲအခမ်းအနားသို့ တက်ရောက်သူစာရင်း

နေ့စွဲ- ၂၀၁၈ခုနှစ် မတ်လ ၂၉ရက် (မနက်ပိုင်း)

နေရာ - ထားဝယ်အထူးစီးပွားရေးဇုန် ITD ရုံးခန်းမ

No. စဉ်	Name အမည်	Age အသက်	Address လိပ်စာ	Contact Phone Number ဖုန်း	Signature လက်မှတ်
	ဦးသောင်းရွှေ	၅၀	ခတောင်းစိတ် ချောင်း	09974910145	
	ဦးအောင်မြင့်	၄၅	〃	094530032856	
	ဦးဆော်ပိုင်	၃၈	〃	09962646221	
	ဦးအုံးသန့်	၅၃	〃	09725117425[illegible]	
	ဦးဝင်းနိုင်	၅၀	ဘဝ	09459252772	
	ဦးကျော်စိုး	၄၀	ပန္နသင်	09426000967	
	ဦးတင်ထွန်း	၄၂	ကျွန်းရှည်ချောင်း၊ ကျွန်းသာယာအောင်	09400601296	
	ဦးထွန်းနိုင်	၄၀	ပုဏ္ဏါကျွန်း	0979323553	
	ဦးမျိုး	၄၆	သစ်ကိုးချောင်း		

Page……….

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.	ဦးဖြင့်ကြည်	၅၄	ယဲချောင်	09-77112910၆	ဦးဖြင့်ကြည်
၂.	ဦးခင်ဟန်	၃၇	ငဗိုတော	09-260920493	[illegible]
၃.	ဦးကျော်ဝင်း	၆၉	ကိုးနိုင်		[illegible]
၄.	ဦးလှကြည်	၃၂	ငဗိုတော	09-251144627	လှကြည်
၅.	ဦးမိုးလှိုင်	၅၄	နဂါးဘင် ဟင်းခတ်		မိုးလှိုင်
၆.	ဦးသိန်းလွင်	၃၄	〃		သိန်းလွင်
၇.	ဦးခေသင်းလွင်	၄၂	ကန်ပိုင်တော	-	[illegible]
၈.	ဦးအုန်းလွင်	၅၂	ပုဂေါ်ကျွန်း		အုန်းလွင်
၉.	ဦးကျော်ဝေ	၅၉	〃		[illegible]
၁၀	ဦးဝေဖြိုး	၅၉	ကျွန်ုပိုင်		[illegible]
	ဦးမိုးသိန်း		ထိန်ကြီး	09 49865533	[illegible]

APPENDIX 9B

MINUTE OF MEETING

FIRST PUBLIC CONSULTATION

Minutes of the Meeting at Nga Pitat Village

Date: 23 January, 2015

Time: 9:00-11.30 hrs.

Venue: Nga Pitat Temple

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

1. Villagers of Nga Pitat	140 persons
2. ITD officers	
Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kyaw Kyaw	
Mr. Min Kyaw Wai	
3. DDC officer	
Ms. Supansa Kruajan	Environmental Officer
4. LNG Plus	
Ms. Kulravee Soentiluk	Supervisor - Project Coordinator
Mr. Khajohnsak Pongpamorn	Site Supervisor
5. TBS staff	
Mr Sai Kyaw Toon Ou	Socio-Economic / Public Consultation Specialist
6. TEAM Consulting Engineering and Management Co, Ltd.	
Dr Siriluck Sirisup	Socio-Economic / Public Consultation Specialist
Mr Plian Maneeya	Soil Scientist
Dr Supichaya Wongchinawit	Environmental Scientist
Mr Natt Dumkum	Environmental Scientist
Mr Nipat Somkleeb	Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- Primary fuel will be LNG.
- The conduct of environmental and social study in the study area, between 23-26 January, consist of:

- Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
- Public consultation at the village level.
- Socio-economic survey at the household level.

- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on danger from emissions from the power plant. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Asking whether the fuel is from coal or not.	The primary fuel is LNG, not coal.
Afraid of emissions.	- Emissions such as CO_2, NOx, SO_2 will be treated before releasing to the ambient air, within government and international safety standard. - Monitoring will be carried out 6 month time, to ensure that the environment is within the safety standard.
Afraid that the creek will be closed, and villagers cannot do fishing as before.	Creek will not be closed. The bridge will be constructed so that villagers can utilize resources as before.
Villagers see marking alignment. If the area is belonged to the project, they would have compensation or not?	At the moment, it is not demarcation. It is preliminary survey. The compensation will be judged by the compensation committee, which will be established after Concession Agreement.
The road to the village will be closed or can be used as usual?	The road will not be closed, villagers can use as usual. In case some parts are closed for the project used, by pass will be constructed for villagers.
Afraid of vibration from transportation during construction period will be affected to the houses.	Measures will be formulated to preventive and mitigate this impact.
Villagers used to have good production of cashew nut, but not this year. Think as its lower production is caused by the project development (i.e. dust, vibration).	Lower production of cashew nut in this year is occurred in the whole region due to the drought year, not only here.
Since villagers can't stop the project, the suggestion was on environmental protection so that they can utilize resources last long.	Preventive and mitigation measures will be formulated to response this suggestion. They will be disclosed to villagers in early May.

The consultation meeting was closed around 11.30 hrs.

Minutes of the Meeting at Nyaung Bin Seik Village

Date: 24 January, 2015

Time: 13:30-16.00 hrs.

Venue: Nyaung Bin Seik School

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

1. Villagers of Nyaung Bin Seik — 54 prs
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw
3. DDC officer
   - Ms. Supansa Kruajan — Environmental Officer
4. LNG Plus
   - Ms. Kulravee Soentiluk — Supervisor - Project Coordinator
   - Mr. Khajohnsak Pongpamorn — Site Supervisor
5. TBS staff
   - Mr Sai Kyaw Toon Ou — Socio-Economic / Public Consultation Specialist
6. TEAM Consulting Engineering and Management Co, Ltd.
   - Dr Siriluck Sirisup — Socio-Economic / Public Consultation Specialist
   - Dr Supichaya Wongchinawit — Environmental Scientist
   - Mr Natt Dumkum — Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. This village is in the 5 km radius of the project site.
- Primary fuel will be LNG.
- The conduct of environmental and social study in the study area, between 23-26 January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.

- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on closure of the creek and access road to the sea, loosing of the mangroves and relocation caused by implementation of the power plant. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Afraid that the project will close the creek so that fishing boats of villagers cannot go back and forth, as doing now.	Creek will not be closed. The fishing boats still can utilize resources as before.
Afraid of gas emissions and smoke that would be caused by the project.	- The consultants come to listen the peoples' concerns. These issues will be studied in details. Their impacts and mitigation measures will be presented in the village in May. - However after complete construction, there will be devices to control these emissions/smoke within standardization, not harm to the peoples. - Currently, we do air quality measurement. This will be baseline data for six month monitoring.
Afraid of losing mangroves forest where is their food and income sources.	Villagers can have mangroves utilization as usual. Implementation of power plant will not disturb mangroves.
Afraid that the access road to the sea will be closed by the developer.	The road will not be closed, villagers can use as usual. In case some parts are closed for the project used, by pass will be constructed for villagers.
Afraid of relocation as villagers are relying on mangroves resources. Afraid of not having these resources in case of relocation to the other place.	There will be no relocation.

- There were other concerns associated with compensation by ITD in the past. The response was made by the ITD engineer.

The consultation meeting was closed around 16.00 hrs.

Minutes of the Meeting at Sakhanthit Village

Date: 24 January, 2015

Time: 9:00-11.30 hrs.

Venue: Sakhanthit beach

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

1. Villagers of Sakhanthit and Pandin In 88 prs
2. ITD officers

Mr. Panno Kraiwanit	Project Manager, Infrastructure Development
Mr. Kyaw Kyaw	

3. DDC officer

Ms. Supansa Kruajan	Environmental Officer

4. LNG Plus

Ms. Kulravee Soentiluk	Supervisor - Project Coordinator
Mr. Khajohnsak Pongpamorn	Site Supervisor

4. TBS staff

Mr Sai Kyaw Toon Ou	Socio-Economic / Public Consultation Specialist

5. TEAM Consulting Engineering and Management Co, Ltd.

Dr Siriluck Sirisup	Socio-Economic / Public Consultation Specialist
Dr Supichaya Wongchinawit	Environmental Scientist
Mr Natt Dumkum	Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. This village is in the 5 km radius of the project site.
- Primary fuel will be LNG.
- The conduct of environmental and social study in the study area, between 23-26 January, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.

- Public consultation at the village level.
- Socio-economic survey at the household level.

- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on danger from emissions, smoke, vibration, discharge of wastewater, closure the road and creek to be caused by the power plant implementation. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Not against the project that support by the Government, the suggestion was on environmental protection so that they can utilize resources last long.	Preventive and mitigation measures will be formulated to response this suggestion. These will be disclosed to villagers in early May.
Afraid of gas emissions, smoke and discharge of wastewater which will damage environment.	- The consultants come to listen the peoples' concerns. These issues will be studied in details. Their impacts and mitigation measures will be presented in the village in May. - However after complete construction, there will be devices to control these emissions/pollutions within standardization, not harm to the peoples.
Afraid that the project will close the creek during construction and operation of the small port so that fishing boats of villagers cannot go back and forth, as doing now.	Creek will not be closed. The fishing boats still can utilize resources as before.
Afraid of losing mangroves forest where is their food and income sources.	We will study on resources utilization of mangroves in detail, and formulate preventive measures accordingly.
The road to the village will be closed or can be used as usual.	The road will not be closed, villagers can use as usual. In case some parts are closed for the project used, by pass will be constructed for villagers.
Afraid of vibration from transportation during construction period will be affected to the houses.	Measures will be formulated to preventive and mitigate this impact.

The consultation meeting was closed around 11.30 hrs.

Minutes of the Meeting at MuangmaganVillage

Date: 30 January, 2015

Time: 14:00-16.30 hrs.

Venue: Muangmagan beach

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

1. Villagers of Muangmakan 31 prs
2. ITD officers
   - Mr. Panno Kraiwanit — Project Manager, Infrastructure Development
   - Mr. Kyaw Kyaw
3. DDC officer
   - Ms. Supansa Kruajan — Environmental Officer
4. LNG Plus
   - Ms. Kulravee Soentiluk — Supervisor - Project Coordinator
   - Mr. Khajohnsak Pongpamorn — Site Supervisor
5. ITD officers
   - Mr. Panno Kraiwanit
   - Mr. Kyaw Kyaw
6. TBS staff
   - Mr Sai Kyaw Toon Ou — Socio-Economic / Public Consultation Specialist
7. TEAM Consulting Engineering and Management Co, Ltd.
   - Dr Siriluck Sirisup — Socio-Economic / Public Consultation Specialist
   - Mr Natt Dumkum — Environmental Scientist
   - Mr Nipat Somkleeb — Environmental Scientist
   - Mr. Tanawit Pansong — Technician

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. This village is in the 5 km radius of the project site.
- Primary fuel will be LNG.

- The conduct of environmental and social study in the study area, between 23 January-3 February, consist of:
  - Environmental measurement of air quality, water quality, soil resources, terrestrial ecology, marine ecology and transportation.
  - Public consultation at the village level.
  - Socio-economic survey at the household level.
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on danger from closure the creek, discharge of wastewater and the project monitoring. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
The project will use the creek area of this village or not?	No.
Will the project close the creek at Veenapin community during construction and operation of the small port or not? Fishing boats of villagers still can go back and forth, as doing now or not?	Creek will not be closed. The fishing boats still can utilize resources as before.
Afraid of wastewater discharge which will damage mangroves.	The wastewater will be treated to be within standard before discharge.
Will there be the project monitoring? Will villagers participate monitoring or not?	Representatives of villagers will be members of Tri-partite committee which will do monitoring for the entire project life.
Appreciated explanation from the consultant, developer and ITD team, and asked for environmental protection.	That's why the team comes to disclose information and listen to villagers' voice. So, impacts can be identified and measures can be formulated accordingly.

- There were other concerns associated with compensation problem that villagers still haven't got from the ITD in the past.
- The ITD engineer had responded by informing that area in Muangmagan village is outside demarcation line of ITD. However the compensation will be paid for the land inside demarcation, after the Concession Agreement. The joint committee will be set up to consider this issue.

The consultation meeting was closed around 16.30 hrs.

Minutes of the Focus Group Meeting at Sakhanthit Village

Date: 1 February, 2015

Time: 9:00-11:00 hrs.

Venue: Sakhanthit Beach

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

1. Villagers of Sakhanthit 15 prs
2. ITD officers
   Mr. Kyaw Kyaw
3. DDC officer
   Ms. Supansa Kruajan Environmental Officer
4. TEAM Consulting Engineering and Management Co, Ltd.
   Mr. Plian Maneeya Soil Scientist
   Mr. Natt Dumkum Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. This village is in the 5 km radius of the project site.
- Discussion on Socio-economic condition such as income, occupation and livelihood.
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Concern on loss of fishing ground area in Sakhanthit Village due to dredging activities	- These issues will be studied in details. Their impacts and mitigation measures will be presented in the village in next consultation
If there is no effect on people and environment, we support this development project.	-

- There was other concern associated with no response on the tree compensation yet on villagers by ITD. The response was made by the ITD engineer.

The consultation meeting was closed around 11.00 hrs.

Minutes of the Focus Group Meeting at Nyaung Bin Seik Village

Date: 1 February, 2015

Time: 14:00-16:00 hrs.

Venue: Nyaung Bin Seik Temple

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Power Plant Project

Participants:

2. Villagers of Nyaung Bin Seik 28 prs
2. ITD officers

   Mr. Kyaw Kyaw
4. DDC officer

   Ms. Supansa Kruajan Environmental Officer
4. TEAM Consulting Engineering and Management Co, Ltd.

   Mr. Plian Maneeya Soil Scientist

   Mr. Natt Dumkum Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. This village is in the 5 km radius of the project site.
- Discussion on Socio-economic condition such as income, occupation and livelihood.
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Concern on human health impact from project activities.	The consultant will estimate health impact assessment from the Project and describe to the people in next consultation.
Concern on change of livelihood caused by the project.	- These issues will be studied in details. Their impacts and mitigation measures will be presented in the village in next consultation - There will be no relocation of villagers.
If there is no effect on people and environment, we support this development project.	-
What is Project's solution for negative impacts on villagers.	The project will provide compliant channels for local communities.

- There was other concern associated with no response on the tree compensation yet on villagers by ITD. The response was made by the ITD engineer.

The consultation meeting was closed around 16.00 hrs.

Minutes of the Focus Group Meeting at Nga Pitat Village

Date: 4 February, 2015

Time: 9:00-11:30 hrs.

Venue: Nga Pitat Shrine

Subject: Information disclosure about the Small Port, LNG Terminal and Boil-Off Gas Power Plant Project

Participants:

1. Villagers of Nga Pitat 11 persons
2. ITD officers

   Mr. Kyaw Kyaw
3. DDC officer

   Ms. Supansa Kruajan Environmental Officer
4. TEAM Consulting Engineering and Management Co, Ltd.

   Mr. Plian Maneeya Soil Scientist

   Mr. Natt Dumkum Environmental Scientist

Minutes:

The consultant disclosed information about:

- Development of the project in the near future. Its location is near this village.
- Discussion on Socio-economic condition such as income, occupation and livelihood.
- Any questions and suggestions are welcome.

Villagers were questioning. The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Concern on marine aquatic organism declination from project activities.	The consultant will estimate marine ecology impact assessment from the Project. Their impacts and mitigation measures will be presented in the village in next consultation
If there is any impact, the Project should take an action to resolve the problem.	The project will cooperate with community to resolve the problem.
Don't want to move to Bawah Resettlement but agree to move at resettlement area with same size (land to land) that ITD proposed in Nga Pitat Village	The project informed the relocated house will move to resettlement area that ITD proposed in Nga Pitat Village
Regarding the environmental impact, local people suggest that the company should try to mitigate the impact in minimization.	All the negative impact from project development will be minimized by mitigation measures proposed in the EIA. Their impacts and mitigation measures will be presented in the village in next consultation
If there is support on people and environment from the Project, people welcome the project development.	-

The consultation meeting was closed around 11.30 hrs.

SECOND PUBLIC CONSULTATION

Minutes of the Meeting at Nga Pitat Village

Date: 26 January, 2016

Time: 1:30-3.30 p.m.

Venue: Nga Pitat Temple

Subject: Information of project study on the Small Port and LNG Terminal Projects

Participants:

1. Villagers of Nga Pitat 57 persons (names as attached in **Appendix 9A-2**)
2. ITD officers
   Mr. Kyaw Kyaw
3. DDC officer
   Ms. Supansa Kruajan Environmental Officer
4. LNG Plus
   Ms. Kulravee Soentiluk Supervisor - Project Coordinator
5. TBS staff
   Ms. Thet Htar Myint Social Safeguards Specialist
6. TEAM Consulting Engineering and Management Co, Ltd.
   Mr. Plian Maneeya Soil Scientist
   Mr. Natt Dumkum Environmental Scientist

Minutes:

The consultant disclosed information about:

- Objective of Study
- ESIA Process
- Project Location and Project Information
- Environmental Design Practice
- Results of Environmental Baseline Data include
  - Physical components
  - Biological components
  - Social components
- Environmental Impact Assessment and Proposed Mitigation Measures
  - Pre-construction
  - Construction
  - Operation
- Contact Persons
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on Alternative Fishing Ground and Boatyard Area, Job opportunities . The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Concern on Alternative Fishing Ground and Boatyard Area that replace from Britney Creek	- Developer will plan to develop the area Chi Oo Klong (Pan Din In Creek) to replace on Britney Creek.
The project should be support on local road improvement in Nga Pitat Village	- Developer will collect information and discuss with committee about road improvement in Nga Pitat Village.
Concerns on Job Opportunity	- The mitigation measure about prior consider the local people for working to create local occupation and reduce conflict between local people and immigrated workers already show in presentation and add in ESIA Report.
Concerns on the height of bridge (at km 3 of access road near Britney Creek) will not support the height of fishing boat (approx 8-14 m.)	- Developer received comment for discussing with engineer
With supporting to village and environment from the project, people agree on the project	

The consultation meeting was closed around 3.30 p.m.

Minutes of the Meeting at Nyaung Bin Seik Village

Date: 27 January, 2016

Time: 1:30-3.00 p.m.

Venue: Nyaung Bin Seik Temple

Subject: Information of project study on the Small Port and LNG Terminal Projects

Participants:

1. Villagers of Nyaung Bin Seik — 43 prs (names as attached in **Appendix 9A-2**)
2. DDC officer
   Ms. Supansa Kruajan — Environmental Officer
3. LNG Plus
   Ms. Kulravee Soentiluk — Supervisor - Project Coordinator
4. TBS staff
   Ms. Thet Htar Myint — Social Safeguards Specialist
5. TEAM Consulting Engineering and Management Co, Ltd.
   Mr. Plian Maneeya — Soil Scientist
   Mr. Natt Dumkum — Environmental Scientist

Minutes:

The consultant disclosed information about:

- Objective of Study
- ESIA Process
- Project Location and Project Information
- Environmental Design Practice
- Results of Environmental Baseline Data include
  - Physical components
  - Biological components
  - Social components
- Environmental Impact Assessment and Proposed Mitigation Measures
  - Pre-construction
  - Construction
  - Operation
- Contact Persons
- Any questions and suggestions are welcome.

Villagers were questioning. Their concerns were on Job opportunities . The consultant and ITD had responded accordingly, as shown below:

Questions from Villagers	Response from the consultant and ITD
Concerns on Job Opportunity	- The mitigation measure about prior consider the local people for working to create local occupation and reduce conflict between local people and immigrated workers already show in presentation and add in ESIA Report.
Suggestion the worker should wear uniform which can indicate between worker and villagers.	- Developer received comment for discussing with committees.
With supporting to village and environment from the project, people agree on the project	

The consultation meeting was closed around 3.00 p.m.

Minutes of the Meeting at Sakhanthit Village

Date: 28 January, 2016

Time: 9:00-10.30 a.m.

Venue: Sakhanthit Beach

Subject: Information of project study on the Small Port Project

Participants:

1. Villagers of Sakhanthit and Pan Din In — 87 prs, (names as attached in in **Appendix 9A-2**)
2. DDC officer
   Ms. Supansa Kruajan — Environmental Officer
3. TBS staff
   Ms. Thet Htar Myint — Social Safeguards Specialist
4. TEAM Consulting Engineering and Management Co, Ltd.
   Mr. Plian Maneeya — Soil Scientist
   Mr. Natt Dumkum — Environmental Scientist

Minutes:

The consultant disclosed information about:

- Objective of Study
- ESIA Process
- Project Location and Project Information
- Environmental Design Practice
- Results of Environmental Baseline Data include
  - Physical components
  - Biological components
  - Social components
- Environmental Impact Assessment and Proposed Mitigation Measures
  - Pre-construction
  - Construction
  - Operation
- Contact Persons
- Any questions and suggestions are welcome.

Villagers were recommend on the project as shown below:

Questions from Villagers	Response from the consultant and ITD
Recommend that all staff and worker should be wear same uniform	- - Developer received comment
Recommend that project must be setting sign or buoy to indicate offshore construction area	- Developer received comment and consulting will be proposed in mitigation measure
With supporting to village and environment from the project, people agree on the project	

The consultation meeting was closed around 11.30 a.m.

Minutes of the Meeting at Vee NapinVillage

Date: 28 January, 2016

Time: 1:30-3.30 p.m.

Venue: Village Office

Subject: Information of project study on the Small Port Project

Participants:

5. Villagers of SVee Napin and Muanmagan — 72 prs, (names as attached in in **Appendix 9A-2**)
6. DDC officer

   Ms. Supansa Kruajan — Environmental Officer
7. TBS staff

   Ms. Thet Htar Myint — Social Safeguards Specialist
8. TEAM Consulting Engineering and Management Co, Ltd.

   Mr. Plian Maneeya — Soil Scientist

   Mr. Natt Dumkum — Environmental Scientist

Minutes:

The consultant disclosed information about:

- Objective of Study
- ESIA Process
- Project Location and Project Information
- Environmental Design Practice
- Results of Environmental Baseline Data include
  - Physical components
  - Biological components
  - Social components
- Environmental Impact Assessment and Proposed Mitigation Measures
  - Pre-construction
  - Construction
  - Operation
- Contact Persons
- Any questions and suggestions are welcome.

Villagers were recommend on the project as shown below:

Questions from Villagers	Response from the consultant and ITD
Recommend that project must be setting sign or buoy to indicate offshore construction area	- Developer received comment and consulting will be proposed in mitigation measure
With supporting to village and environment from the project, people agree on the project	

The consultation meeting was closed around 3.30 p.m.

THIRD PUBLIC CONSULTATION

TEAM GROUP

MINUTES OF MEETING	
Project ESIA for Small Port Project	**Project No** P03153

Venue	Dawei Special Economic Zone, Meeting Hall	**Date**	29th March, 2018
Subject	Public Consultation Meeting III	**Time**	Morning section (1)

Participants: (Appendix 9A-3)

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: 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:

Questions and responses:

No.	Question	Response
	Mr.Tin Shwe (Nga Pi Tat Villager) - The bridge of Britney Creek (located at the mouth of creek) is in deteriorated condition causing risk for villagers' boats when crossing beneath. - If Britney Creek is filling up, where they can park their boats? - He noticed, noise barrier that the report recommended. Is it permanent and will it obstruct travelling of villager? - Concerning relocate of affected house due to road construction, recently there are more than 12 households that have been recorded. What is the plan for other extra households?	**TEAM replied,** - The bridge will demolish in next month. - When the Britney Creek is filling up, new boat yard will develop in Chi Oo Creek with similar quality of current boat yard in Britney Creek. - At pre-construction phase, noise quality will monitor again and if the noise level is over than the standard, noise barrier will construct for temporary (not permanent). - Before the project starts, project developer and resettlement committee will conduct detail inventory again and all affected households will have entitle for compensation and house relocation provided.

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 Small Port Project.)

MINUTE OF MEETING DURING THE THIRD PUBLIC CONSULTATION MEETING (OVERALL)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

စာအမှတ် ထဝ-၁/DSEZ-D/၂၀၁၈ (၁၄၅)
ရက်စွဲ ၊ ၂၀၁၈ ခုနှစ်၊ ဧပြီလ 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 (၁၈၀၀) 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)	ဦးကြည်မိုး	ဒုတိယဥက္ကဋ္ဌ	တနင်္သာရီတိုင်းဒေသကြီးလွှတ်တော်
(င)	ဒေါက်တာမြင့်ဆန်း	ဒုတိယဥက္ကဋ္ဌ-၂	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ
(စ)	ဦးလှမော်ဦး	ညွှန်ကြားရေးမှူးချုပ်	စားသုံးသူရေးရာဦးစီးဌာန
(ဆ)	ဦးလှထွန်းဦး	ဒုတိယညွှန်ကြားရေးမှူးချုပ်	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ဇ)	ဦးသောင်းမြင့်ထွန်း	အင်ဂျင်နီယာချုပ်	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ဈ)	ဦးစောတီးလယ်		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)	ဦးဝင်းမင်းထွန်း	ညွှန်ကြားရေးမှူး	ဆောက်လုပ်ရေးဝန်ကြီးဌာန
(ထ)	ဦးနေလင်း	လ/ထညွှန်ကြားရေးမှူး	ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ ရုံးအဖွဲ့
(ဒ)	ဦးထင်အောင်ကျော်	လ/ထညွှန်ကြားရေးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(ဓ)	ဒေါ်ဝေစိုးခင်	ဦးစီးအရာရှိ	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
(န)	ဦးစောမောင်သိမ်း	ဒု-ဦးစီးမှူး	သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန

(ပ) OSSC ကိုယ်စားလှယ်များ

(ဖ) Italian-Thai Development Public Company Limited (ITD) ကိုယ်စားလှယ်များ

(ဗ) Myandawei Industrial Estate Company Limited (MIE) ကိုယ်စားလှယ်များ

(ဘ) Dawei Residence Company Limited (DRC) ကိုယ်စားလှယ်များ

(မ) Dawei Power Company Limited (DPC) ကိုယ်စားလှယ်များ

(ယ) Dawei Power Generating Company Limited (DPG) ကိုယ်စားလှယ်များ

(ရ) Dawei LNG Terminal Company Limited (DLTC) ကိုယ်စားလှယ်များ

(လ) United Analyst And Engineering Consultant Company Limited (UAE) ကိုယ်စားလှယ်များ

(ဝ) TEAM Consulting Engineering and Management Company Limited (TEAM) ကိုယ်စားလှယ်များ

(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
(-)	ဦးအောင်မြိုးဝင်း		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 ဦးစွာပထမနှုတ်ခွန်းဆက်သပါကြောင်း၊ ယနေ့ပြုလုပ်သောဆွေးနွေးပွဲမှာ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်း အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ လူမှုပတ်ဝန်းကျင်နှင့် သဘာဝပတ်ဝန်းကျင် လေ့လာတွေ့ရှိချက်များအား ဒေသခံပြည်သူလူထုအား ရှင်းလင်းတင်ပြရန် ပြည်သူကြားနာပွဲပြုလုပ်ရခြင်းဖြစ်ပါကြောင်း၊ ပြည်သူတွေကို ပွင့်ပွင့်လင်းလင်းချပြမှာဖြစ်ကြောင်း၊ ယခုပွဲမှာဆိုရင်ဖြင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ပညာရှင်များ၊ အသိပညာရှင် အတတ်ပညာရှင်များမှ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်မှုနှင့်ပတ်သက်ပြီး ရှင်းလင်းတင်ပြမှာဖြစ်သဖြင့် ပြည်သူလူထုအနေဖြင့် သိရှိလိုသည့်အချက်များအား ပွင့်လင်းစွာမေးမြန်းနိုင်ကြောင်း၊ မည်သည့်လုပ်ငန်းမဆို ပြည်သူမပါက အောင်မြင်မှုမရရှိနိုင်ပါကြောင်း၊ ပြည်သူတွေနှင့် ရင်းရင်းနှီးနှီး တွေ့ဆုံဆွေးနွေးနိုင်အောင် ဤပွဲကို ပြုလုပ်ရခြင်းဖြစ်ကြောင်း၊ အထူးစီးပွားရေးဇုန် (၃) ခုရှိသည့်အနက် ရေနက်ဆိပ်ကမ်းရော အထူးစီးပွားရေးဇုန်ရော ပြုလုပ်နိုင်သည့်ဇုန်မှာ ထားဝယ်ဇုန်ပဲဖြစ်ပါကြောင်း၊ ပထမဆုံးအနေဖြင့် ထားဝယ်-ထီးခီး နှစ်လမ်းသွားကားလမ်း ဖောက်လုပ်မှာဖြစ်ကြောင်းနှင့် စီမံကိန်းလုပ်ငန်းများဆောင်ရွက်ရာတွင် ပြည်သူလူထုထိခိုက်မှုအနည်းဆုံးဖြစ်အောင် ဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ မည်သည့်အလုပ်မဆို ပြည်သူနှင့်အစိုးရ တိုင်ပင်ညှိနှိုင်းပူးပေါင်းဆောင်ရွက်မှသာ အောင်မြင်မည်ဖြစ်ကြောင်း၊ ဒီနေ့အခမ်းအနားဟာလည်း (၃) ကြိမ်မြောက် ပြည်သူလူထုနှင့် တွေ့ဆုံခြင်းဖြစ်ကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးစီမံကိန်းနှင့်ပတ်သက်၍ ရင်းရင်းနှီးနှီးအကြံပြုနိုင်ကြောင်း၊ စီမံကိန်းအကောင် အထည်ဖော်ဆောင်ရွက်နိုင်ရေး ဒေသခံပြည်သူများမှ ဝိုင်းဝန်းကူညီဆောင်ရွက်သွားရန် လိုအပ်ပါကြောင်းနှင့် ယခုလိုပြည်သူကြားနာပွဲအား ဒေသခံပြည်သူများအနေဖြင့် စိတ်ပါဝင်စားစွာ အချိန်ပေးပြီး တက်ရောက်လာကြတဲ့အတွက် အလေးပင်ကျေးဇူးတင်ရှိပါကြောင်း နှုတ်ခွန်းဆက်စကားပြောကြားခဲ့ပါသည်။

၄။ Mr Thanaratt Italian-Thai Development Public Co.,ltd., မှ ယနေ့သည် အမှတ်ရစရာနေ့တစ်ရက်ဖြစ်ပါကြောင်း၊ ဒီနေ့ကိုစောင့်စားလာခဲ့တာ ကြာခဲ့ပြီဖြစ်ပါကြောင်း၊ ဒီ Project ကို အမြင်အနေနဲ့ပြောရမယ်ဆိုရင် ကမ္ဘာ့နိုင်ငံရေးမှာ နိုင်ငံတစ်နိုင်ငံသည် တစ်နိုင်ငံတည်းအနေဖြင့် ရပ်တည်ရန်

ခက်ခဲကြောင်း၊ ထို့ကြောင့် နိုင်ငံအများနှင့် ပူးပေါင်းဆောင်ရွက်ရပါကြောင်း၊ မြန်မာနှင့်ထိုင်းသည် အိမ်နီးချင်းမိတ်ဆွေနိုင်ငံများဖြစ်ပါကြောင်း၊ တစ်နိုင်ငံနှင့်တစ်နိုင်ငံ အပြန်အလှန် ဖေးမလက်တွဲမှီခိုနေရပါကြောင်း၊ ယခုစီမံကိန်းသည်လည်း မြန်မာနိုင်ငံနှင့် ထိုင်းနိုင်ငံ၏ ပေါင်းစည်းမှုအတွက် အကောင်းဆုံးပြယုဂ်ဖြစ်ပါကြောင်း၊ ယခုစီမံကိန်းအတွက် အစိုးရတာဝန်ရှိသူများရော ဒေသခံများပါ စီမံကိန်းလုပ်ငန်းများအပေါ် အမြင်ချင်းဖလှယ်နိုင်ရန် သတင်းအချက်အလက်များပေးရန် လာရောက်ခဲ့ခြင်းဖြစ်ပါကြောင်း၊ ထားဝယ်သာမက ဒေသကြီးတစ်ခုလုံးအတွက် ဖွံ့ဖြိုးတိုးတက်ရန်ဖြစ်ပါကြောင်း၊ နောင်အနာဂတ် ဖွံ့ဖြိုးတိုးတက်ရန် ရည်ရွယ်ပါကြောင်း၊ ရင်းနှီးမြှုပ်နှံမှုအား အတူတကွပူးပေါင်း၍ အောင်မြင်အောင်ဆောင်ရွက်လိုပါကြောင်း၊ ယခုအချိန်မှစ၍ တဖြည်းဖြည်းချင်းတိုးတက်အောင် ဆောင်ရွက်သွားပါက တစ်ချိန်တွင် ပြီးမြောက်အောင်မြင်သွားမည်ဖြစ်ပါကြောင်း၊ နှစ်ဦးနှစ်ဖက် မှန်ကန်သောလမ်းကြောင်းမှ 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 ပြန်လည်နေရာချထားခြင်းနှင့်ပတ်သက်၍ ဆွေးနွေးခဲ့ပါကြောင်း၊ ဒေသခံရွာသားများ၏ စိုးရိမ်ပူပန်မှုများ အနှစ်ချုပ်မှာ ကျန်းမာရေး ထိခိုက်မှု၊ ပတ်ဝန်းကျင်ထိခိုက်မှု (အထူးသဖြင့် ရေထုညစ်ညမ်းမှု)။ မြေနှင့် သီးနှံများအတွက် လျော်ကြေးသမာသမတ်ရှိမှု၊ ဒေသခံများ၏အလုပ်အကိုင်၊ ပညာပေးရေးအစီအစဉ်များ၊ အလုပ်သမားအခွင့်အရေးနှင့် သင့်တော်သောလစာဖန်တီးပေးခြင်း၊ အခြေခံအဆောက်အဦး၊ လျှပ်စစ်၊ ဆရာဝန်လုံလောက်မှု၊ ကျန်းမာရေးစောင့်ရှောက်မှုမြှင့်တင်ခြင်းများ ဖြစ်ပါကြောင်း၊ လူထုစိုးရိမ်ပူပန်မှုများအား လျော့ပါးသက်သာစေရေးအတွက် တာဝန်ယူမှု/တာဝန်ခံမှုများဖြင့်

ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်းနှင့် စီမံကိန်းဆောင်ရွက်ခြင်းဖြင့် ရရှိနိုင်မည့်အကျိုး ကျေးဇူးများအားဆွေးနွေးခဲ့ပါသည်။

၆။ ဦးစောဘီးလယ်၊ KNU အဖွဲ့မှ စက်မှုဇုန်အကောင်အထည်ဖော်ရေးနှင့်ပတ်သက်၍ (၁၃) ရွာ သိခိုက်မှုရှိသည်ဟု သိရှိရပါကြောင်း၊ ကျေးရွာများအထိသွားရောက်၍ အနီးကပ်မေးမြန်းသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၇။ ထို့နောက် UAE အဖွဲ့မှ စက်မှုဇုန်စီမံကိန်းနှင့် ဆက်စပ်နေသည့် ကျေးရွာ (၁၄) ရွာသို့ သွား ရောက်ခဲ့ပါကြောင်း၊ 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 အကြံပြုချက်ပေးထား သည့် အခြေအနေတွင်သာ တွေ့ရှိရပါကြောင်း၊ EIA အစီရင်ခံစာတွင် စာမျက်နှာ (၂၀၀၀) ခန့်ရှိသည်ကို တွေ့ရပါကြောင်း၊ အဆိုပါအစီရင်ခံစာများအား ဒေသခံများနားလည်အောင် မည်သည့်ပုံစံဖြင့် ချပြထား ခြင်းရှိသည်ကို သိရှိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၉။ ထို့နောက် UAE အဖွဲ့မှ တနင်္သာရီတိုင်းဒေသကြီးအစိုးရအဖွဲ့သို့ အစီရင်ခံစာအနှစ်ချုပ် ပေးပို့ထား ပါကြောင်း ပြန်လည်ဆွေးနွေးတင်ပြခဲ့ပါသည်။

၁၀။ ဆက်လက်၍ ဒေါက်တာဆန်းဦး၊ ညွှန်ကြားရေးမှူး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ EIA လုပ်ငန်းဆောင်ရွက်ပုံအဆင့်ဆင့်ကို သုတ်ပြန်ပြီးဖြစ်ပါကြောင်း၊ EIA စိစစ်သုံးသပ်ရေးအဖွဲ့ကို ဖွဲ့စည်း ထားပါကြောင်း၊ ထိုအဖွဲ့တွင် မိမိအနေဖြင့် အတွင်းရေးမှူးအနေဖြင့်ပါဝင်ပြီး၊ အဖွဲ့ဝင် (၃၉) ဦးဖြင့် ဖွဲ့စည်းထားပါကြောင်း၊ ၎င်းအဖွဲ့တွင်မှ အဖွဲ့ခွဲ (၄) ခုကို ထပ်မံခွဲခြားထားပါကြောင်း၊ သက်ဆိုင်ရာ ဌာန ဆိုင်ရာများမှ အဖွဲ့ခွဲများတွင် ပါဝင်ပါကြောင်း၊ EIA အခြေအနေပေါ်မူတည်၍ SIA ရေးဆွဲသင့်ပါက ရေး ဆွဲရန် သတ်မှတ်ပါကြောင်း၊ ယခုစီမံကိန်းနှင့်ပတ်သက်၍ ဒေသခံလူထုနှင့် ဆက်စပ်ပတ်သက်နေခြင်းများ ကို ဖြေကြားပေးနိုင်ပါကြောင်း၊ ဆွေးနွေးဖြေကြားရင်း သွေဖည်လွဲမှားခြင်းများ အနည်းငယ်ရှိပါက ခွင့်လွှတ်ပေးစေလိုကြောင်း၊ ဆွေးနွေးချက် သွေဖည်လွဲမှားမှုများရှိပါက ယခုတက်ရောက်ကြသော ဒေသခံ များ၊ အဖွဲ့အစည်းများမှ ထောက်ပြပေး၍ရပါကြောင်း၊ EIA သုံးသပ်ဆန်းစစ်ခြင်းများပြုလုပ်ရာတွင် ယခု

တင်ပြသွားတဲ့ ဒေါ်ဖြူဖြူရှိန်တို့အဖွဲ့တွေကိုပါ ဖိတ်ကြားပါကြောင်း၊ EIA အစီရင်ခံစာ အကောင်အထည်ဖော်မှု စောင့်ကြည့်ရမည့်အပိုင်းနှင့်ပတ်သက်၍ စောင့်ကြည့်စစ်ဆေးနေပါကြောင်း၊ (၆) လလျှင် တစ်ကြိမ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနသို့ Monitoring Report တင်ရမည်ဖြစ်ကြောင်း၊ နောက်ဆက်တွဲလေ့လာစောင့်ကြည့်မှုများ ပြုလုပ်သွားရမည်ဖြစ်ပါကြောင်း၊ EIA, SIA အစီရင်ခံစာပါ လမ်းညွှန်အကြံပြုချက်များအား လိုက်နာမှုရှိပါက အရေးယူ၍ရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၁။ ဦးအောင်ဖြိုးဝေ၊ ထားဝယ်ဖွံ့ဖြိုးရေးအဖွဲ့က EIA Process အား ဆောင်ရွက်ရာတွင် ကျေးရွာ (၁၃) ရွာအား မတ်လ (၁၇) ရက်မှ (၂၂) ရက်နေ့ထိ (၆) ရက်တည်းဖြင့် မည်သို့မည်ပုံ ကွင်းဆင်းသွားသည်ကို သိလိုကြောင်း၊ ကျေးရွာကွင်းဆင်းမှုမှာ တစ်ရက်လျှင် နှစ်ရွာနှင့်အထက်ဖြစ်နေပါကြောင်း၊ တစ်ရွာလျှင် ရွာသားဦးရေမည်မျှ မေးမြန်းရှင်းပြခဲ့သည်ကို သိလိုပါကြောင်း၊ အချင်းဝက် (၅) ကီလိုမီတာနယ်မြေဆိုသည်မှာ မည်သည့်နေရာများ ပါဝင်သည်ကိုသိလိုကြောင်း၊ ယခုတင်ပြချက်များတွင် ကွင်းဆင်းစစ်ဆေးချိန်တွင် အဓိကတွေ့ရှိရချက်များ မပေါ်လွင်ပဲဖြစ်နေပါကြောင်း၊ မိမိအနေဖြင့် ယခုစီမံကိန်း EIA ကိစ္စနှင့်ပတ်သက်၍ ပြည်သူလူထုကြားနာပွဲပြုလုပ်ပြီးမှ နဲ့ခြမ်းစိတ်ဖြာမှု 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 အစိုးရတာဝန်ရှိသူများအား စီမံကိန်းအကောင်အထည်ဖော်မှုနှင့်ပတ်သက်၍ ကန့်ကွက်မှုများ သိပ်ပြီးမပြုလုပ်ရန် ပြောလိုပါကြောင်း၊ ဒေသခံပြည်သူများအား သနားငဲ့ညှာသင့်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၃။ UAE အဖွဲ့မှ မိမိတို့အဖွဲ့ ကွင်းဆင်းမည့်ရက်အား ကျေးရွာသို့ ကြိုတင်အကြောင်းကြားပါကြောင်း၊ တစ်ရက်တည်းဖြင့် နှစ်ရွာခန့် ကွင်းဆင်းပြီးသည်များလည်း ရှိပါကြောင်း၊ အချို့ရွာများတွင် လူဦးရေနည်းပါးခြင်းနှင့် အချို့ရွာများတွင် ရွာချင်းကပ်လျက်ရှိနေပါကြောင်း၊ လူထုထိတွေ့မှုအား UAE အဖွဲ့မှ အခကြေးငွေပေးအဖြစ် ဆောင်ရွက်ပါကြောင်း၊ EIA Process ဆောင်ရွက်ပြီးမှ ဥပဒေထွက်ရှိခြင်းဖြစ်၍

ပြောင်းပြန်ဟုပြော၍မရပါကြောင်း၊ ပြည်သူလူထုသို့ အသိပညာပေးဖြန့်ဝေမှုများ ဆက်လက်လုပ်ဆောင်သွားရမှာဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၄။ ဦးတင်မောင်ဦး၊ အပြည်ပြည်ဆိုင်ရာဥပဒေပညာရှင်များအဖွဲ့မှ ယခု EIA အစီရင်ခံစာ ပြုစုချိန်မည်ချကြာသည်ကို 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 ကြာခဏပြုလုပ်နေကြောင်း၊ ယခုထိ စီမံကိန်းလုပ်ငန်းများ စတင်သည်ကိုမတွေ့ရသေးကြောင်း၊ ကျေးရွာ (၁၃) ရွာလုံးမှ စီမံကိန်းအား မျှော်လင့်နေပါကြောင်း၊ မဖြစ်နိုင်တာတွေ ကန့်ကွက်နေသရွေ့ စီမံကိန်းအကောင်အထည်ဖော်ဖို့ ခက်ခဲနေမည်ဖြစ်ပါကြောင်း၊ ဒေသခံပြည်သူများအနေဖြင့် လုပ်ငန်းများ လုပ်ဖြစ်မည်/ မလုပ်ဖြစ်မည်၊ ဘယ်အချိန် စတင်နိုင်မည်ကို ရှင်းရှင်းလင်းလင်းသိလိုပါကြောင်း၊ အမှန်တကယ် စီမံကိန်းအကောင်အထည်ဖော်ပါက ဒေသခံရွာများအားလုံးမှ အားပေးနေမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၁၆။ UAF 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) ထပ် ဝန်ဆောင်မှုအဆောက်အဦး (၁) လုံးနှင့် Retail ဆောင်ရွက်နိုင်ရန် (၃) ထပ်အဆောက်အဦပါဝင်ကြောင်း၊ ဖွံ့ဖြိုးမှုအဆင့်တွင် (၅) ထပ်အဆောက်အဦ (၁၆၇) လုံး၊ ဈေးကွက်လိုအပ်ချက်အပေါ်မူတည်ပြီး (၈) ထပ်

ဝန်ဆောင်မှုအဆောက်အဦ (၂၀) လုံးနှင့် Retail (၃) ထပ်အဆောက်အဦ (၆၂) လုံးတည်ဆောက်နိုင်ရန် ရည်မှန်းထားပါကြောင်း၊စီးပွားရေးဇရိယာများပါဝင်ပါကြောင်း၊ အခြေခံအဆောက်အဦးနှင့် ဝန်ဆောင်မှုတွင် လမ်းဖောက်လုပ်ခြင်း၊ ရေကြီးရေလျှံမှုကာကွယ်ရေးစနစ်၊ ရေသန့်စင်စက်၊ ရေဆိုးသန့်စင်စက်၊ အမှိုက်စွန့်ပြစ်ရန်နေရာ၊ မီးသတ်ဌာန၊ ဆက်သွယ်ရေးစင်တာ၊ သယ်ယူပို့ဆောင်ရေးနှင့် အပန်းဖြေဇရိယာများပါဝင်ပါကြောင်း၊ ရေကြီးရေလျှံထိန်းချုပ်မှုစနစ်၊ ရေးပေါ်မီးဘေးတုံ့ပြန်ရေးအစီအစဉ်နှင့် မုန်တိုင်းနှင့် ရေကြီး/ရေလျှံမှုများအတွက် အရေးပေါ်ကာကွယ်ရေးအစီအစဉ်များ ပါဝင်ပါကြောင်း၊ ကနဦးမြို့ပြစီမံကိန်းအား တည်ဆောက်ရာတွင် EIA၊ SIA များအတွက် မြန်မာနိုင်ငံအတွင်း တည်ဆဲဥပဒေ၊ နည်းဥပဒေများအတိုင်း လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်း၊ လူထုစိုးရိမ်ပူပန်မှုများအား လျော့ပါးသက်သာစေရေးအတွက် တာဝန်ယူမှု/တာဝန်ခံမှုများဖြင့် ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ပါကြောင်းနှင့် စီမံကိန်းဆောင်ရွက်ခြင်းဖြင့် ပိုမိုကောင်းမွန်သောအခြေခံအဆောက်အဦးများ၊ ဆက်သွယ်ရန်လမ်းများ၊ လျှပ်စစ်နှင့်ရေပေးဝေရေး၊ ထောက်ပံ့ရေးအဆောက်အဦး မီးသတ်စခန်းနှင့် ဆေးရုံ၊ ပိုမိုကောင်းမွန်သော စီးပွားရေး၊ ဘဝတန်ဖိုးနှင့် လူနေမှုအဆင့်အတန်း၊ ကျွမ်းကျင်မှုအသစ်နှင့်နည်းပညာအသစ်၊ ဝန်ဆောင်မှု အလုပ်အကိုင်/လုပ်ငန်းအခွင့်အလန်းများ စသည့်အကျိုးကျေးဇူးများ ရရှိနိုင်မည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၁၈။ ဦးစိုးသိန်း၊ လဲရှောင်ကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ယခင်ကပြုလုပ်ခဲ့သော ဆွေးနွေးပွဲများအား အကြိမ်ကြိမ်အခါခါ တက်ရောက်ခဲ့ပါကြောင်း၊ ဒေသခံများအနေဖြင့် မြေယာလျော်ကြေးများ မှန်မှန်ကန်ကန်ရရှိရေး၊ အလုပ်အကိုင်ရရှိရေးကိစ္စများအတွက် စိုးရိမ်ပူပန်မှုများ ဖြစ်နေပါကြောင်း၊ ကျေးရွာတိုင်းတွင် လိုအပ်ချက်များအားလုံး ချက်ချင်းရရန်မဖြစ်နိုင်သည်ကိုတော့ နားလည်ပါကြောင်း၊ နိုင်ငံတော်စီမံကိန်းဖြစ်သည့်အတွက် အချို့ကိစ္စများတွင် ချက်ချင်းမရနိုင်သည်များကို နားလည်ပါကြောင်း၊ ကုမ္ပဏီမှ ဒေသအတွက် မှန်မှန်ကန်ကန်လုပ်ဆောင်ပေးပါက အထူးပြောစရာမလိုပါကြောင်း၊ ယခုအချိန်တွင် ဒေသခံများက တင်ပြသည်ထက် အခြားဒေသမှလူများက ဝေဖန်မှုများ များပြားနေသည်ကို တွေ့နေရပါကြောင်း၊ ယခင်က တိုင်းဒေသကြီးအစိုးရအဖွဲ့၊ ဘိုင်းအုပ်ချုပ်ရေးမှူး 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၊ ပုဂေါ်ခွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ အထူးစီးပွားရေးဇုန် အကောင်အထည်ဖော်မည့် ကုမ္ပဏီအနေဖြင့် တာဝန်ယူမှု၊ တာဝန်ခံမှုရှိရန် လိုအပ်ပါကြောင်း၊ မြေယာကိစ္စနှင့်ပတ်သက်၍ ယခင်ကဲ့သို့ ကြိုက်ရောင်းကြိုက်ဝယ်ပုံစံဖြင့် ဆောင်ရွက်ရန်မှာ လက်ခံ၍မရပါကြောင်း၊ အကောင်အထည်ဖော်မည့် ကုမ္ပဏီမှာ ITD ဖြစ်စေ၊ အခြားကုမ္ပဏီဖြစ်စေ တာဝန်ယူမှု၊ တာဝန်ခံမှုရှိရန် အရေးကြီးပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၀။ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းမှ မိမိတို့ တနင်္သာရီတိုင်းဒေသကြီးတွင် Infrastructure ပိုင်း အားနည်းပါကြောင်း၊ ယခင်ကော်မတီ၊ ယခင်အစိုးရကာလအတွင်းတွင် အထူးစီးပွားရေးဇုန်လုပ်ငန်းများ လည်ပတ်မှုမရှိခဲ့ပါကြောင်း၊ မြေယာလျော်ကြေးကိစ္စနှင့်ပတ်သက်၍ ညီတူညီမျှဖြစ်စေရမည်ဖြစ်ကြောင်း၊ မိမိတို့ တာဝန်ယူချိန်တွင် ပြည်သူလူထုကို ထိခိုက်နစ်နာအောင် ပြုလုပ်မည်မဟုတ်ကြောင်း၊ မိမိတို့အနေဖြင့် ဘဝါကျောက်မိုင်းကြောင့် ဒေသခံများနစ်နာမှုများအတွက် လျော်ကြေးငွေ သိန်းတစ်ထောင်ကျော်ရရှိအောင် ဆောင်ရွက်ပေးခဲ့ပါကြောင်း၊ တနင်္သာရီတိုင်းအနေဖြင့် National Grid လျှပ်စစ်မီးမရရှိသေးပါကြောင်း၊ ကန်ပေါက်ဒေသတွင် ၁၃၀၀ မီဂါဝပ် လျှပ်စစ်ဓာတ်အားရရှိနိုင်မည့် တာတိုင်တည်ဆောက်နေပါကြောင်း၊ တနင်္သာရီကမ်းခြောင်ဒေသ Master Plan နှင့် SEZ Master Plan တို့အား ရေးဆွဲနေပါကြောင်း၊ ယခင်က စီမံကိန်းဧရိယာအတွင်း 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 ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံကိန်းသည်း မအောင်မြင်နိုင်စရာမရှိပါကြောင်း၊ ကျွန်တော်တို့အနေဖြင့် လုပ်ငန်းဆောင်ရွက်ရာတွင် အမှားတွေ့ရှိပါက ထောက်ပြနိုင်ကြောင်း၊ စီမံကိန်းလုပ်ငန်းများနှင့်ပတ်သက်၍ သိရှိလိုသည်များအား

ပွင့်ပွင့်လင်းလင်းမေးမြန်းနိုင်ပါကြောင်း၊ မိမိတို့လူမျိုးများအနေဖြင့် နဂိုစီမံထည့်ပါကြောင်း၊ အနှစ် (၂၀) အတွင်း စက်ဘုပုကိုကျော်နိုင်အောင် ကြိုးစားကြမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၁။ ဦးကျော်ဆန်း၊ မူးဒူးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ မိမိအနေဖြင့် ဒေသခံစစ်စစ်ဖြစ်ပါကြောင်း၊ မိမိတို့ မူးဒူးကျေးရွာ ပြောင်းရွှေ့ရမည့် ကျေးရွာစာရင်းထဲပါဝင်သည်ဟု သိရပါကြောင်း၊ ယခင်ကကောက်ယူထား သည့် အိမ်ခြေစာရင်းထက် ယခုအခါ အိမ်ခြေပိုမိုများပြားလာပါဖြစ်ကြောင်း၊ ကျေးရွာအတွင်း လူဦးရေ တိုးတက်လာသဖြင့် အိမ်ခြေပိုမိုများပြားခြင်းဖြစ်ကြောင်း၊ ထပ်မံတိုးတက်လာသည့် အိမ်ခြေများအတွက် မည်သို့ပြုလုပ်ပေးမည်ကို သိလိုပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၂။ ဝန်ကြီးဦးဖြိုးဝင်းထွန်းမှ နာဂစ်ကြောင့် ဧရာဝတီမှလူများ ရန်ကုန်၊ လှိုင်သာယာတွင် လာရောက် ကျူးကျော်သကဲ့သို့ ယခု ထားဝယ်အထူးစီးပွားရေးဇုန်အတွင်း ပြင်ပမှ လာရောက်ကျူးကျော်သူများ မရှိ ဟု ယုံကြည်ကြောင်း၊ နဂိုဒေသခံမိသားစုမှ တိုးပွားလာသော မိသားစုများ၏ နေအိမ်များသာ ထပ်မံတိုး ပွားလာသည်ဟု ယုံကြည်ကြောင်း၊ ဒါတွေဟာ ဖြစ်ရိုးဖြစ်စဉ်များဖြစ်၍ နောက်ဆုံးအခြေအနေအား အကောင်းဆုံးဖြေရှင်းသွားမည်ဖြစ်ကြောင်း ဒေသခံများ နစ်နာအောင်ဆောင်ရွက်မည်မဟုတ်ကြောင်း ပြန်လည်ရှင်းလင်းပြောကြားခဲ့ပါသည်။

၂၃။ ဒေါက်တာမြင့်ဆန်း၊ ဒုဥက္ကဋ္ဌ-၂၊ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီမှ ဝန်ကြီး ဦးဖြိုးဝင်းထွန်းဦးဆောင်သော မြေယာစီမံခန့်ခွဲမှုကော်မတီကို ဖွဲ့စည်းထားပါကြောင်း၊ နိုင်ငံခြားမှ ERM အဖွဲ့ကိုငှားရမ်း၍ မြေယာသိမ်းဆည်းရေး၊ မြေယာလျော်ကြေးပေးချေရေးကိစ္စများအတွက် ရွာသားများ အား သင်တန်းပေးဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံခန့်ခွဲမှုကော်မတီ၊ တိုင်းဒေသကြီးအစိုးရအဖွဲ့နှင့် ERM အဖွဲ့ တို့ ပူးပေါင်းဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၂၄။ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် တည်ဆောက်မည့် (၁၅) မဂ္ဂါဝပ် ယာယီဓါတ်အားပေးစက်ရုံ စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးအပေါ် ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာအား TEAM (Team Consulting Engineering and Management Co.,Ltd.(Thai) & TOTAL Business Solution Co.,Ltd.(Myanmar) မှ တင်သွင်းဖတ်ကြားခဲ့ရာ ESIA အတွက် ပထမအကြိမ်အစည်းအဝေးကို ၂၀၁၆ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၂၇) ရက်နေ့တွင် ကျင်းပခဲ့ပါကြောင်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာကို ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလ (၃၀) ရက်နေ့တွင် အတည်ပြုချက်ရရှိခဲ့ပါကြောင်း၊ သယံဇာတ နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ESIA အစီရင်ခံစာအတည်ပြု

ချက်ကို ၂၀၁၇ ခုနှစ်၊ အောက်တိုဘာလ (၂၅) ရက်နေ့တွင် ရရှိခဲ့ပါကြောင်း၊ ယခုစီမံကိန်းသည် (၁၅) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံစီမံကိန်းသာဖြစ်သော်လည်း ပတ်ဝန်းကျင်ထိခိုက်ဆန်းစစ်ခြင်းနှင့် သက်ဆိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်း (EIA) ကိုလုပ်ဆောင်ထားပါကြောင်း၊ ယာယီဓါတ်အားပေးစက်ရုံသည် 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၍ မုဒေါခွန်း၊ 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 တင်သွင်းဖော်ပြရာ ရေအရင်းအမြစ် ရရှိနိုင်သောနေရာများမှာ ပယင်းဖြူရေလှောင်တမံ၊ ဓကာနီရွာအနောက်ဘက် ရေသိုလှောင်ကန်၊ ဒွဲတောရေလှောင်တမံ၊ အိုင်းရှည်ရေလှောင်တမံနှင့် ကလုံးသာရေလှောင်တမံနှင့် 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၊ နေ့စမ်းသပ်ခြင်းနှင့် အချက်အလက်ကောက်ယူခြင်းများ ဆောင်ရွက်ပြီးဖြစ်ပါကြောင်း၊ အသုံးပြုမည့်မြေများအား တိုင်းတာခြင်းနှင့် သီးပင်စားပင်များ စာရင်းကောက်ယူခြင်း၊ ဂေဟနည်းပညာဖြင့် စုံစမ်းစစ်ဆေးခြင်း၊ ရေအရည်အသွေးနှင့် ရေအခြေအနေကို စောင့်ကြည့်စစ်ဆေးခြင်း၊ အများပြည်သူပါဝင်မှုနှင့် တိုင်ပင်ဆွေးနွေးမှုတွင် ပယင်းဖြူရွာ၊ ဥသျှစ်ရွာနှင့် ဝက်ချောင်းရွာမှ လူကြီးများနှင့်လည်းကောင်း၊ အထူးစီးပွားရေးဇုန်အထောက်အကူလုပ်ငန်းအဖွဲ့နှင့် တိုင်းဒေသကြီးအစိုးရအဖွဲ့တို့ဖြင့် ဆွေးနွေးခဲ့ပြီးဖြစ်ကြောင်း၊ ဤစီမံကိန်းသည် ဒေသခံများအား အလုပ်အကိုင်အခွင့်အလမ်းနှင့် စီးပွားရေးဖွံ့ဖြိုးမှုအခွင့်အလမ်းကို အကျိုးဖြစ်ထွန်းစေမည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၂၇။ ဦးရီးစွမ်း၊ ပုဂေါ်ခွန်းကျေးရွာအုပ်ချုပ်ရေးမှူးမှ 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 ဆန်းစစ်ခြင်း အစီရင်ခံစာအား TEAM အဖွဲ့မှ တင်သွင်းဖော်ကြားရာတွင် နယ်ပယ် တိုင်းတာခြင်းအစီရင်ခံစာအား ၂၀၁၇ ခုနှစ်၊ နိုဝင်ဘာလ (၄) ရက်နေ့တွင် တင်သွင်းခဲ့ကြောင်း၊ အပြီးသတ် ESIA အစီရင်ခံစာမူကြမ်းအတွက် MONREC မှ စတုတ္ထအကြိမ်တရားဝင် သုံးသပ်ချက်ကို ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၂၀) ရက်နေ့တွင် ရရှိခဲ့ပါကြောင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ကိုလိုမီတာ (၅၀) အထက်ရှည်လျားသောလမ်းဟောင်းကို အဆင့်မြှင့်တင်ခြင်း စီမံကိန်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း EIA ပြင်ဆင်ရန် လိုအပ်ပါကြောင်း၊ ထိုင်းနိုင်ငံနယ်စပ်မှ ထားဝယ်အထူးစီးပွားရေးဇုန်အထိ လက်ရှိဖောက်လုပ်ထားပြီး

ဖြစ်သည့် ကျောက်ချောမခင်းရသေးသောလမ်းကို တိုင်းနိုင်ငံ၏ လမ်းတံတားဌာန၏ စံနှုန်းဖြစ်သည့် အဆင့် (၄) ရှိသော အဝေးပြေးလမ်း ဒီဇိုင်းစံနှုန်းနှင့်အညီ ကတ္တရာလမ်းခင်းသွားမည်ဖြစ်ပြီး စီမံကိန်း၏ အချို့သော လက်ရှိလမ်းပိုင်းများတွင် ဘူမိဆိုင်ရာလမ်းဒီဇိုင်းများကို ပြုပြင်ပြောင်းလဲသွားရမည်ဖြစ်ကြောင်း၊ လမ်းတွင် ယာဉ်အသုံးပြုခကောက်ခံရာနေရာ၊ ဝန်ဆောင်မှုစင်တာ၊ နားနေဆောင်များပါဝင်ကြောင်း၊ Toll Plaza အခြေစိုက်စခန်း၊ မဲဟ္တာအခြေစိုက်စခန်း၊ Elasto အခြေစိုက်စခန်း (၁) တို့တွင် လေထုအရည်အသွေးတိုင်းတာခြင်း၊ ယာဉ်သွားလာမှု စစ်တမ်းကောက်ယူခြင်း၊ ရေနေသတ္တဝါဂေဟဗေဒ စစ်တမ်းကောက်ယူခြင်း၊ လူမှုစီးပွားစစ်တမ်းကောက်ယူခြင်း၊ အမျိုးသားအဆင့်နှင့် တိုင်းဒေသကြီးအဆင့်အာဏာပိုင်များနှင့် တွေ့ဆုံခြင်း၊ ကျေးရွာများတွင် လူထုတွေ့ဆုံပွဲပြုလုပ်ခြင်းများ ဆောင်ရွက်ခဲ့ပါကြောင်း၊ ကျေးရွာ (၁၅) ရွာကို ဖြတ်သန်းရမည်ဖြစ်ကြောင်း၊ မြေယာပေးလျော်ခြင်းအစီအစဉ်ကို အပြည်ပြည်ဆိုင်ရာစံနှုန်းများနှင့်အညီ ထားဝယ်အထူးစီးပွားရေးဇုန်ကော်မတီနှင့် အခြားသောအစိုးရဌာနများနှင့် ဒေသခံများပါဝင်ကာ ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ WWF ၏ လမ်းဖောက်လုပ်ခြင်းဒီဇိုင်း လက်စွဲစာစောင်အကြံပြုချက်များအတိုင်း တောရိုင်းတိရစ္ဆာန်များ ဖြတ်သန်းသွားလာရန်နှင့် ဇီဝမျိုးကွဲများအတွက် စီစဉ်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ စီမံကိန်းအကောင်အထည်ဖော်စဉ် လိုက်နာရမည့် ကတိကဝတ်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု (EMP) အစီအစဉ်များအား လိုက်နာဆောင်ရွက်သွားမည်ဖြစ်ပြီး ခြောက်လတစ်ကြိမ် အစီရင်ခံစာအား ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာန ECD သို့ တင်ပြသွားမည်ဖြစ်ကြောင်း ရှင်းလင်းတင်ပြခဲ့ပါသည်။

၃၁။ ဦးစောဘီးလယ်၊ KNU အဖွဲ့မှ ယခင်ကမိမိအနေဖြင့် ပြည်ထောင်စုအဆင့်သို့ တင်ပြခဲ့သည်များရှိပါကြောင်း၊ (၂) လမ်းသွားကားလမ်းဖောက်လုပ်မည့်အစီအစဉ်မှာ ကြာမြင့်နေပြီဖြစ်ကြောင်း၊ ကားလမ်းကြောင်းတစ်လျှောက် ကျေးရွာများတွင် အိမ်ခြေများ တိုးပွားလာမှုရှိနေကြောင်း၊ မြေဘ္တာမြို့နှင့် ထီးခီးဒေသမှ ဒေသခံများကိုလည်း သွားရောက်ရှင်းပြစေလိုကြောင်း၊ ယခင်က ITD မှ မစွတာအာနမ်နှင့် 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 စီမံကိန်းနှင့်ပတ်သက်၍ 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၊ ရှေ့ဦးစွာ 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 အမိကနစ်နာသူများကို 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၊ လွန်ဖင်းရှင်းများနှင့် 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 ဒေသခံပြည်သူ များ၊ KNU အဖွဲ့အစည်းမှ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ ထားဝယ်အထူးစီးပွားရေးဇုန် ဖြစ်မြောက်ရေးအတွက် ဆောင်ရွက်ပေးသည့်ဝန်ထမ်းများအား ကျေးဇူးတင်ကြောင်း၊ ရှင်းလင်းပြောကြားပေးသောအဖွဲ့များကို လည်း အထူးကျေးဇူးတင်ပါကြောင်း၊ ဒေသခံများအနေဖြင့် စီမံကိန်းအောင်မြင်ရန်အတွက် ပံ့ပိုးကူညီပေး ရန်လိုအပ်ပါကြောင်း၊ လျော်ကြေးရယူထားပြီးဖြစ်သော်လည်း ၎င်းမြေများအား လုပ်ငန်းများမစတင်မီ အချိန်တွင် အလကားမထားပဲ အရင်းအမြစ်ပြုလုပ်၍ စိုက်ပျိုးအသုံးချနိုင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ ပြီး အစည်းအဝေးအား ညနေ (၁၅၀၀) နာရီတွင် ခေတ္တရပ်နားခဲ့ပါသည်။

၃၈။ အစည်းအဝေးဒုတိယနေ့အား (၂၉-၃-၂၀၁၈) ရက်နေ့ နံနက် (၀၈၀၀) နာရီတွင် ပြန်လည်စတင်ခဲ့ ပါသည်။

၃၉။ ထားဝယ်အထူးစီးပွားရေးဇုန် စီမံခန့်ခွဲမှုကော်မတီ ဒုတိယဥက္ကဋ္ဌ (၂) ဒေါက်တာမြင့်ဆန်းမှ အဖွင့် အမှာစကားပြောကြားရာတွင် ယခုအစည်းအဝေးသည် ပြည်သူကြားနာပွဲ၊ ဒေသခံပြည်သူများနှင့်တွေ့ဆုံပွဲ ဖြစ်ပြီး ယခုအကြိမ်သည် တတိယအကြိမ်ဖြစ်ပါကြောင်း၊ အထူးစီးပွားရေးဇုန် (၃) ခုရှိပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် စီမံကိန်း (၉) ခုရှိပါကြောင်း၊ အဆိုပါ (၉) ခုအနက်မှ (၄) ခု အကြောင်း တင်ပြမည်ဖြစ်ပါကြောင်း၊ ထားဝယ်အထူးစီးပွားရေးဇုန်သည် ၂၀၀၈ ခုနှစ်မှ စတင်ခဲ့သော်လည်း အကြောင်းကြောင်းကြောင့် နှောင့်နှေးခဲ့ရခြင်းဖြစ်ပါကြောင်း၊ ၂၀၁၆ ခုနှစ် စီမံခန့်ခွဲမှုကော်မတီ အသစ် တာဝန်ထမ်းဆောင်ပြီးနောက်ပိုင်း ITD နှင့် ချုပ်ဆိုထားသော စာချုပ်များကို ပြန်လည်သုံးသပ်ခဲ့ပါ ကြောင်း၊ စီမံကိန်း (၃) ခုကို ရွေးချယ်ပြီး ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ ၎င်းတို့မှာ (၁) နှစ်လမ်းသွား ကားလမ်းစီမံကိန်း၊ (၂) လျှပ်စစ်မီးရရှိရေးစီမံကိန်းနှင့် (၃) ဆိပ်ကမ်းစီမံကိန်းတို့ ဖြစ်ပါကြောင်း၊ နှစ်လမ်း သွားကားလမ်း ဖောက်လုပ်ရန်အတွက် ထိုင်းနိုင်ငံမှချေးငွေရယူရန် လွှတ်တော်မှ အတည်ပြုပြီးဖြစ်၍ ထိုင်းနိုင်ငံမှ ချေးငွေရရှိရန်ဆောင်ရွက်ပြီး တင်ဒါခေါ်ယူဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ လျှပ်စစ်မီးရရှိ

ရေးအတွက် LNG သဘာဝဓာတ်ငွေ့ဖြင့် ဓာတ်အားပေါက် 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 စုန်စီမံကိန်းများ ဖြစ်ပေါ်စေရန် မျှော်လင့်နေရသည်မှာ မောနေပြီဖြစ်ကြောင်း၊ ဒေသခံများ၏ စိုးရိမ်စိတ်များအား နားလည်ပါကြောင်း၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် ထိခိုက်မှုများသက်သာရန် ITD မှ Third Party ငှားရမ်း၍ ပညာရှင်များဖြင့် EIA. SIA များ ဆောင်ရွက်ပြီး မြန်မာနိုင်ငံဘက် ECD မှ ပညာရှင်များက အစီရင်ခံစာများကို စိစစ်ရကြောင်း၊ သဘာဝပတ်ဝန်းကျင်ဥပဒေများ ၂၀၁၂ နှင့် ၂၀၁၄ တွင်မှ ထွက်ပေါ်ခဲ့၍ ဖုန်၏ EIA, SIA Process များ ပြုလုပ်ချိန်သည် ဥပဒေမထွက်ပေါ်ခင်အချိန်က ပြုလုပ်ခဲ့ခြင်း ဖြစ်သောကြောင့် အားနည်းချက်များ ရှိနိုင်ပါကြောင်း၊ ဒေသခံလူထုနှင့်တွေ့ဆုံ၍ ၎င်းတို့၏ ဆန္ဒများ၊ စိုးရိမ်စိတ်များအား ပွင့်လင်းမြင်သာစွာ ဆွေးနွေးစေလိုကြောင်း၊ ပြည်သူလူထုထိခိုက်မှု အနည်းဆုံးဖြစ်အောင် ကြိုးပမ်းဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း၊ အစီခံစာအားလုံးအား Website တင်ပေးသွားမည်ဖြစ်ကြောင်း၊ 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 တင်သွင်းဖော်ကြားခဲ့ရာ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ (၂၅) ဟက်တာ (၆၁.၇၈ ဧက) ထက်ကျယ်ဝန်းသော ဆိပ်ကမ်းစီမံကိန်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ပြင်ဆင်ရန်လိုအပ်ပြီး ဆောက်လုပ်ရေးမစတင်ခင် အကောင်အထည်ပြု

ချက်ရရှိရန်လိုအပ်ခြင်းကြောင့် ပျမ်းမျှဧက (၁၀၀) ကျယ်ဝန်းသော ဆိပ်ကမ်းပေါ်စီမံကိန်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ပြင်ဆင်ရမည်ဖြစ်ပါကြောင်း၊ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီလတွင် ရရှိခဲ့ပြီး ESIA အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၇ ခုနှစ်၊ နိုဝင်ဘာလတွင် ရရှိခဲ့ပါကြောင်း၊ စီမံကိန်းအချက်အလက်များအနေဖြင့် ကမ်းလွန်အဆောက်အဦးများတွင် ပန်းဒင်အင်းမြစ်ဝ ဘယ်ဘက်အခြမ်းမှ (၁.၄) ကီလိုမီတာ ရှိသောလှိုင်းကာတစ်ခု၊ အရှည် (၃) ကီလိုမီတာ၊ အကျယ် (၁၅၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသော ချဉ်းကပ်ဘူးမြောင်းတစ်ခုနှင့် အချင်း (၃၆၀) မီတာနှင့် အနက် (၈) မီတာ ရှိသော Turning Circle တစ်ခုပါဝင်ကြောင်း၊ ကုန်းတွင်း အဆောက်အဦးများအတွက် 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 သောင်တူးဖော်ခြင်းလုပ်ငန်း ရေိယာတို့၏ သတင်းအချက်အလက်များကို ဖြန့်ဝေပေးရန် လိုအပ်ပါကြောင်း၊ ဒေသခံပြည်သူများ၏ အကူအညီလိုအပ်ချက်ကို ထောက်ပံ့ပေးနိုင်ရန် CSR အစီအစဉ်ကို ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း၊ ပိတ်သိမ်းမှုအစီအစဉ် မစတင်ခင် (၁) လနှင့် ပိတ်သိမ်းမှုပြီးစီးသည့်အချိန်တွင် ကမ်းလွန်အဆောက်အဦးများအနီးရှိ ကမ်းရိုးတန်းရေအရည်အသွေးနှင့် အဏ္ဏဝါဂေဟစနစ်တို့ကို စောင့်ကြည့်ရန် လိုအပ်ပါကြောင်း၊ စီမံကိန်းမတည်ဆောက်မီနှင့် တည်ဆောက်ဆဲကာလအတွင်း Grievance Redress Mechanism ကို ပြင်ဆင်ရန် လိုအပ်ပါကြောင်း၊ ဒေသခံပြည်သူများနှင့် စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်းတို့၏

အကြံပြုချက်နှင့် လိုလားချက်များအား အလေးထားပေါင်းစပ်ဆောင်ရွက်ရန် လိုအပ်ပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးမှုအစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ (၄) လ တစ်ကြိမ် တင်ပြရမည်ဖြစ်ပါကြောင်း ဆွေးနွေးခဲ့ပါသည်။

၄၁။ ဦးတင်ရွှေ၊ ကျန်းမာရေးမှူး၊ ငပိတက်ငယ်ရွာမှ ဗျစ်နီချောင်းရှိ တံငါလှေများနှင့်ပတ်သက်၍ မည်သို့ဆောင်ရွက်ပေးမည်ကို သိလိုပါကြောင်း၊ EIA စစ်တမ်းကောက်ယူမှုနှင့် ရွာသို့လာရောက်ရှင်းပြခြင်းမရှိသေးပါကြောင်း၊ ယခင်က အိမ်ခြေ (၁၂) လုံးသာရှိခဲ့သော်လည်း ယခုအိမ်ခြေများ ပိုမိုများပြားသောကြောင်း၊ အရှည် (၁) မိုင်ခွဲ၊ အမြင့် (၁၂) ပေရှိ အသံကာတံတိုင်း တည်ဆောက်မည်ဟု သိရှိရပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၂။ နောက်လတွင် အဆိုပါဗျစ်နီချောင်းတံတားအား ဖျက်သိမ်းပေးမည်ဖြစ်ကြောင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းများမစတင်ခင် လူထုတွေ့ဆုံပွဲ လုပ်သွားမည်ဖြစ်ကြောင်း Team အဖွဲ့မှ ပြန်လည်ရှင်းလင်းဖြေကြားခဲ့ပါသည်။

၄၃။ ဦးစိုးနိုင်၊ ထိန်ကြီးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ထိန်ကြီးကျေးရွာအုပ်စု၊ ဗျစ်နီရွာတွင် အိမ်ခြေ (၅၀) ရှိပြီး လူဦးရေ (၂၀၀) ခန့်ရှိပါကြောင်း၊ ဘာသာရေးအဆောက်အဦး၊ ယာယီစာသင်ကျောင်းနှင့် ဘုန်းကြီးကျောင်းအတွက် မြေနေရာများ စီစဉ်ပေးပါရန် ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၄၄။ အဆိုပါတင်ပြချက်အား တားဝယ်အထူးစီးပွားရေးဇုန်ထဲတွင်ပါဝင်ပါက စီမံခန့်ခွဲမှုကော်မတီမှ ဆောင်ရွက်ပေးသွားမည်ဖြစ်ပြီး ထားဝယ်အထူးစီးပွားရေးဇုန်ပြင်ပဖြစ်ပါက တနင်္သာရီတိုင်းအစိုးရအဖွဲ့မှ ဆောင်ရွက်ပေးနိုင်ရန် တင်ပြပေးမည်ဖြစ်ကြောင်း ဒုတိယဥက္ကဋ္ဌ (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၊ ကုန်းတွင်းဆောက်လုပ်ခြင်းလုပ်ငန်းများ၊ ချဉ်းကပ်လမ်းကြောင်းများ၊ ဆိပ်ကမ်းများ၊ ကုန်းတွင်း

အဆောက်အဦများ၊ သောင်တူးဖော်ခြင်းလုပ်ငန်းများ၊ တူးဖော်ရရှိသောသောင်များကို စွန့်ပစ်ခြင်း လုပ်ငန်းများပါဝင်ကြောင်း၊ ဆောက်လုပ်ရေးအတွက် အချိန်ဇယားအား (၁၅) လ ခန့်မှန်းရေးဆွဲထားပါကြောင်း၊ သင်္ဘောဖြင့်တင်ဆောင်လာသော LNG များကို အပူချိန် -၁၆၇ 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) လချော်တစ်ကြိမ် တင်ပြသွားမည်ဖြစ်ကြောင်း ရှင်းလင်းတင်ပြခဲ့ပါသည်။

၄၆။ ဦးရွှေစိုး၊ ဝေတက်ငယ်ရွာ၊ 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 တင်သွင်းဖော်ကြားရာတွင် အပြီးသတ် ESIA အစီရင်ခံစာမူကြမ်းကို ၂၀၁၆ ခုနှစ်၊ ဩဂုတ်လတွင် တင်သွင်းခဲ့ပြီး ESIA အစီရင်ခံစာအတည်ပြုချက်ကို ၂၀၁၈ ခုနှစ်၊ ဖေဖော်ဝါရီလ (၁၅) ရက်နေ့တွင် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) မှ ရရှိခဲ့ပါကြောင်း၊ စီမံကိန်းအချက်အလက် LNG Tank ၏ ပတ်ဝန်းကျင်အပူကြောင့် ထွက်ရှိလာသော ဓါတ်ငွေ့ကို အပူစွမ်းအင်အဖြစ်အသုံးပြုကာ လျှပ်စစ်ဓါတ်အားထုတ်လုပ်မည်ဖြစ်ပါကြောင်း၊ ပတ်ဝန်းကျင်နှင့် အဓိကသက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ လူမှုရေးဆိုင်ရာ ထိခိုက်မှုစီမံခန့်ခွဲခြင်းနှင့် သက်ဆိုင်သောဥပဒေနှင့် စည်းမျဉ်းများအတိုင်း လိုက်နာဆောင်ရွက်သွားရမည်ဖြစ်ပြီး တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ဖုန်မှုန့်၊ ဆူညံ

သံ၊ စွန့်ပြစ် ရေဆိုး/ကမ်းရိုးတန်းရေ/အဏ္ဏဝါ ဂေဟဗေဒ၊ လူမှု-စီးပွားတို့တွင် သက်ရောက်မှုများကို လျော့ချနိုင်ရေးနည်းလမ်းများနှင့် စောင့်ကြည့်လေ့လာခြင်းများပြုလုပ်မည့် အစီအစဉ်များကိုလည်းကောင်း၊ လုပ်ငန်းလည်ပတ် ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) လေ့လာအရည်အသွေး၊ 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 ရှိန်ခွံ ဧရိယာတွင် တည်ရှိကြောင်း၊ တည်ဆောက်ရေးကာလသည် (၆) နှစ် ကြာမြင့်ပြီး အများဆုံး အလုပ်သမား အရေအတွက် (၆၀၀) ယောက် ရှိနိုင်ပါကြောင်း၊ အနီးဆုံး လူမှုအသိုင်းအဝိုင်းသည် ငပိတက်ရွာဖြစ်ပြီး စီမံကိန်းနေရာမှ ပျမ်းမျှ (၂.၂၃) ကီလိုမီတာ ကွာဝေးပါကြောင်း၊ LNG Terminal မှ သဘာဝ ဓါတ်ငွေ့ကိုအသုံးပြုသော (၄၂၀) မဂ္ဂါဝပ် ဓါတ်အားပေးစက်ရုံ ပါဝင်ကြောင်း၊ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအခြေခံ EIA ဖြစ်စဉ်နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်းနှင့် ကာကွယ်ခြင်း၊ လူမှုရေးဆိုင်ရာ ထိခိုက်မှု စီမံခန့်ခွဲခြင်းနှင့်သက်ဆိုင်သော ဥပဒေနှင့် စည်းမျဉ်းများ၊ စီမံကိန်း အကောင်အထည်ဖော်မှု အတွက် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များအား လိုက်နာဆောင်ရွက်သွားရမည်ဖြစ်ကြောင်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) တွင် အပိုင်း (၃) ပိုင်းပါဝင်ပါကြောင်း၊ အကြိုတည်ဆောက်ရေး လုပ်ငန်းဆောင်ရွက်ခြင်းကာလနှင့် တည်ဆောက်ဆဲကာလများတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင် ဆောင်ရွက်ရမည့် CEMP၊ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလတွင် စီမံကိန်းပိုင်ရှင်မှ ပြီးမြောက် အောင်ဆောင်ရွက်ရမည့် OEMP၊ လုပ်ငန်းရပ်စဲခြင်းကာလတွင် ကန်ထရိုက်တာမှ ပြီးမြောက်အောင် ဆောင်ရွက်ရမည့် DEMP တို့ဖြစ်ကြောင်း၊ ခန့်မှန်းထားသော ထိခိုက်မှုနှင့် လျော့ချရေး နည်းလမ်းများနှင့်

ကိုက်ညီသော အစီအစဉ်ခွဲ (၆) ခုကို ဖော်ပြထားပါကြောင်း၊ ၎င်းတို့မှာ လေထုအရည်အသွေးစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ ဆူညံသံစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ ရေဆိုးစီမံခန့်ခွဲခြင်း အစီအစဉ်၊ လမ်းပန်းဆက်သွယ်ရေး စီမံခန့်ခွဲခြင်းအစီအစဉ်၊ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး (OHS) စီမံခန့်ခွဲမှုနှင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ် တို့ဖြစ်ပါကြောင်း ရှင်းလင်းကြားခဲ့ပါသည်၊

၅၀။ ဦးကျော်ဆန်း၊ မူးဒုးကျေးရွာအုပ်ချုပ်ရေးမှူးမှ 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 ယခုတင်သွင်းသော စာတမ်းများအတိုင်း လိုက်နာဆောင်ရွက်မှုရှိ/မရှိ တိုက်ဆိုင်စစ်ဆေးရန် အထောက်အထားများဖြစ်ကြောင်း၊ ဒေသခံရွာများမှ ဇုန်အတွင်းပါဝင်သည့်အတွက် မြစိမ်းရောင်ဈေးငွေ၊ လယ်စိုက်ဘဏ်ချေးငွေ စသည်တို့မရဘဲ နစ်နာနေပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ ပါသည်။

၅၃။ ဦးစုငယ်၊ ထိန်ကြီးရွာမှ နဘူးလယ်ဒေသသည် ဇုန်အတွင်းဖြစ်နေပါသဖြင့် ၂၀၁၄ ခုနှစ်မှစ၍ ချေးငွေများမရရှိပါကြောင်း၊ ယခုအခါ ညောင်ပင်ဆိပ်ရွာသို့ လျှပ်စစ်မီးရောက်နေပြီဖြစ်သော်လည်း မိမိတို့ကျေးရွာသို့ (၃) နှစ်ကြာမှ လျှပ်စစ်မီးရရှိမည်ဟုကြားသိရကြောင်း၊ ပျက်စီးနေသော တံတားများနှင့် အန္တရာယ်ရှိသောတံတားများအား ပြုပြင်ပေးစေလိုပါကြောင်း ဆွေးနွေးတင်ပြခဲ့ပါသည်။

၅၄။ ဦးစိုးသိန်း၊ လဲရောင်ကျေးရွာအုပ်ချုပ်ရေးမှူးမှ ဒေသတွင်းအလုပ်အကိုင်အခွင့်အလမ်းရရှိရေးကို ဦးတည်စဉ်းစားပေးစေလိုကြောင်းနှင့် အသက်မွေးဝမ်းကြောင်း သင်တန်းများ၊ ကျွမ်းကျင်လုပ်သားသင်တန်းများ ဖွင့်လှစ်ပေးစေလိုကြောင်း၊ မြေယာလျော်ကြေးငွေများ ယခင်ကကွက်တိကွက်ကျား ပေးလျော်ခဲ့ပါကြောင်း၊ ဒေသခံများမှ စီမံကိန်းအတွက် အကောင်းမြင်ပါကြောင်း ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၅။ ဦးထွန်းလွင်၊ ပုဂေါခွန်းရွာမှ ယခုစီမံကိန်းသည် ဦးတည်ချက်နှင့် ရည်မှန်းချက်ကောင်းပါကြောင်း၊ (၅) ထပ်တိုက်သေးတွင် ခြံပိုင်ရှင် (၁၄) ဦးခန့်ရှိပါကြောင်း၊ ၎င်းတို့အတွက် နစ်နာမှုမရှိအောင် ဆောင်ရွက်ပေးစေလိုပါ ကြောင်း၊ ဆွေးနွေးပြောကြားခဲ့ပါသည်။

၅၆။ ဦးရွှေစိုး၊ ဝပ်တက်ငယ်ရွာ၊ 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 သတ်ပေးဆိုင်းဘုတ်များ 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၊ သစ်တောများ ပျက်စီးနေခြင်းအား ပြုပြင်ပေးရန် တောင်းဆိုသွားမည်ဖြစ်ကြောင်း၊ ယခုဦးစီးစီမံကိန်းကို ITD မှ ဆောင်ရွက်မည်ဖြစ်ပြီး ပဏာမ စီမံကိန်းအား မကြာမီတွင် စတင်နိုင်မည်ဖြစ်ကြောင်း၊ စီမံကိန်းနှင့်ပတ်သက်၍ (၃/၄) လတစ်ကြိမ် ရှင်းပြရန် လာရန်ရှိပါကြောင်း နိဂုံးချုပ်ပြောကြားခဲ့ပါသည်။

မှတ်တမ်းတင်သူ

(ရဲဝင်းကျော်၊ ဌာနခွဲမှူး)

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

စာအမှတ်၊ ၀၀ - ၁ / DSEZ – D / ၂၀၁၈

ရက်စွဲ ၊ ၂၀၁၈ ခုနှစ်၊ ဧပြီလ ၆ ရက်

ဖြန့်ဝေခြင်း -

အစည်းအဝေးတက်ရောက်သူများအားလုံး

မိတ္တူကို

- ရုံးစာတွဲ / လက်ခံစာတွဲ

APPENDIX 9C

PRESENTATION BOTH FIRST AND SECOND PUBLIC CONSULTATIONS

TEAM GROUP

ISO 9001:2008

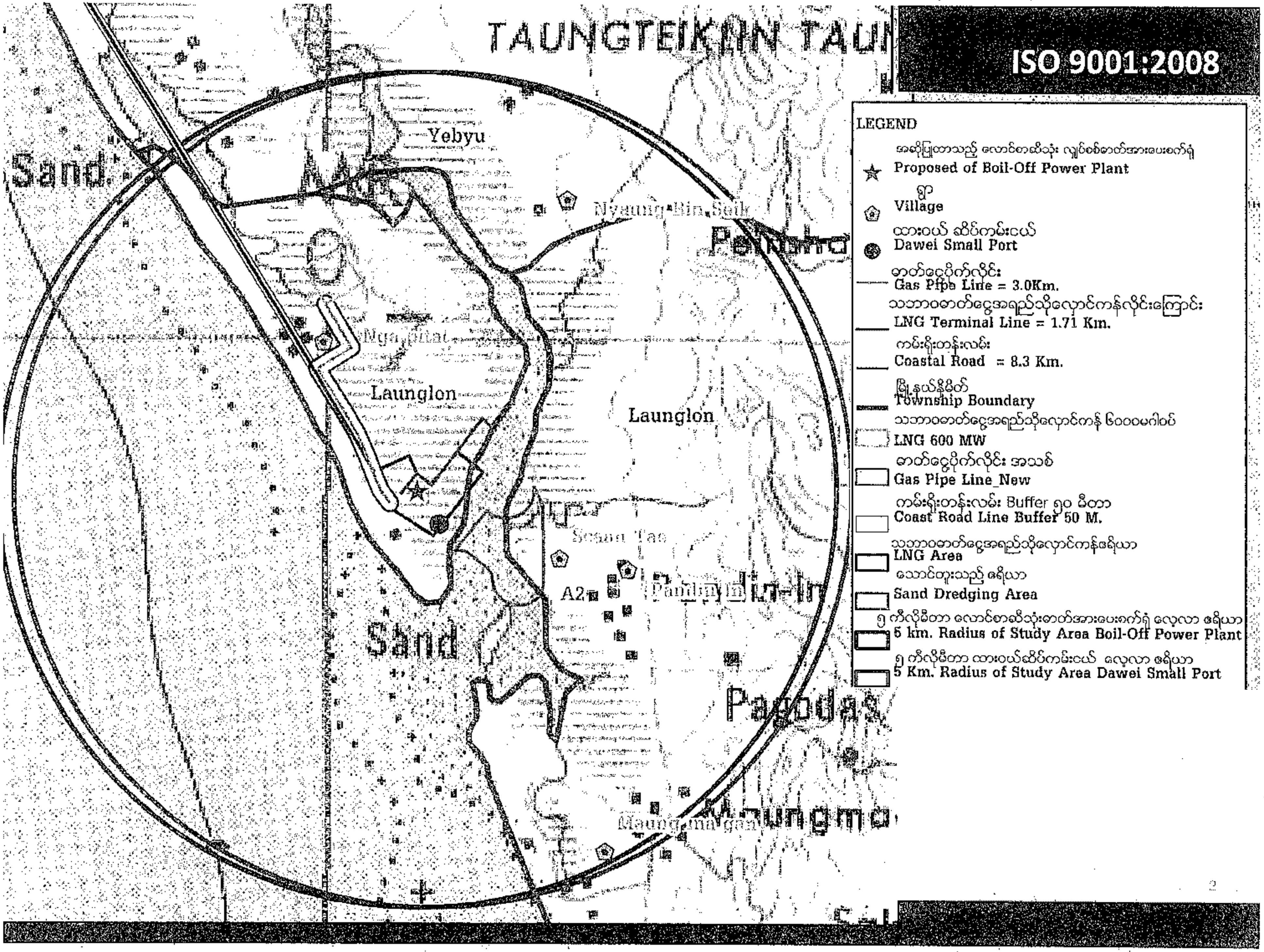
ထားဝယ်အထူးစီးပွားရေးဇုံ၏ ကနဦးအဆင့်ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် ခြောက်သွေ့ရာသီအချိန်တွင် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ရေး လူမှုရေးထိခိုက်အကျိုးသက်ရောက်မှုစစ်တမ်း သုံးသပ်စစ်ဆေးခြင်း

ESIA အတွက်ကွင်းဆင်းစစ်ဆေးတိုင်းတာခြင်း၊

လူမှုစီးပွားနှင့်ပြည်သူလူထုများနှင့် အကြံဉာဏ်ယူညှိနှိုင်းတိုင်ပင်ခြင်း။

ဆိပ်ကမ်းငယ် ၊ သဘာဝဓါတ်ငွေ့အရည်သိုလှောင်ကန်စခန်းနှင့် လောင်စာဆီသုံးလျှပ်စစ်ဓါတ်အားပေးစက်ရုံ

TEAM CONSULTING ENGINEERING AND MANAGEMENT CO., LTD.


ISO 9001:2008
TAUNGTEIKKIN TAU
LEGEND
Proposed of Boil-Off Power Plant
Village
Dawei Small Port
Gas Pipe Line = 3.0Km.
LNG Terminal Line = 1.71 Km.
Coastal Road = 8.3 Km.
Township Boundary
LNG 600 MW
Gas Pipe Line_New
Coast Road Line Buffer 50 M.
LNG Area
Sand Dredging Area
5 km. Radius of Study Area Boil-Off Power Plant
5 Km. Radius of Study Area Dawei Small Port
Sand
Yebyu
Launglon
Launglon
A2
Sand
Pagodas

သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးထိခိုက်အကျိုးသက်ရောက်မှု စစ်တမ်းသုံးသပ် စစ်ဆေးခြင်း ပြုလုပ်ပုံ ပြုလုပ်နည်း

- စီမံကိန်း အမျိုးစားဖော်ပြချက်များကို ပြန်လည်ဆန်းစစ်ခြင်း
- အမျိုးမျိုးသော ပတ်ဝန်းကျင်နှင့် လူမှုကဏ္ဍအရေ့အလားလာအတွက် ကွင်းဆင်းလေ့လာခြင်းနှင့် အချက်လက် မှတ်တမ်းများကောက်ယူခြင်း
- လက်ရှိ သဘာဝပတ်ဝန်းကျင်အခြေအနေနှင့် သိပြီးသောအခြေအနေများကို အခြေခံပြီး အနာဂတ်အခြေအနေကို တည်ဆောက်ခြင်း
- အရည်သွေးတန်ဖိုး အကဲဖြတ်ခြင်းနှင့် ထိခိုက်အကျိုးသက်ရောက် အကဲဖြတ်ခြင်း
- သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာထိန်းသိမ်းစီမံကိန်း (EMP) အတွက်ထောက်ခံမှု
- အရေးယူဆောင်ရွက်မှုစီမံကိန်းအပေါ် ပြောင်းရွှေ့ပြန်လည်နေရာချထားခြင်း (RAP)
- လူထုနှင့် အကြံဉာဏ်ယူဆွေးနွေးညှိနှိုင်းခြင်း

အဆိုပါစီမံကိန်း ဧရိယာ၏ ထိခိုက်အကျိုးသက်ရောက်မှုအလားလာ

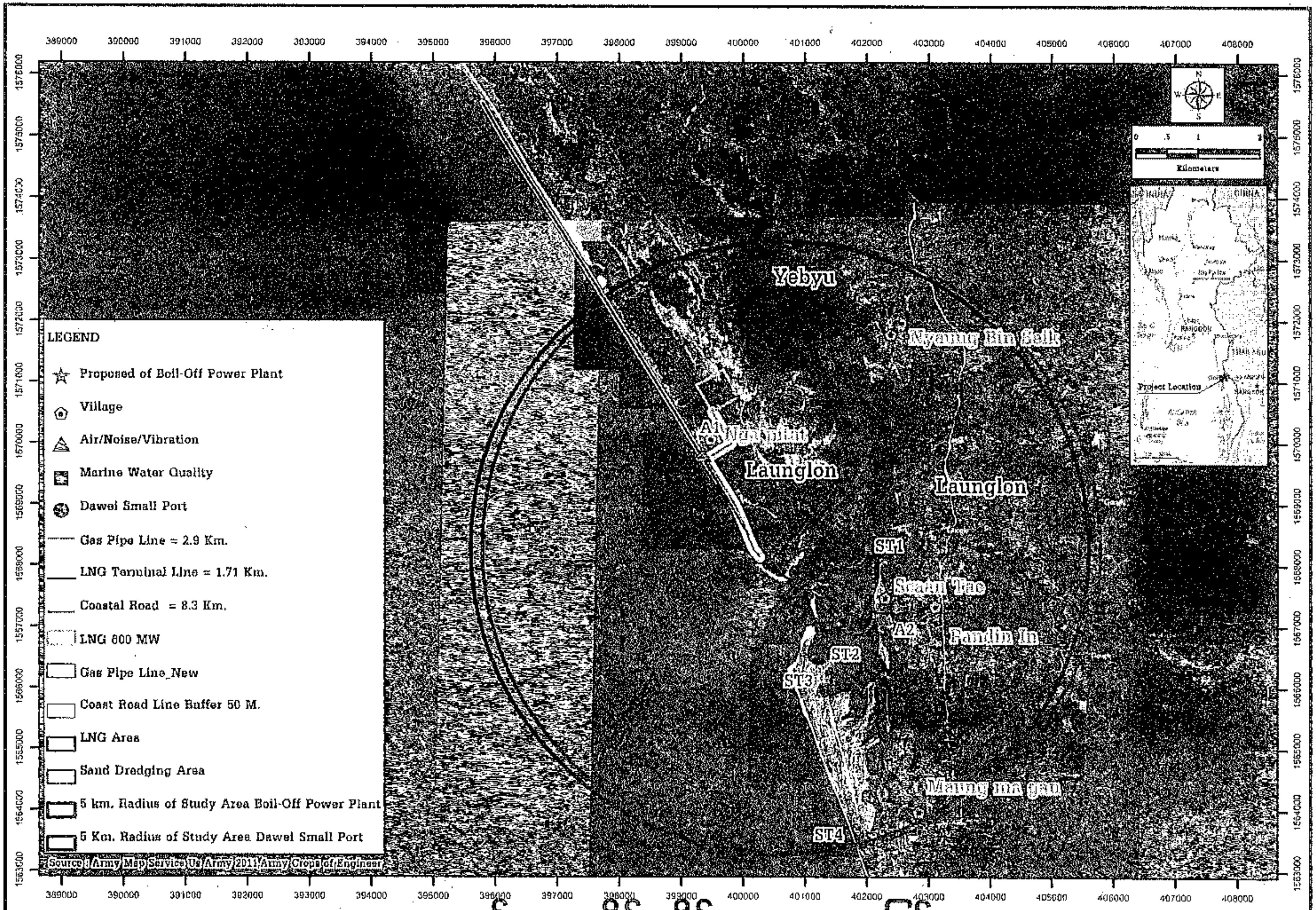
သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာကဏ္ဍ	ဧရိယာ၏ ထိခိုက်အကျိုးသက်ရောက်မှုအလားလာ
၁.ရာသီဥတု	စီမံကိန်းပြုရာဧရိယာအတွင်းရှိ အထွေထွေရာသီဥတုသည် နီးစပ်ရာ မိုးလေဝသနှင့်ဇလဗေဒဌာန သတိမူအလေးထားကြရမည်။
၂. ဆိပ်ကမ်းကုန်းမြေဒေသအတွင်း သဘာဝပတ်ဝန်းကျင် အရည်အသွေး (လေထုအရည်အသွေး၊ ဆူညံခြင်း၊ တုန်ခါခြင်း)	အဆိုစီမံကိန်းပြုရာဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း
၃. ရေရရှိရေး၊ ရေအသုံးပြုခြင်း၊ ရေလွှမ်းမိုးမှုကာကွယ်ခြင်း၊ ရေနုတ်မြောင်းစနစ်	အဓိကအားဖြင့် စီမံကိန်းပြုရာနေရာနှင့် စီမံကိန်းပြုရာ အနီးနားပတ်ဝန်းကျင်နေရာများ
၄. အဏ္ဏဝါဇီဝနှင့် အဏ္ဏဝါရေမျက်နှာပြင်စားကျက်များ	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း နှင့် ကမ်းရိုးတန်း ဧရိယာ
၅. အဏ္ဏဝါဇီဝအလေ့ထဖြစ်စဉ်များ	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း
၆. ရေမျက်နှာပြင်၊ မြေအောက်ရေ အရည်အသွေး၊ အဏ္ဏဝါဇီဝဂေဟစနစ်၊ ရေလုပ်ငန်းများ	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း နှင့် ကမ်းရိုးတန်း ဧရိယာ
၇. ကမ္ဘာမြေကြီးနှင့် ဆက်စပ်သော ဂေဟစနစ်၊ မြေအသုံးချမှု	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း

အဆိုပါစီမံကိန်း ဧရိယာ၏ ထိခိုက်အကျိုးသက်ရောက်မှုအလားလာ

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာကဏ္ဍ	ဧရိယာ၏ ထိခိုက်အကျိုးသက်ရောက်မှုအလားလာ
၈. လူမှု-စီးပွား၊ ပြည်သူနှင့် အပြန်လှန် ညှိနှိုင်းဆွေးနွေးခြင်း	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း
၉. ပြောင်းရွှေ့ပြန်လည်နေရာချထားရေး	၅.၆ကီလိုမီတာ ပိုက်လိုင်း (လေ့လာဧရိယာ ၁၀၀ မီတာ Righ-of-Way)နှင့် ၈.၃ကီလိုမီတာ တိုးချဲ့ကမ်းရိုးတန်းလမ်း (လေ့လာဧရိယာ ၅၀ Righ-of-Way) စီမံကိန်းသက်ရောက်မှုခံရသည့်သူများကိုသာ
၁၀. ပြည်သူ့ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ စွန့်ပစ်အမှိုက် ထိန်းသိမ်းမှု	အဓိက စီမံကိန်းပြုရာနေရာဖြစ်ပြီး အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်းနှင့် ဆက်စပ်နယ်နိမိတ်များ
၁၁. သမိုင်းနှင့် ယဉ်ကျေးမှုအမွေနှစ်များ / ရှေးဟောင်းအမွေနှစ် (ရုပ်ပိုင်းဆိုင်ရာယဉ်ကျေးမှုအရင်းမြစ်များ: PCR)	အဆိုပြုပါ ဆိပ်ကမ်းနေရာမှ ဗဟိုပြု၍ ၅ကီလိုမီတာ စက်ဝန်းနယ်နိမိတ်အတွင်း
၁၂. တခြားကဏ္ဍများ၊ သယ်ယူပို့ဆောင်ရေး၊ အခြေခံအဆောက်အအုံ၊ အစရှိသည်ဖြင့်	ပို့ဆောင်ဆက်သွယ်ရေးပုံစံ နီးစပ်ရာ နေရာများနှင့် ဆက်စပ်နေရာဒေသများတွင် ချက်ခြင်းဆောင်ရွက်ရမည်

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ကဏ္ဍ	ကွင်းဆင်းလေ့လာဆောင်ရွက်မှုများနှင့် တည်နေရာဒေသ အကျဉ်း
၁. လေ အရည်အသွေး၊ ဆူညံမှု၊ တုန်ခါမှု	**- နမူနာတည်နေရာဒေသ နှစ်နေရာ** ငပိတတ်ရွာနှင့် စခန်းသစ်ရွာ (၇၂နာရီ ဆက်လက်ဆောင်ရွက်မည်)
၂. ရေ အရည်အသွေး၊ ရေနေသတ္တဝါ ဂေဟစနစ်၊ ပင်လယ်ငါးငယ်များ၊ ပင်လယ်လိပ်များ၏ အသိုက်မြုံဥချရာနေရာ	**- ပင်လယ်သမုဒ္ဒရာ အောက်ကြမ်းခင်းအနည်နှစ် အရည်အသွေး** နမူနာတည်နေရာဒေသ ၄နေရာ (ST1) ပန်းဒက်အင်းရွာ (ST2) အဆိုပြုထားသည့် စီမံကိန်းဧရိယာ၏ မြစ်ဝ (ST3) အဆိုပြုထားသည့် စီမံကိန်းဧရိယာ၏ မြောက်ဘက် (ST4) မောင်းမကန်ရွာအနား **- ပင်လယ်လိပ်များနေထိုင်ဥချဧရိယာများကို ငပိတက်ဒေသခံရွာသားများကို တွေ့ဆုံမေးမြန်းပါမည်။**

သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ကဏ္ဍ	ကွင်းဆင်းလေ့လာဆောင်ရွက်မှုများနှင့် တည်နေရာဒေသ အကျဉ်း
၃.ကမ္ဘာမြေကြီးနှင့်ဆက်စပ်သော ဂေဟစနစ်	- စီမံကိန်းဧရိယာ ၅ကီလိုမီတာ စက်ဝန်းပတ်ပတ်လည် - သဘာဝဓာတ်ငွေ့ရည်သိုလှောင်ကန်စခန်း - သဲသောင်တူးသည့် ဧရိယာ
4. ကုန်းလမ်းသယ်ယူပို့ဆောင်ရေး (၂ရက် ၆း၀၀ - ၁၈း၀၀)	- ပင်လယ်ကမ်းခြေလမ်း တိုးတက်လာစေရန်။
5. လူမှုစီးပွားနှင့် ပထမ ပြည်သူနှင့် အပြန်လှန်အကြံဉာဏ်ပေး ညှိနှိုင်းဆွေးနွေးခြင်း	- သက်ဆိုင်ရာ အာဏာပိုင်များနှင့် ထိခိုက်အကျိုးသက်ရောက်မည့် ရွာ ၅ရွာကို တွေ့ဆုံမည်။



နည်းပညာပိုင်းဆိုင်ရာ လေ့လာခြင်း

10P3153/Tanawit.P/15-1-59/All Sampling Station.mxd

သဘာဝပတ်ဝန်းကျင်ဆေးထွက်ဆိုးကျိုးများကို စူးစမ်းထောက်လှမ်းရှာဖွေသည့် ယာယီအစီစဉ်

သဘာဝပတ်ဝန်းကျင် နမူနာကောက်ယူမည့် နေရာ

- လေအရည်အသွေး/ ဆူညံမှု/တုန်ခါမှု
  - ငပိသစ်ရွာ (၂၀-၂၄ ဇန်နဝါရီလ ၂၀၁၅)
  - စခန်းသစ်ရွာ (၂၅-၂၈ ဇန်နဝါရီလ ၂၀၁၅)

- ရေ အရည်အသွေး၊ ရေနေသတ္တဝါဂေဟစနစ်၊ ပင်လယ်ငါးငယ်များ၊
  - မောင်းမကန်ရွာအနီး (၂၀-၂၂ ဇန်နဝါရီလ ၂၀၁၅)

- မြေအောက်ရေ အရည်အသွေး နမူနာ ငပိသစ်ရွာ နှင့် စခန်းသစ်ရွာ
  - ငါးပိသစ်ရွာ နှင့် စခန်းသစ်ရွာ (၂၃ ဇန်နဝါရီ ၂၀၁၅)

သဘာဝပတ်ဝန်းကျင်ဘေးထွက်ဆိုးကျိုးများကို စူးစမ်းဖော်ထုတ်လှမ်းရှာဖွေသည့် ယာယီအစီစဉ်

သဘာဝပတ်ဝန်းကျင် နမူနာကောက်ယူမည့် နေရာ

- ပင်လယ်လိပ်များ ဥချဖရိယာ သတင်းအချက်လက်များကို စုဆောင်းခြင်း
  ငပိတက်ရွာ (၂၃ ဇန်နဝါရီလ ၂၀၁၅)

- ဈေးမှ ငါးမျိုးစိပ်များကို စုဆောင်းခြင်း

  ငပိတက်ရွာ နှင့် စခန်းသစ်ရွာ (၂၄ဇန်နဝါရီလ ၂၀၁၅)

- ရေလမ်းပို့ဆောင်းရေးယာဉ်များ နှင့် ကုန်းလမ်းပို့ဆောင်ရေးယည်များ၏ အရေအတွက်များကို စုဆောင်းခြင်း
  တိုးချဲ့ ကမ်းရိုးတန်းလမ်း (၂၃-၂၅ ဇန်နဝါရီလ ၂၀၁၅)

- မြေအသုံးချမှုနှင့် ကမ္ဘာ့မြေကြီးနှင့်ဆိုင်သော ဂေဟာစနစ် စစ်ဆေးခြင်း
  (၂၀-၂၄ ဇန်နဝါရီလ ၂၀၁၅)

ပြည်သူလူထုနှင့် အပြန်အလှန်အကြံဉာဏ်ယူညှိနှိုင်းဆွေးနွေးခြင်း လုပ်ဆောင်ချက်များ

အဆိုပြုထားသော သက်ဆိုင်ရာအာဏာပိုင်များနှင့် ဒေသခံအစုရှယ်ယာပိုင်ဆိုင်သူများ စာရင်း

၁) အဖွဲ့ (က) : အစိုးရဌာနဆိုင်ရာ အရာရှိများ

- လူမှုပြည်လည်နေရာချထားရေး အရာရှိကြီး, (လူမှုပြန်လည်နေရာချထားရေး ဝန်ကြီးဌာန)
- ထားဝယ်အထူးစီးပွားရေးဇုံ (DSEZ) စီမံရေးရာ ကော်မတီ
- DSEZ Supporting Working Body (SWB)
- အခြားသော သက်ဆိုင်ရာကိုယ်စားလှယ်များ.

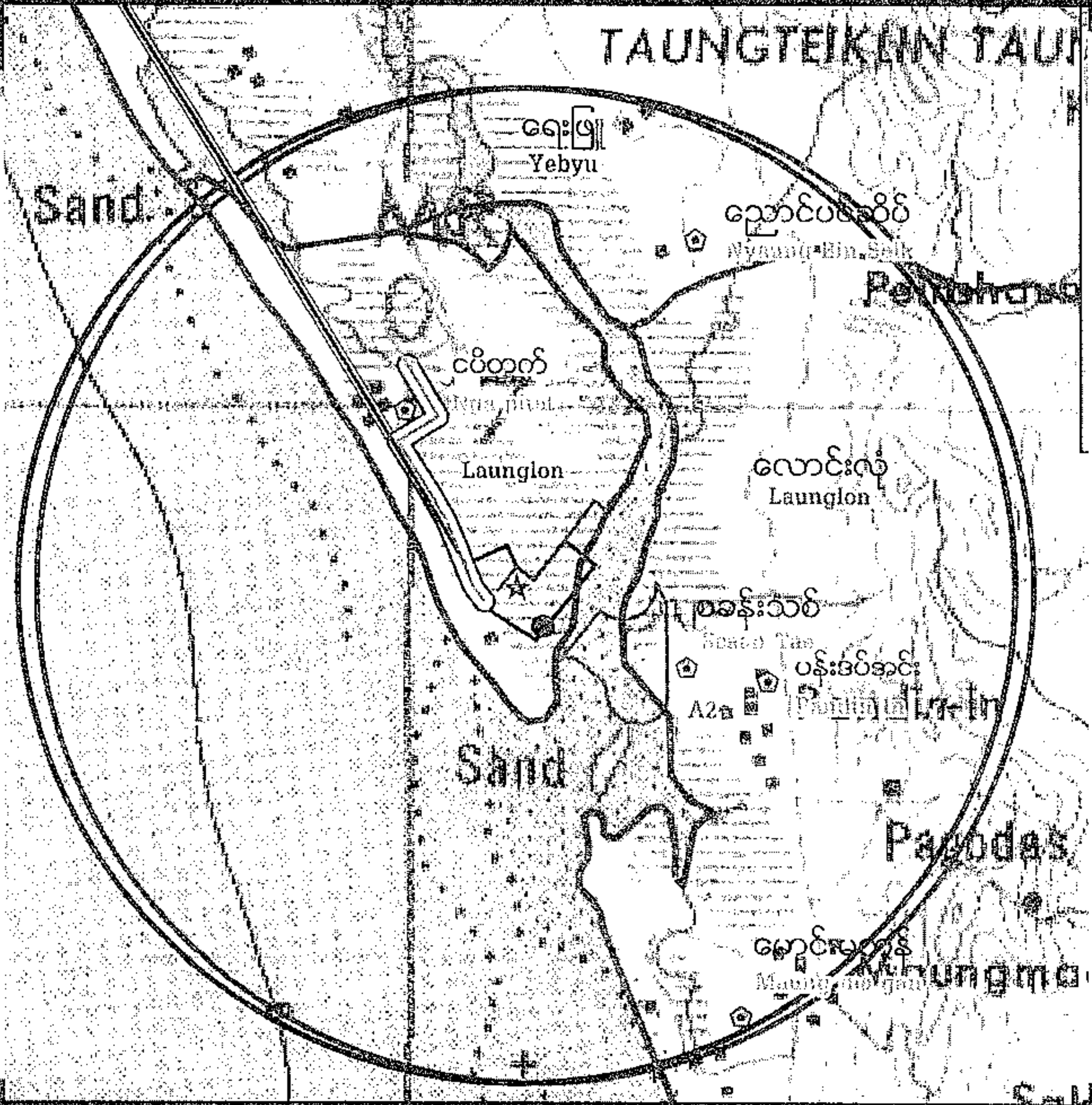
၂) အဖွဲ့ (ခ): ဒေသခံ အာဏာပိုင်များ

- တနင်္သာရီတိုင်းဒေသကြီး ဒေသခံအာဏာပိုင်အမှုထမ်း
- လောင်းလုံနှင့် ရေဖြူမြို့နယ်အပါအဝင် စီမံကိန်း၏ထိခိုက်အကျိုးသက်ရောက်သည့် ဒေသခံအမှုထမ်းများ

➢၃) အဖွဲ့ (ဂ) : ထိခိုက်အကျိုးသက်ရောက်ခံရသော ရွာခံများ

- ငပိတက်ရွာ၊ မောင်းမကန်ရွာ၊ ပန်းဒက်အင်းရွာ၊ စခန်းသစ်ရွာ၊ ညောင်ပင်ဆိပ်ရွာများမှ သူကြီး၊ ကော်မတီ နှင့် ရွာသူရွာသားများ

ရည်မှန်းထားသည့် ရွာသူ ရွာသားများ၏ တည်နေရာ



လူမှုစီးပွားမှတ်တမ်းအတွက် ကွင်းဆင်းစူးစမ်းထောက်လှမ်းမှု ယာယီအချိန်ဇယား

ပြည်သူနှင့် အပြန်လှန်အကြံဉာဏ်ပေး ညှိနှိုင်းဆွေးနွေးခြင်း

- (၂၀ ဇန်နဝါရီလ, ၂၀၁၅)
  အီတာလျံ-ထိုင်း ရင်းနှီးမြှုပ်နှံမှု ကုမ္ပဏီ (ITD)၊ ထားဝယ်အထူးစီးပွားရေးဇုန် (DSEZ) နှင့် တနင်္သာရီဒေသအတွင်းရှိ အာဏာပိုင်အရာရှိများနှင့် တွေ့ဆုံဆွေးနွေးသည်

- (၂၁ ဇန်နဝါရီလ, ၂၀၁၅)
  ရွာသူကြီးများနှင့် စနည်းကျကျ တွေ့ဆုံဆွေးနွေးပြီး ပြည်သူနှင့် အပြန်လှန်အကြံဉာဏ်ပေး ညှိနှိုင်းတွေ့ဆုံဆွေးနွေးမှုများ၊ လူမှုစီးပွားစစ်တမ်းများ အားဖော်ပြသည်။

- (၂၂ ဇန်နဝါရီလ, ၂၀၁၅)
  ရေဖြူမြို့နယ်နှင့် လောင်းလုံမြို့နယ်ဒေသခံ အာဏာပိုင်များဖြင့် ပထမအဆင့် ဒေသခံပြည်သူနှင့် အပြန်လှန်အကြံပေး ညှိနှိုင်းဆွေးနွေးသည်။

- (၂ ဖေဖော်ဝါရီလ, ၂၀၁၅)
  ငပိတက်ရွာ၊ ညောင်ပင်ဆိပ်ရွာ၊ စခန်းသစ်ရွာ နှင့် ပန်းဒက်အင်းရွာများသို့ ပထမအဆင့် ဒေသခံပြည်သူနှင့် အပြန်လှန်အကြံပေး ညှိနှိုင်းဆွေးနွေးမည်။

- (၃ ဖေဖော်ဝါရီလ, ၂၀၁၅)
  မောင်းမကန်ရွာသို့ ပထမအဆင့် ဒေသခံပြည်သူနှင့် အပြန်လှန်ကြံပေး ညှိနိုင်းဆွေးနွေးမည်။

လူမှုစီးပွားမှတ်တမ်းအတွက် ကွင်းဆင်းစုံစမ်းထောက်လှမ်းမှု ယာယီအချိန်စာရင်း

လူမှုစီးပွား ကောက်ယူမည့်စစ်တမ်း (ပျမ်းမျှ နမူနာ ၁၆၀)

- (၃ ဖေဖော်ဝါရီ ၂၀၁၅)တွင်
  ထိခိုက်အကျိုးသက်ရောက်မှုခံထားရသည့် မောင်းမကန်နှင့် ပန်းဒက်အင်း ရွာတွင်
  လူမှုစီးပွား ကြည့်ရှုကောက်ယူမည်။

- (၄ ဖေဖော်ဝါရီ ၂၀၁၅)တွင်
  ထိခိုက်အကျိုးသက်ရောက်မှုခံထားရသည့် စခန်းသစ်နှင့် ညောင်ပင်ဆိပ်ရွာများတွင်
  လူမှုစီပွား ကြည့်ရှုကောက်ယူမည်။

- (၅ ဖေဖော်ဝါရီ ၂၀၁၅)တွင်
  ထိခိုက်အကျိုးသက်ရောက်မှုခံထားရသည့် ငပိတက် ရွာသို့
  လူမှုစီပွားကြည့်ရှုကောက်ယူမည်။

လေ့လာ တရင်းမှတ်တမ်း

Activities	1				2				3				4				5				6			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Preparation of ESIA Document																								
1) Review the EFR prepared by the project design consultant	-																							
2) Undertake a initial site visit		-																						
3) Compilation of Project Details / Description		-	-	-	-	-	-	-																
4) Data Collection and Field Survey for Various Environmental																								
and Social Aspects																								
- Environmetal Quality in the Port Landside					-	-																		
(Air Quality / Noise /Vibration)																								
- Water Supply/ Water Utilization/Flood Control/Drainage System					-	-																		
- Oceanography/Sediment					-	-																		
- Marine Habitat					-	-																		
- Water Supply/ Marine Ecology/Fisheries					-	-																		
- Terrestrial Ecology/Land Use					-	-																		
- Socio-economics					-	-																		
- Public Health/Waste Management					-	-																		
- Historical&Cultural Heritage/Archaeological Resources					-	-																		
(Physical Cultural Resources, PCR)																								
- Other Aspects; Transportation, Infrastructure, etc.					-	-																		
5) Establishment of Existing Environmental Condition and							-	-	-	-	-	-	-	-	-									
Projection of Future Condition																								
6) Evaluation and Assessment of Impact							-	-	-	-	-	-	-	-	-	-	-	-						
7) Recommendation for Environmental Monitoring Program							-	-	-	-	-	-	-	-	-	-	-	-						

လှေ့လာစာရင်းမှတ်တမ်း

Activities	1				2				3				4				5				6			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Public Consultation Program																								
1) Identification of target groups																								
2) Consultation with district and provincial officials																								
3) Preparation of project information/documents																								
4) First public consultation sessions																								
5) Second public consultation sessions																								
6) Evaluation of the public consultation																								
Report Submission																								
1) Scoping Report with TOR for ESIA																								
2) Progress Report																								
3) Draft Final ESIA Report for Review by Ministry of Environment Conservation and Forestry																								
4) Final ESIA Report																								

ကျေးဇူးတင်ပါတယ်

SECOND PUBLIC CONSULTATION

ထားဝယ်အထူးစီးပွားရေးဇုံ ဆိပ်ကမ်းငယ်တည်ဆောက်ရေး ၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အကျိုးသက်ရောက်ခြင်း အကဲဖြတ်လေ့လာမှုများ

(၂၀၁၂)ခုနှစ်မြန်မာနိုင်ငံပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ရေးနှင့် သစ်တောရေးရာဝန်ကြီးဌာန၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ခြင်းနှင့်အကျိုးသက်ရောက်မှုဥပဒေ၊(၂၀၁၄)ခုနှစ်ပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်ရေးဝန်ကြီးဌာန၏ပတ်ဝန်းကျင်ထိခိုက်သက်ရောက်မှုလေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်များအရ ၂၅ ဟက်တာ(၆၁.၇၈ဧကေ)ရှိဆိပ်ကမ်းငယ်သည် ၏ ပတ်ဝန်းကျင်ရေးရာအကျိုး သက်ရောက်မှုအကဲဖြတ်လေ့လာဆန်းစစ်ခြင်း (EIA) ကို စီမံကိန်း မစတင်မီတွင် အတည် ပြုချက်ရယူနိုင်ရန် ပြင်ဆင်ရန် လိုအပ်ပါသည်။

1

TEAM GROUP

သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အကျိုးသက်ရောက်မှုများလေ့လာဆန်းစစ်ခြင်းရည်ရွယ်ချက်

- စီမံကိန်းမှ ဖြစ်နိုင်ခြေရှိသော ကောင်းကျိုးနှင့် ဆိုးကျိုး သက်ရောက်မှုများ၏ ပမာဏကိုဖော်ထုတ်ရန် (ရုပ်ဝတ္ထုပတ်ဝန်းကျင်ဆိုင်ရာများ၊သက်ရှိတို့၏ဂေဟစနစ် လူသားတို့၏ အသုံးချမှု၊ ဓလေ့စရိုက် အရည်အသွေးများနှင့် ကျန်းမာရေးစံနှုန်းများ)
- အဆိုပြုကာကွယ်ခြင်းများ၊ဆိုးကျိုးသက်ရောက်မှုလျော့ချခြင်းနှင့် စောင့်ကြည့်ကြီးကြပ်ရန်

TEAM GROUP

သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အကျိုးသက်ရောက်မှုများလေ့လာဆန်းစစ်ခြင်းအစီအစဉ်များ

(၁) သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုစီးပွါး ထိခိုက်သက်ရောက်မှုများ ဆန်းစစ်ခြင်း အစီအစဉ်များ

(၂) စီမံကိန်း ဖော်ပြချက်များ ပေါင်းစုခြင်း

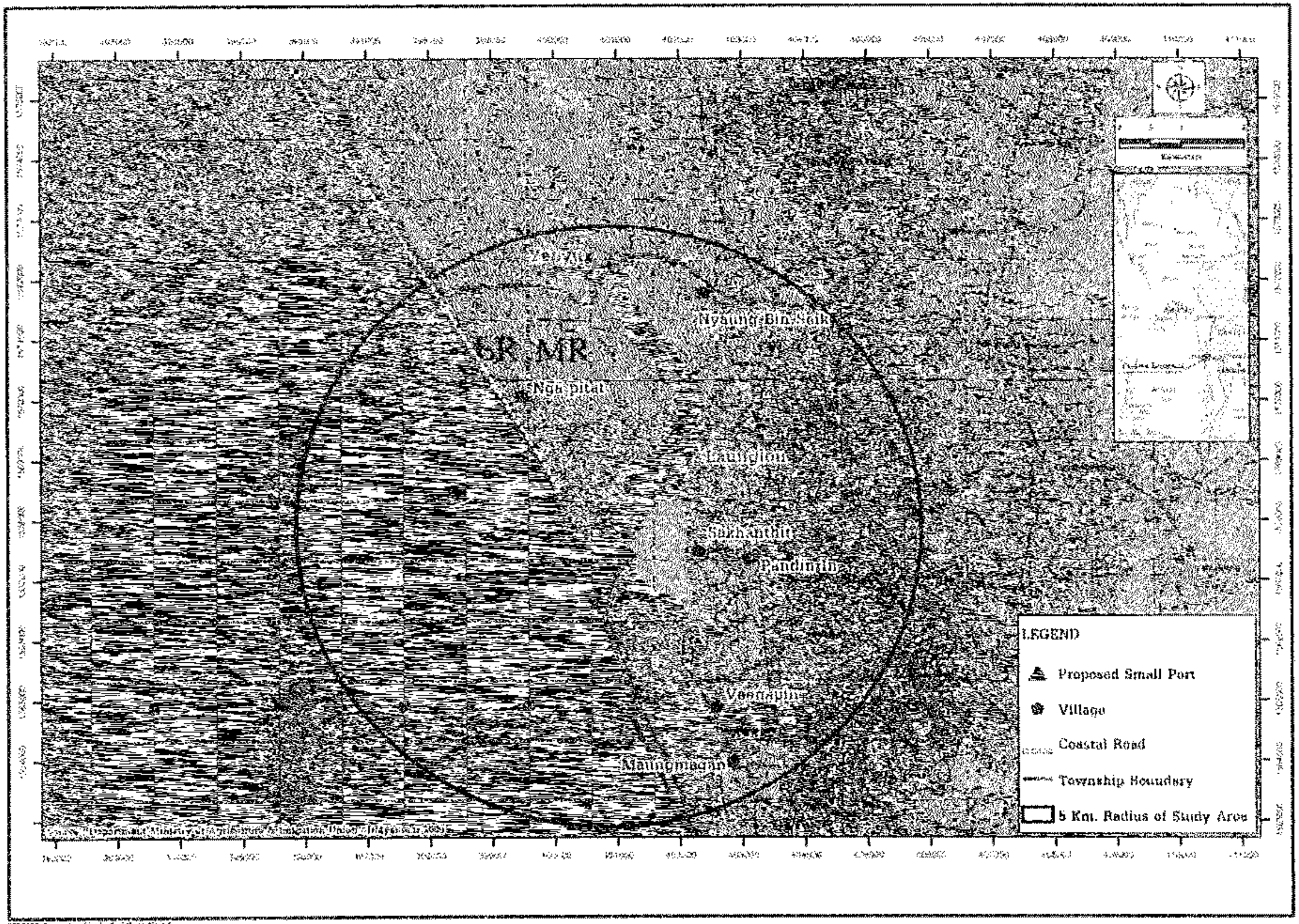
(၃) ကွင်းဆင်းလေ့လာ၍ အချက်အလက်များ စုဆောင်းခြင်း

(၄) သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကွပ်ကဲမှုအစီအစဉ်အတွက် အကြံပြုထောက်ခံခြင်း

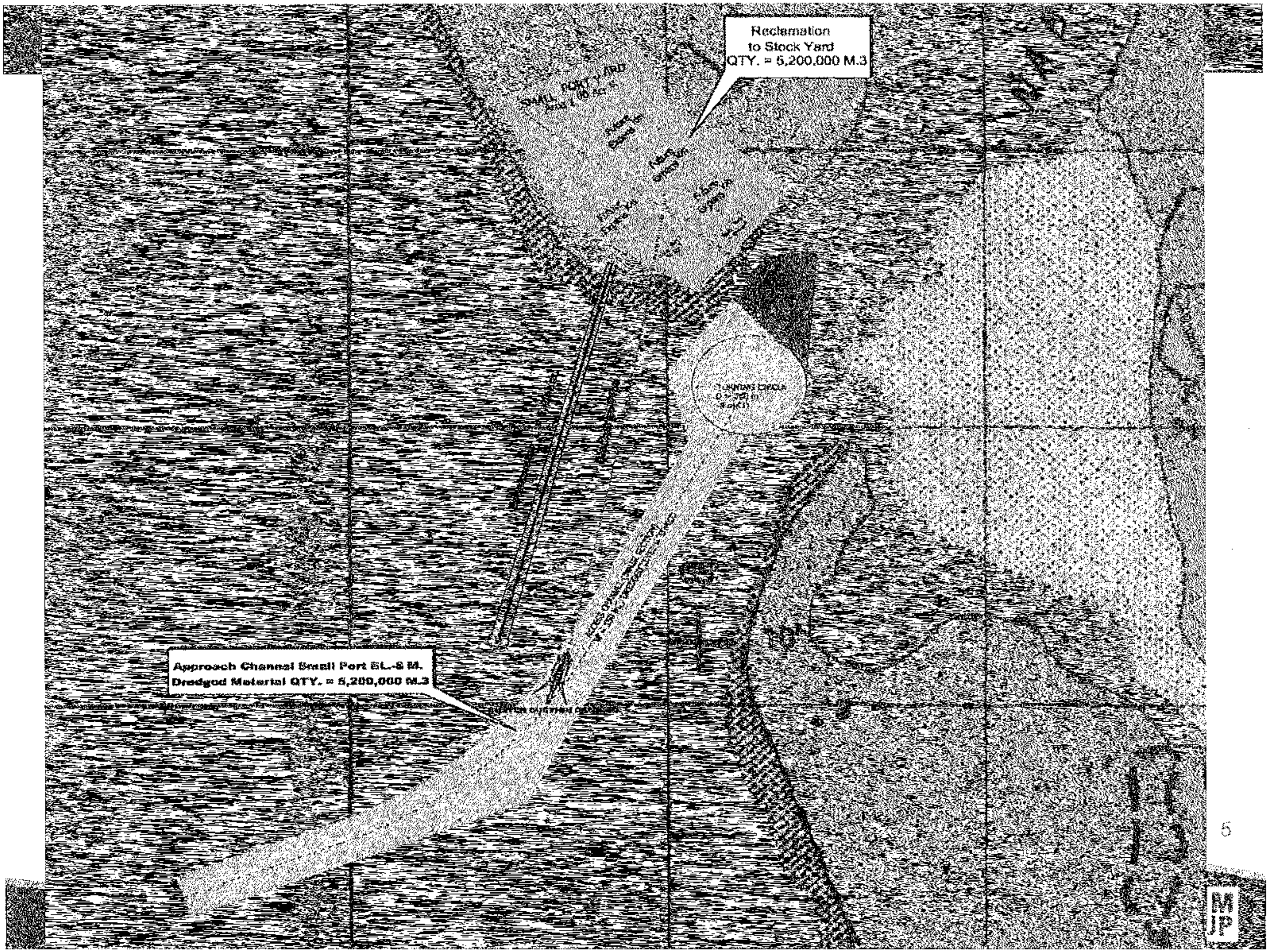
(၅) လူထုပါဝင်ဆွေးနွေးခြင်း။

စီမံကိန်းလေ့လာနေရာ - အဆိုပြု စီမံကိန်းနေရာမှ အချင်းဝက် ၅ ကီလိုမီတာ ဝန်းကျင်

စီမံကိန်းတည်နေရာ



6R MR
Nga pitat
Nyaung Bin Seik
Sakhanthit
Pandinthin
Maungmagan
LEGEND
Proposed Small Port
Village
Coastal Road
Township Boundary
5 Km. Radius of Study Area


Reclamation
to Stock Yard
QTY. = 5,200,000 M.3
Approach Channel Small Port EL.-8 M.
Dredged Material QTY. = 5,200,000 M.3

5

စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

ပင်လယ်ကမ်းနီးအဆောက်အဦများ

- ❑ ရေတား

ပန်းတင်အင်းရေချိုရေငံစပ်ချောင်းလက်ထက်၏ လက်ဝဲဘက်တည်ရှိ ၁.၄ ကီလိုမီတာ အရှည် ရေတားတစ်ခု

- ❑ တစ်လမ်းသွားဝင်ထွက်လမ်း

- ၃ ကီလိုမီတာ အရှည်၊ ၁၅၀ မီတာအကျယ်နှင့် ၈ မီတာအနက်
- ကွေ့ဝင်ရာနေရာ အချင်း ၃၆၀ မီတာနှင့် ၈ မီတာအနက်

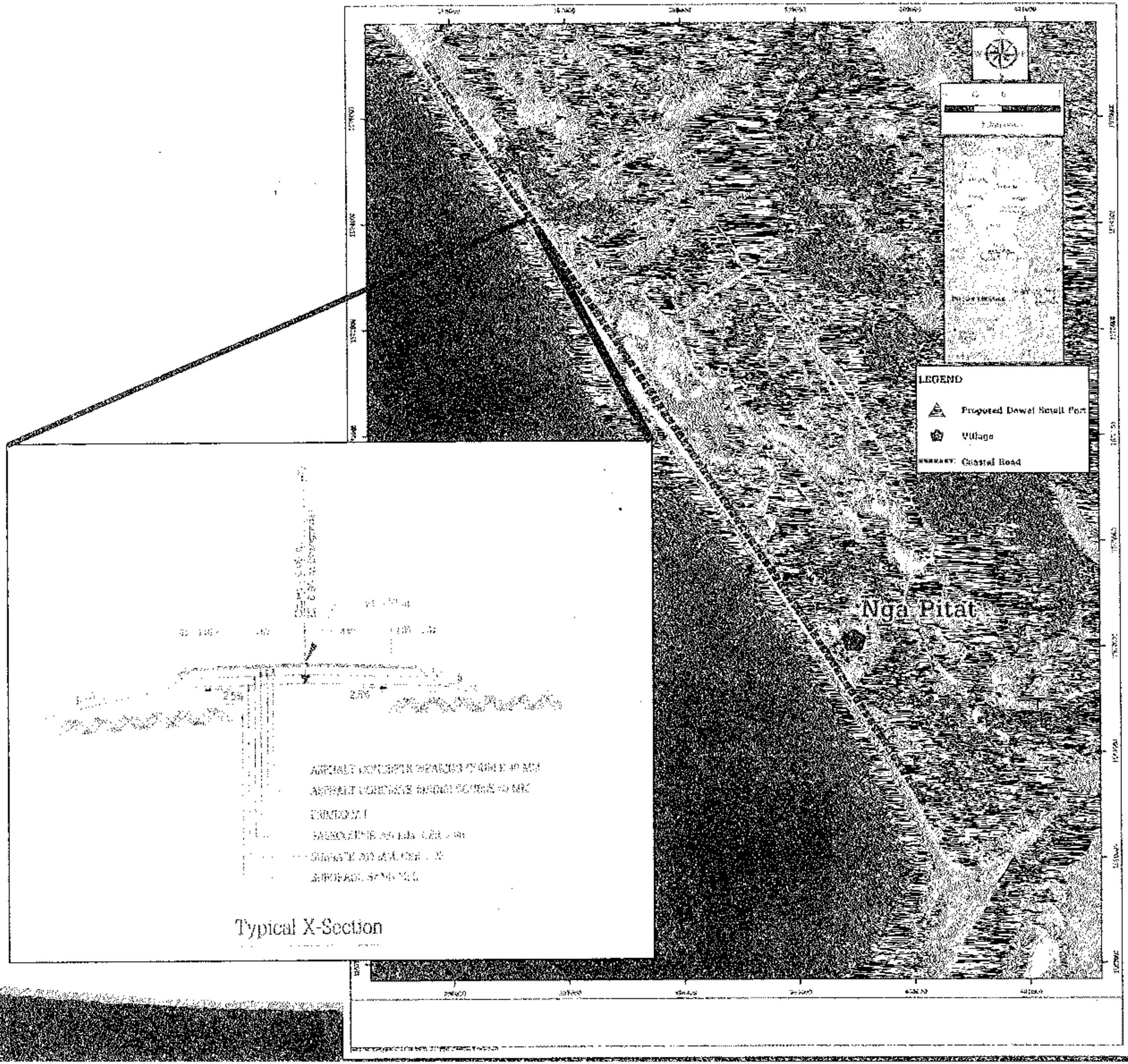
ကမ်းစပ်အဆောက်အဦ

- ၁၀၀ ဧက
- စုစုပေါင်း ဧက ၂၀ ရှိ ကုန်သိုလှောင်ရုံ ၂ ခုနှင့် နောက်တွင် ၈၀ ဧက အထိချဲ့ရန် လျာထား

TEAM GROUP

စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

- စီမံကိန်းဝင်ထွက်လမ်း
  - ၈.၃ ကီလိုမီတာ အရှည်နှင့် ၇ မီတာ အကျယ်ရှိပြီး လမ်းဘေးဇရိယာ ၁ မီတာ
  - စီမံကိန်း ဝင်ထွက်ရာလမ်း၏ အရှည်မှာ စီမံကိန်း တည်ရှိရာ နေရာမှ ITD ရုံးစိုက်ရာ km + 000 နေရာအထိ
  - km 3 + 000 ရှိ ချောင်းလက်တက်တွင် တံတားတည်ဆောက်ခြင်း


LEGEND
Proposed Dowei Small Port
Village
Coastal Road
Nga Pitat
Typical X-Section

စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

- အဓိကဆောင်ရွက်ချက်များ

❑ မြေတူးခြင်း

- စုစုပေါင်းခန့်မှန်းခြေ ၅,၂၀၀,၀၀၀ ကုဗမီတာ ထုထည်ပမာဏရှိသော သဲမြေများကို တူးထုတ်ခြင်း

❑ စွန့်ပစ်ခြင်း

- တူးထုတ်ထားသော မြေအားလုံးကို ကမ်းခြေမြေသားပြုပြင်ဖြည့်တင်းရေးအတွက် သုံးမည်
- မည်သည့်စွန့်ပစ်ပစ္စည်းကိုမျှ ပင်လယ်ကမ်းစပ်နှင့် ကမ်းပေါ်တွင် စွန့်ပစ်ခြင်း မရှိစေရ။
- ကုန်သွယ်လှောင်ရုံတည်ရာနေရာတွင် ၂၀၀၀၀ ကုဗမီတာ ပမာဏမျှ မြေညှိရာတွင် အသုံးပြုမည်။
- ၅၀၀၀၀၀၀ ကုဗမီတာ ပမာဏရှိ သဲမြေများကိုမူ စင်္ကာပူနိုင်ငံသို့ ပို့ရန်လျာထား

စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

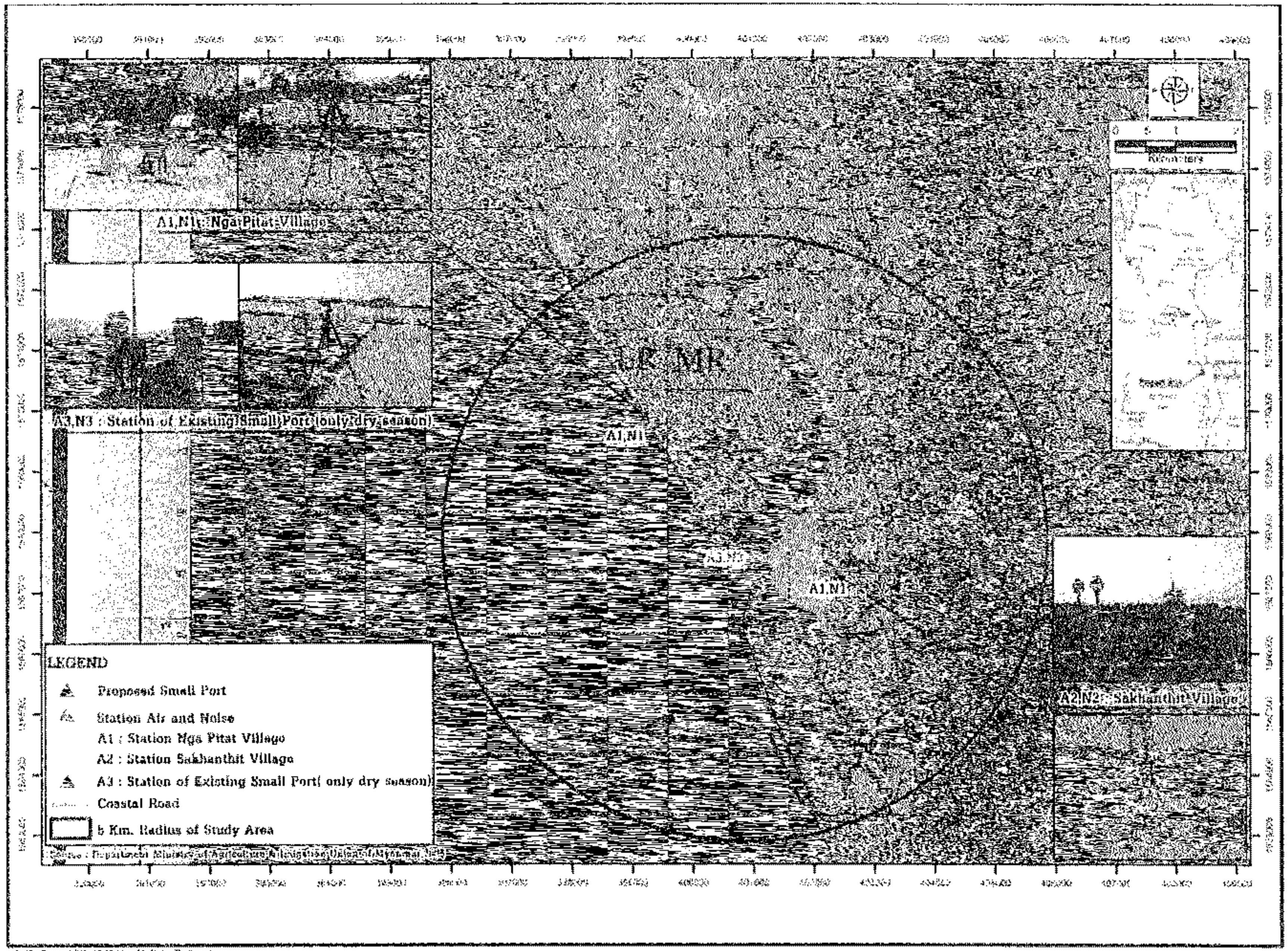
- ရေတားတည်ဆောက်ခြင်း
  - ရေတားကို ကျောက်တုံးကျော်စိုင်များဖြင့် တည်ဆောက်ရန်လျာထား

    ၎င်းကျောက်တုံးကျောက်စိုင်များကို ပို၍ကြီးမားလေးလံသော ကျောက်တုံးများဖြင့် ဖုံးအုပ်ကာ ရံခြင်းဖြင့်တည်ဆောက်မည်။
- စီမံကိန်းဝင်ထွက်ရာ လမ်းတည်ဆောက်ခြင်း
  - ၎င်းလမ်းတည်ဆောက်ရာတွင် တည်ရှိသော ငပိတက်ရွာရှိ အိမ် (၁၂) လုံးခန့်မျှ ဖယ်ရှားရန် လိုအပ်သဖြင့် ပြန်လည်နေရာချထားရေး ဆောင်ရွက်မှု လမ်းညွှန်ချက်များအရ ထိုဖယ်ရှားခံရသည့် အိမ်များသို့ နှစ်နာဆုံးရှုံးသော မြေနေရာ၊ အိမ်နှင့် ဆုံးရှုံးသည့် ပမာဏများအား အပြည့်အဝ လျော်ကြေးပေးရန် စီစဥ်ရမည်။

စီမံကိန်းအစီအစဥ်

- တစ်နှစ်အတွင်း အပြီးသတ်တည်ဆောက်ရန်
- တည်ဆောက်မှု သဘောတူညီချက်မှာ ၂၀၁၅ ခုနှစ် ဇူလိုင်လနောက်ပိုင်းတွင် ဖြစ်၍ စီမံကိန်း တည်ဆောက်အပြီး လည်ပတ်ရန်မှာ ၂၀၁၇ ခုနှစ် ဖေဖော်ဝါရီလတွင် ဖြစ်သည်။

လေအရည်အသွေး နှင့် အသံဆူညံခြင်းတိုင်းတာနမူနာရယူနေရာများ



ရပ်ရွာဆိုင်ရာ အစီတ်အပိုင်းများ

❖ ယခုတည်ရှိသော ဆိပ်ကမ်းပေါ်၊ စခန်းသစ်ရွာနှင့် ဇေဝိတက်ရွာများတွင် နမူနာရယူသော လေအရည်အသွေးနှင့် အသံဆူညံမှု

➢ လေအရည်အသွေး

- လေထုအရည်အသွေး အညွှန်းကိန်း (PM-10, TSP, NO2SO2) များမှာ ၁၉၉၈ နှင့် ၂၀၀၇ ခုနှစ် ကမ္ဘာ့ဘဏ်အုပ်စု သတ်မှတ်ထားရှိသော အမြင့်ဆုံးတန်ဘိုးထက် နိမ့်ကျပါသည်။
- နမူနာရယူရာ သုံးနေရာလုံးတွင် လေထုသန့်စင်ပါသည်။

➢ အသံ

- ယေဘုယျအသံ သတ်မှတ်နှုန်း (Leg 24 hr) သည် US. EPA စံနှုန်းထက် နိမ့်ကျပါသည်။

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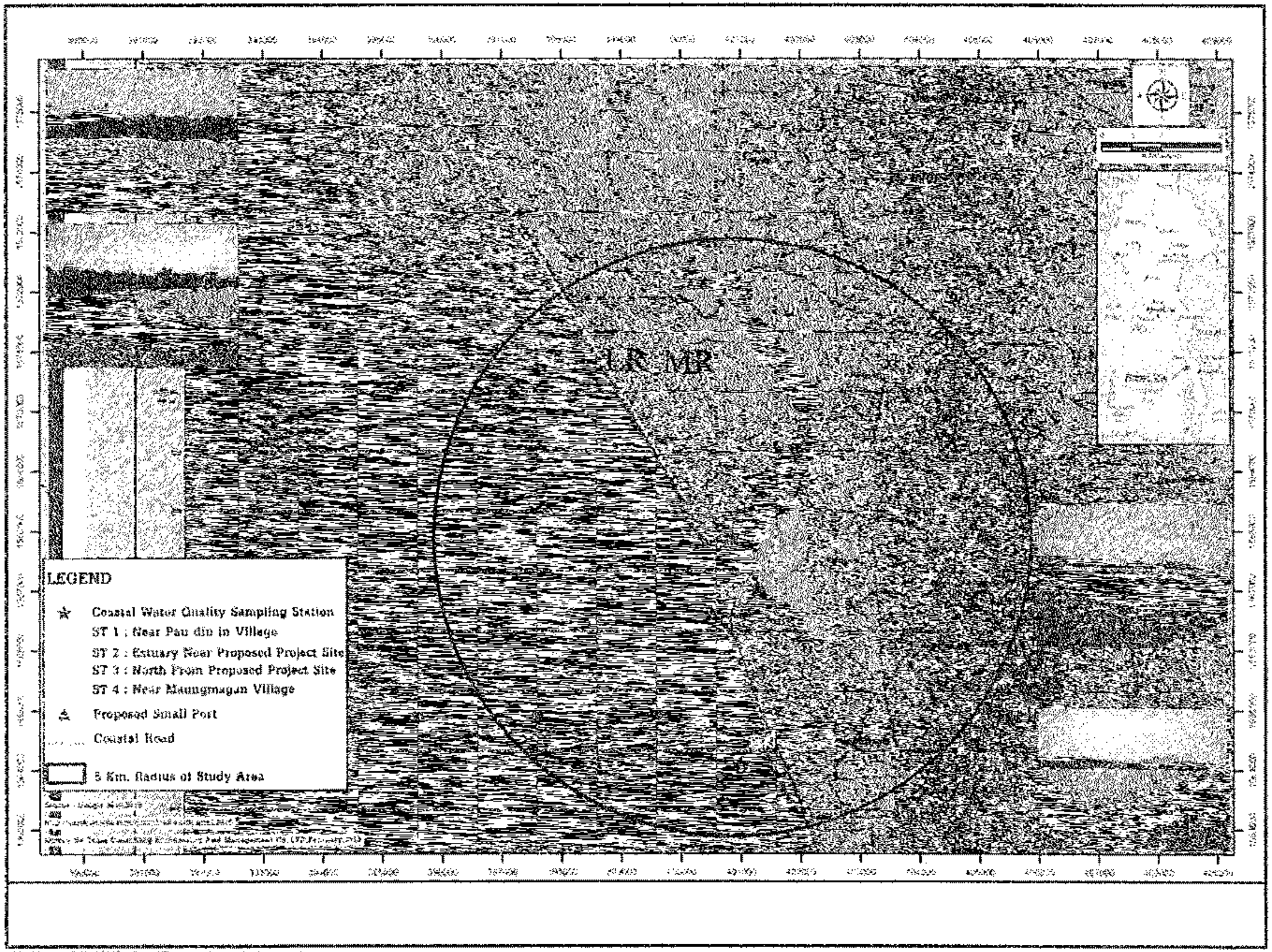
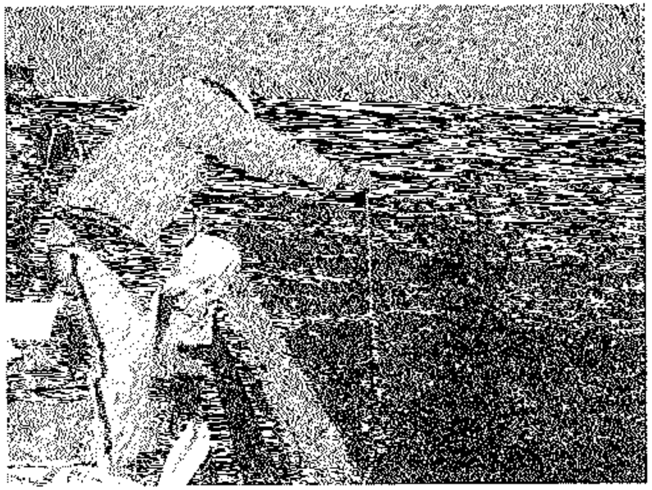
ပင်လယ်ကမ်းရိုးတန်းရေနမူနာယူရာများ

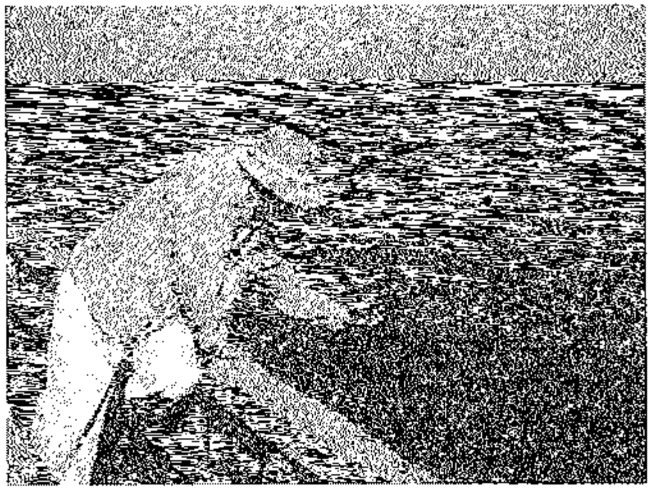


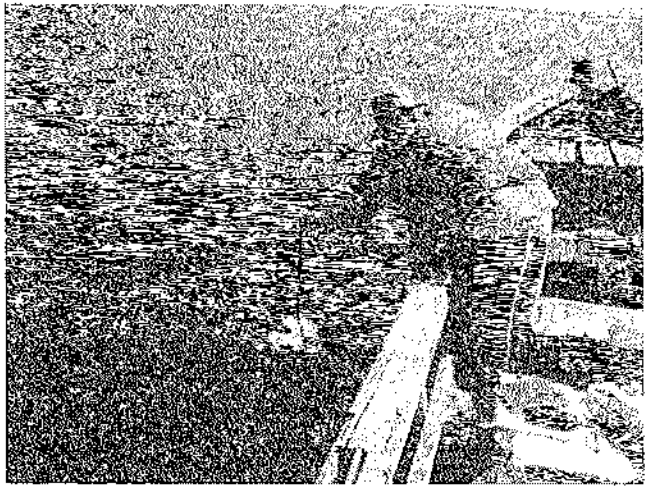
ရုပ်ပိုင်းဆိုင်ရာအသွင်ပြင်လက္ခဏာ

❖ ရေမျက်နှာပြင်အရောင်အသွေး

အန်ဒမန်ပင်လယ်ပြင်အတွင်း
နမူနာ (၄)နေရာ







ပင်လယ်ရေနမူနာ(၄)နေရာမှစမ်းသပ်ချက်အရ

- ရေသည်အောက်စီဂျင်ပါဝင်မှုမြင့်မားပြီးအော်ဂဲနစ်အနယ်နှင့်သတ္တုအနယ်ထိုင်မှုအလွန်နည်းပါးသောကြောင့်ရေအရည်အသွေးကောင်းသည်။
- အက္ကာဝါဂေဟစံနစ်အတွက်သင့်တော်သောရေအမျိုးအစားဖြစ်ပါသည်။

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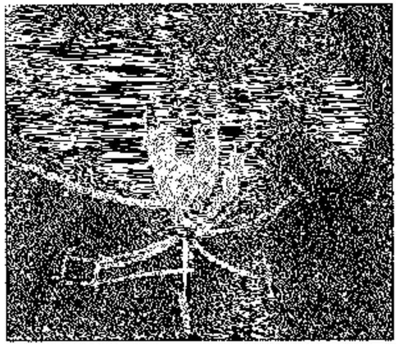
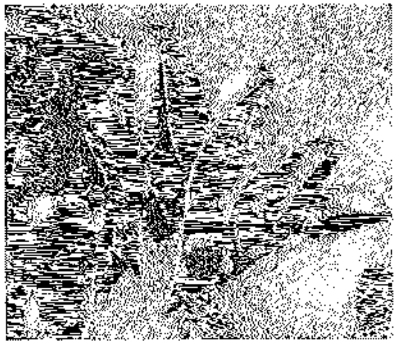
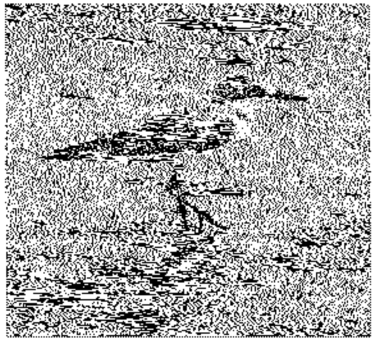
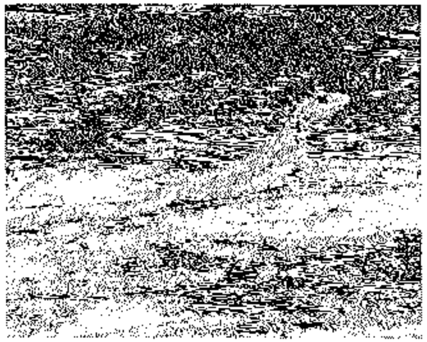
ဇီဝဆိုင်ရာအစိတ်အပိုင်းများ

နေရာနှင့်တွေ့ရသောမျိုးများ

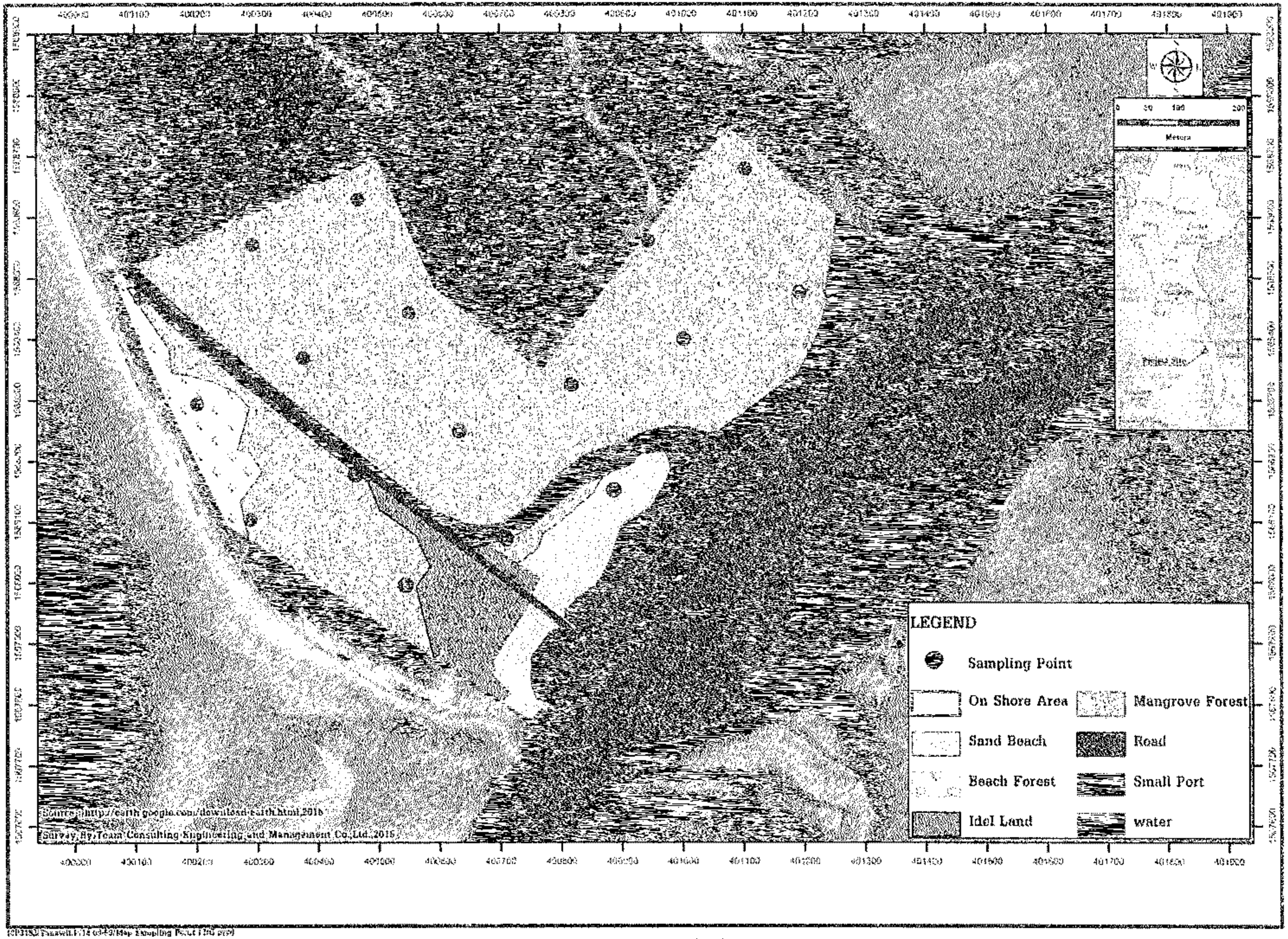




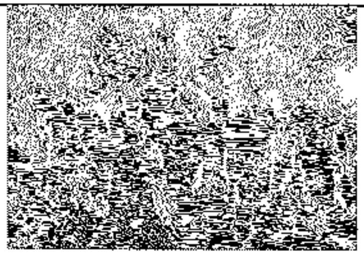
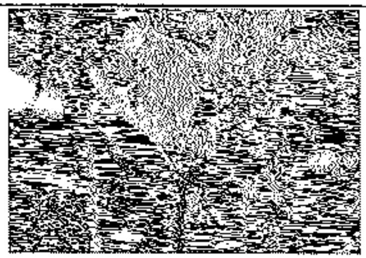




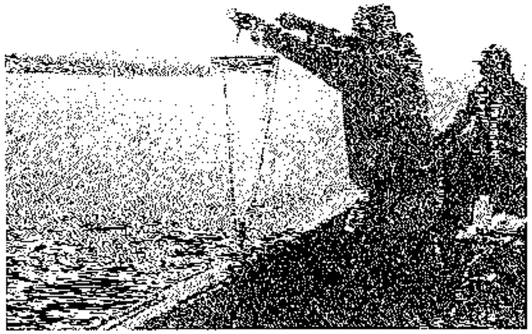
- တောရိုင်းသတ္တဝါ မျိုးစိတ် (၃၉) မျိုးနှင့် အပင်မျိုးစိတ် (၇၅) မျိုးကို အဆိုပြုစီမံကိန်း နေရာတွင် တွေ့ရှိရပါသည်။
- မျိုးသုန်းလုနီး သတ္တဝါမျိုးစိတ်များနှင့် အပင်များကို မတွေ့ရှိရပါ။
- စိုးရိမ်ဖွယ်ရာအဆင့်ရှိအပင်(၃)မျိုးတွေ့ရှိရသော်လည်းအရှေ့တောင်အာရှရှိအခြား နိုင်ငံများတွင် ယေဘူယျတွေ့ရှိရပါသည်။

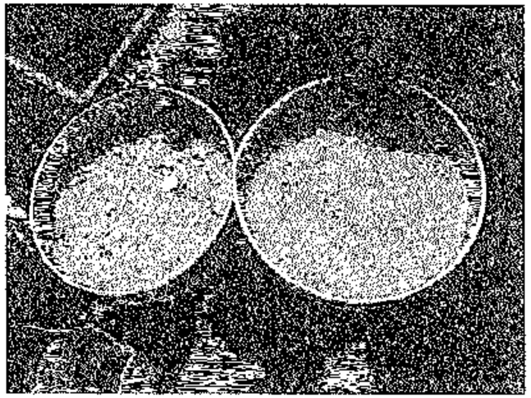

LEGEND
Sampling Point
On Shore Area
Mangrove Forest
Sand Beach
Road
Beach Forest
Small Port
Idel Land
water
Meters
Project Site
Source: http://earth.google.com/download-earth.html,2015
Survey By Team Consulting Engineering and Management Co.,Ltd.,2015

မျိုးသုန်းရန်စိုးရိမ်ဖွယ်ရာအဆင့်ရှိအပင်(၃)မျိုး

No.	Scientific Name	Common Name	Family Name	Photo
1	*Aegialitis rotundifolia* Roxb.	Bai Pai	Plumbaginaceae	
2	*Ceriops decandra* (Griff.) Ding Hou	Prong Khao	Rhizophoraceae	
3	*Sonneratia ovata* Backer	Lampan	Lythraceae	

ဇီဝဆိုင်ရာအစိတ်အပိုင်းများ





- မိုးဥတုတွင် အပင်ငယ်မျိုးစိတ် (၃၅) မျိုး၊ သတ္တဝါငယ်များ (၁၃) မျိုးနှင့် အောက်ခြေအနည် မှ benthos (၇) မျိုး တွေ့ရှိရသည်။
- ခြောက်သွေ့သောရာသီတွင်မှ အပင်ငယ် (၂၈) မျိုး၊ သတ္တဝါငယ်မျိုးစိတ် (၁၆) မျိုးနှင့် အနည် benthos (၅) မျိုး တွေ့ရှိနိုင်ပါသည်။
- ပင်လယ်မြက်များနှင့် သန္တာကျောက်တန်းများကို စီမံကိန်းနေရာ ပတ်လည် ၅ ကီလိုမီတာ အတွင်း မတွေ့ရှိပါ။

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လူမှုစီးပွားအစိတ်အပိုင်းများ

❖ [illegible] ကွင်းဆင်း[illegible]

ရွာများ	အိမ်ထောင်စု	လူဦးရေစုစုပေါင်း		
		ကျား	မ	စုစုပေါင်း
ငစိတောက်ရွာ	၁၈၀	၄၇၇	၄၃၄	၉၁၁
ဓနိုးသစ်	၁၆၀	၃၅၇	၄၀၇	၇၆၄
ညောင်ပင်ဆိပ်	၇၅	၁၅၇	၂၁၃	၃၇၀
ဝန်းတောင်အင်း	၁၀၀၀	၃၂၉၈	၄၆၄၃	၇၉၃၂
မှိန်မင်	၁၀၈	၃၀၀	၃၂၀	၆၂၀
မြို့နယ်လူဦးရေ	N/A	၇၃၅၂၅	၇၈၃၄၉	၁၅၁၈၇၄
မြို့နယ်လူဦးရေ၏ ရာခိုင်နှုန်း	N/A	၆	၈	၇

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လူမှုစီးပွားရေးလေ့ဒ်များ

➢ အလုပ်အကိုင်

- ကျေးရွာ(၅)ရွာစလုံးရေလုပ်ငန်းနှင့် ရေတွက်ပစ္စည်းများ စုဆောင်းခြင်းကို အဓိက ဆောင်ရွက်သည်။

➢ လူမျိုးနှင့် ကိုးကွယ်ဘာသာ

- ထားဝယ်ဒေသခံ ထားဝယ်-မြန်မာလူမျိုးများ ဖြစ်ကြသည်။ ထေရဝါဒ ဗုဒ္ဓဘာသာ ကိုးကွယ်၍ ဒေသန္တရ ထားဝယ်စကားကို ပြောဆိုကြသည်။

➢ စီးပွားရေးဆိုင်ရာ အချက်အလက်များ

- နှစ်စဉ်ပျမ်းမျှဝင်ငွေမှာ အိမ်ထောင်စုတစုလျှင် -၂၆၅၀ ဒေါ်လာခန့်မျှ
- နှစ်စဉ်ပျမ်းမျှ အသုံးစရိတ် -၂၅၅၀ ဒေါ်လာခန့်မျှ
- ဝင်ငွေထွက်ငွေမျှတစွာ သုံးစွဲကြရသည်။
- အများစုမှာ အစားအသောက်အတွက် ဖြစ်ပြီး အလုပ်လက်မဲ့ ဦးရေနည်းပါးသည်။

လူမှုစီးပွားအစိတ်အပိုင်းများ

[illegible]

အမျိုးအမည်	အဆိုပြုဆိပ်ကမ်းပေါ်တည်ရှိ နေရာ		စီမံကိန်းဝင်ထွက်လမ်း ၂၀ မီတာ လမ်းဧရိယာ	
	ဧရိယာ (ဧက)	ရာခိုင်နှုန်း (%)	ဧရိယာ (ဧက)	ရာခိုင်နှုန်း (%)
ရွာဧရိယာ အဆောက်အဦးများနှင့် စိုက်ပျိုးမြေ	-	-	၃.၈၄	၈.၂၈
ကြိုးပြိုင်သစ်တော	၈၃.၄၆	၈၃.၄၆	၁၃.၈၄	၂၉.၈၄
အစဉ်ရွှေ့ရွှေ့အသုံးချမြေ	-	-	၂၇.၅၁	၅၉.၃၂
ရေထုထည်	၁၆.၅၄	၁၆.၅၄	၁.၂၀	၂.၅၈
စုစုပေါင်း	၁၀၀	၁၀၀	၄၆.၃၉	၁၀၀

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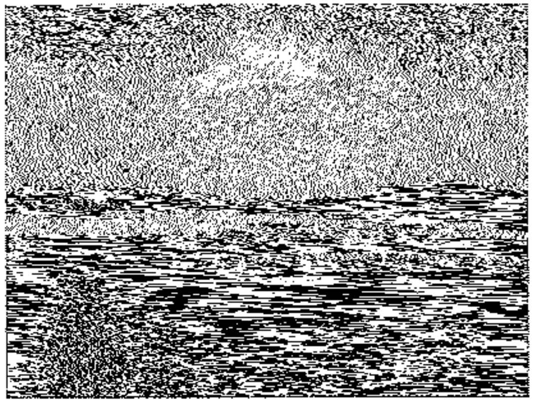
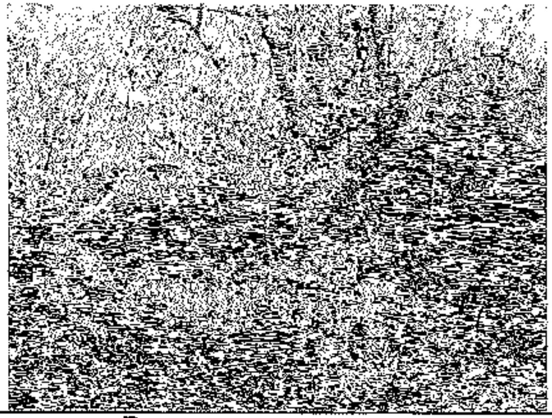
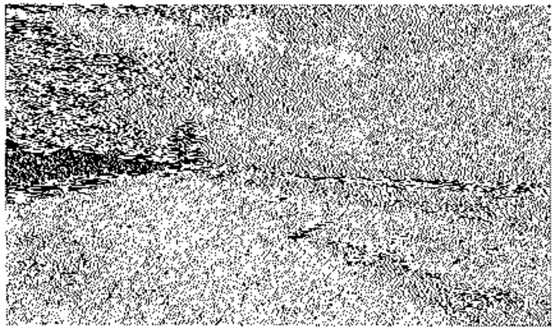
အဆိုပြုစီမံကိန်းတည်နေရာအခြေအနေ





ဆိပ်ကမ်းငယ်



ဝင်ထွက်ရာလမ်း

TEAM GROUP

ပတ်ဝန်းကျင်ထိခိုက်မှုလျှော့လာသန်းစစ်ခြင်း

- ရုပ်ပိုင်းဆိုင်ရာအစိတ်အပိုင်းများ
- ဇီဝဆိုင်ရာလက္ခဏာ
- လူမှု-စီးပွားဆိုင်ရာပါဝင်ဖွဲ့စည်းမှုများ
- ယဉ်ကျေးမှုနှင့်စက္ခုပသာဒ အစိတ်အပိုင်း
- ပြည်သူနှင့်တွေ့ဆုံတိုင်ပင်ခြင်း

စီမံကိန်းအကြိုကာလ အဓိက ထိခိုက်သက်ရောက်နိုင်မှုများ

➢ ထိခိုက်သက်ရောက်နိုင်ခြင်း

(၁)စီမံကိန်းမြေနေရာရှင်းလင်းခြင်း၊ မြေပြုပြင်ခြင်း၊ မြေညှိခြင်းတို့ကြောင့် ဖုန်ထခြင်း

(၂)တည်ဆောက်ရေးပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်းကြောင့် ယာဉ်များ၏ ဆူညံသံ နှင့် တုန်ခါမှုများ

(၃)ဧက ၁၀၀ ခန့်ရှိ ဒီရေရောက်တော နှင့် ပင်လယ်ကမ်းစပ်အားစီမံကိန်းအတွက်ရှင်းလင်းခြင်း

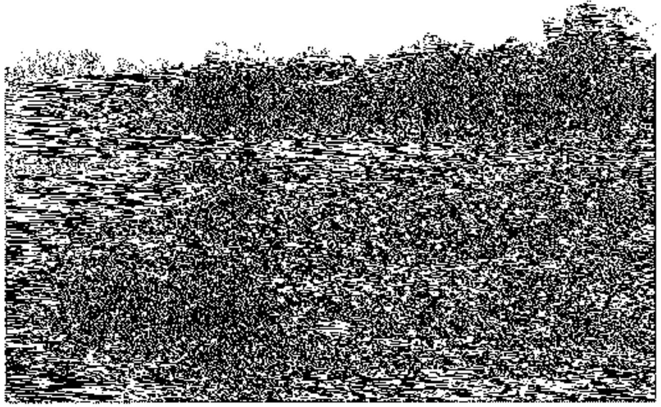
➢ လျှော့ချနည်းလမ်းများ

- မြေနေရာယူမှု သက်သာစေရန် လိုအပ်သော စီမံကိန်းနေရာ၌သာလျှင် မြေညှိမှုထိန်းချုပ်ခြင်း
- စီမံကိန်းတည်ဆောက်နေရာနှင့် ဝင်ထွက်ရာလမ်း ဝန်းကျင်ကို အချိန်မှန်ရေဖြန်းခြင်း
- အသုံးပြုစက်ယန္တယားနှင့် ကရိယာများမှာ ဆူညံမှု လျှော့နည်းပစ္စည်းများ ဖြစ်ခြင်း၊
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့်သစ်တောရေးရာဌာန၊သစ်တောပြန်လည်အစားထိုးစိုက်ပျိုးရေးများပြုလုပ်ခြင်း၊စောင့်ကြည့်ကြီးကြပ်ခြင်း

စီမံကိန်းအကြိုကာလ အစီကာထိခိုက်သက်ရောက်နိုင်မှုများ

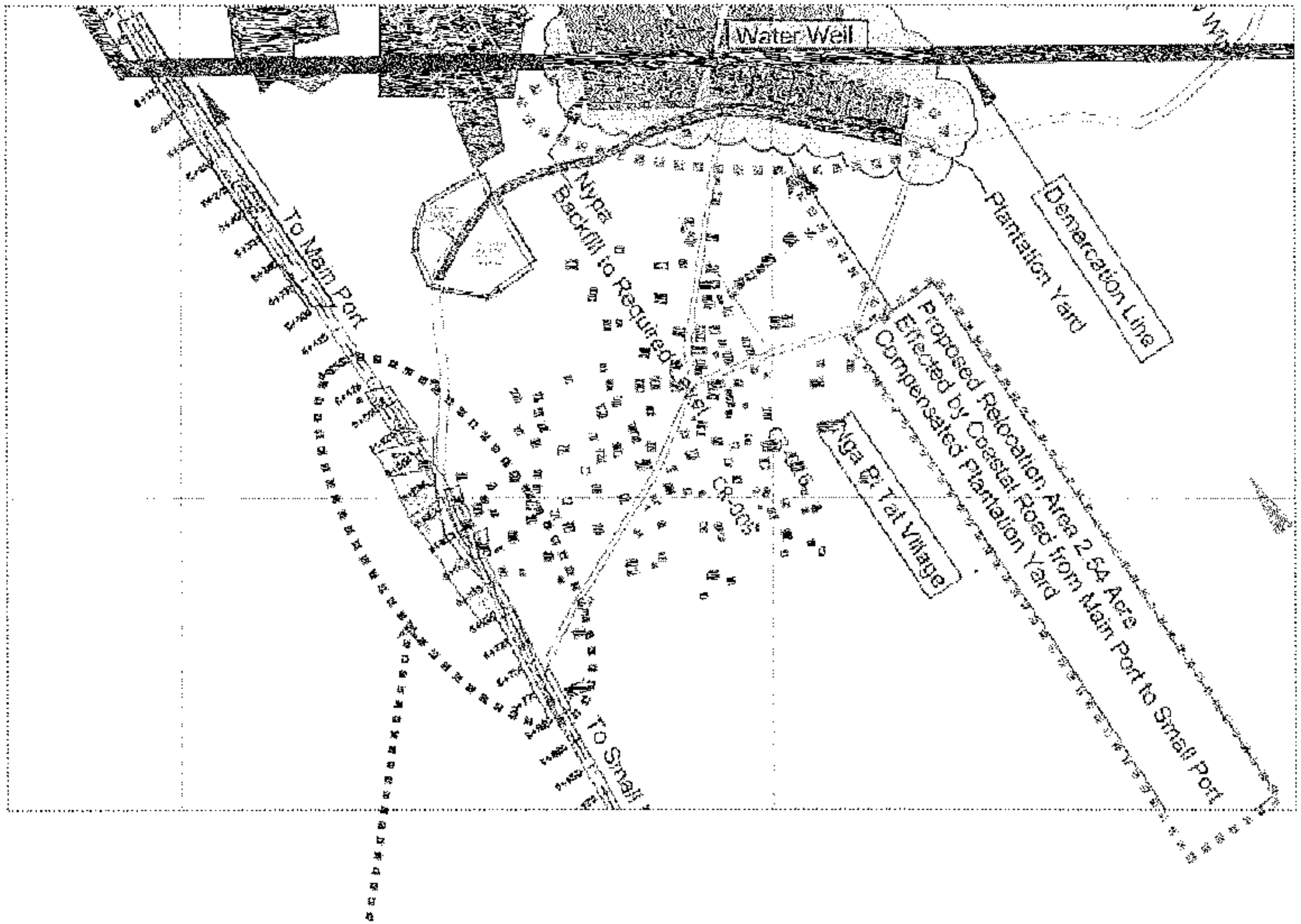
➢ ထိခိုက်သက်ရောက်မှု

ငပိတက်ရွာရှိ အိမ်ခြေ ၁၂ လုံးအား စီမံကိန်းဝင်ထွက်ရာ လမ်း တည်ဆောက်မှုကြောင့် ဖယ်ရှားရမည်ဖြစ်သည်။ ၎င်းထိခိုက်သက်ရောက်ခံ အိမ်မြေများကို ငပိတက်ရွာ၌ပင် ပြန်လည်နေရာချထားပေးရန် ဖြစ်သည်။

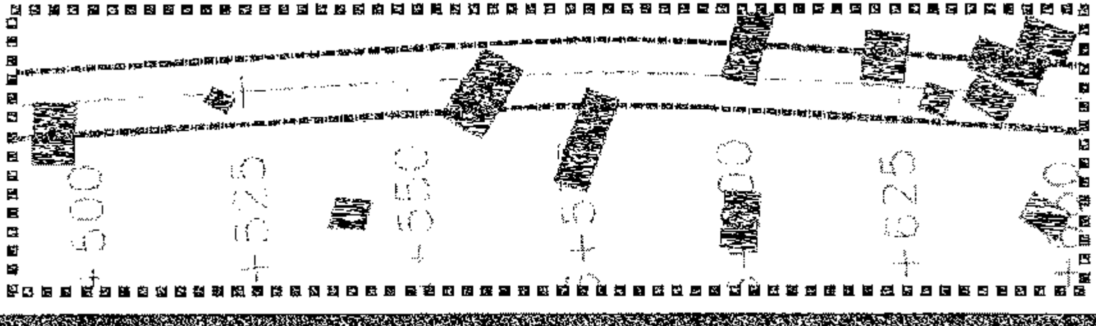


ငပိတက်ရွာရှိ ပြန်လည်နေရာချထားပေးရန် အဆိုပြုနေရာ

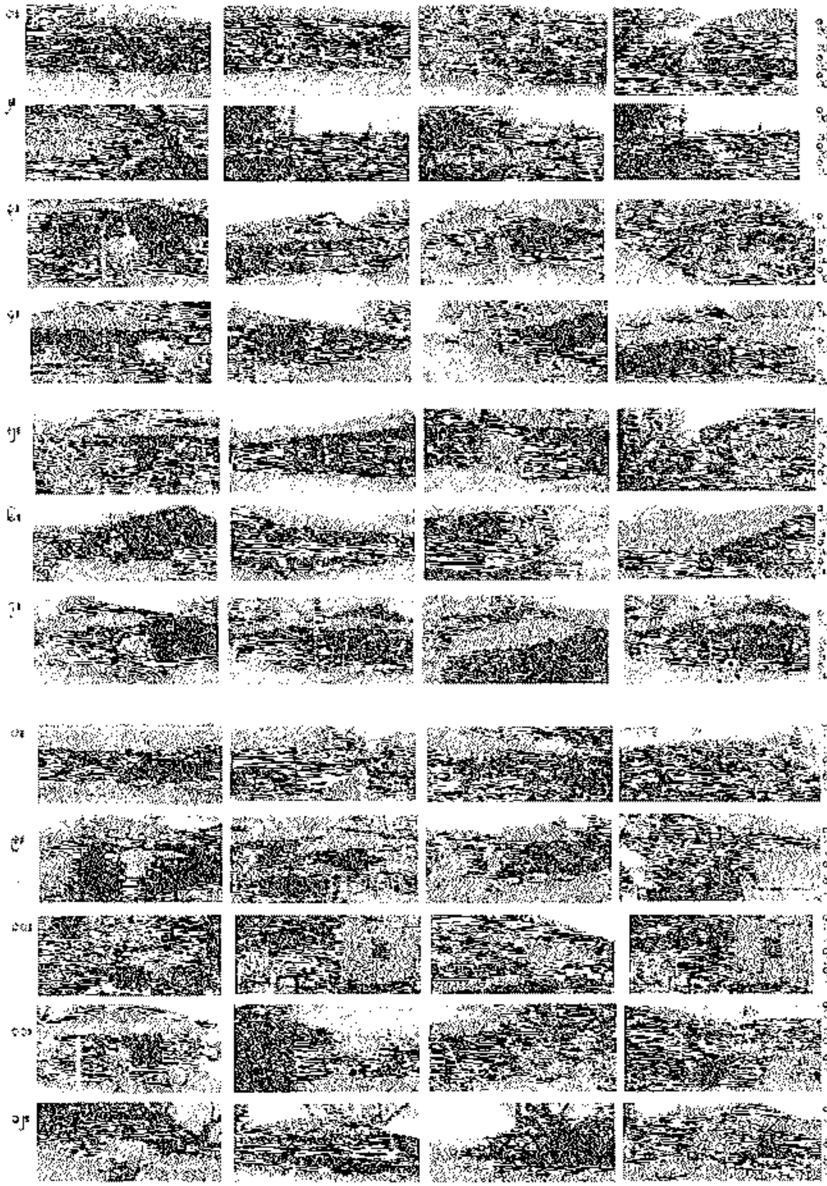
TEAM GROUP



The Existing Households



TEAM GROUP



House No. 1
Name - U Tin Ko Ko
Family Member - 3
House Size - (21X31) 60.49 Sq.m

House No. 2
Name - U Thar Naing Tin
Family Member - 2
House Size - (5X13) 10.57 Sq.m

House No. 3
Name - U Nay Soe
Family Member - 6
House Size - (23X40) 85.475Sq.m

House No. 4
Name - U Kyaw Lwin
Family Member - 6
House Size - (17X45) 77.30 Sq.m

House No. 5
Name - U San Myat
Family Member - 4
House Size - (17X28) 38.30 Sq.m

House No. 6
Name - U Hla Aye
Family Member - 7
House Size - (22X35) 58.1 Sq.m

House No. 7
Name - Daw Kan Win
Family Member - 6
House Size - (17X37) 55.44 Sq.m

House No. 8
Name - U Naing Lin Oo
Family Member - 2
House Size - (15X23) 32.05 Sq.m

House No. 9
Name - U Tin Aye(U Hla Win)
Family Member - 3
House Size - (14X14) 18.21 Sq.m

House No. 10
Name - U Win Myint
Family Member - 3
House Size - (17X29) 41.02 Sq.m

House No. 11
Name - Daw Sann Lwin
Family Member - 2
House Size - (18X29) 48.5 Sq.m

House No. 12
Name - U Aung Aung
Family Member - 4
House Size - (15X22) 30.66 Sq.m

THE 12 AFFECTED HOUSHOLDS (ITD 2014)

စီမံကိန်းတည်ဆောက်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

- ထိခိုက်သက်ရောက်နိုင်ခြင်း
- (၃) ပင်လယ်အောက်ခြေကြမ်းခင်းသဲမြေများ တူးခြင်းကြောင့် ရေနောက်ကျိခြင်းနှင့် အနည်အနစ်များ ဆုံးရှုံးခြင်း
- လျှော့ချနည်းလမ်းများ
- အနည်အနစ်များ ပြန်လည်စုစည်းနိုင်စေရေးနှင့် ရေနေသတ္တဝါနှင့် အပင်များအတွက် ဆန့်ကျင်ဘက် ဆိုးကျိုးသက်ရောက်မှုများ နည်းစေနိုင်သော စီမံကိန်းပုံစံ ဖြစ်စေရမည်။
- အနည်အနစ်စုစုပေါင်း 50 g/l ထက်ကျော်လွန်၍ ပျံ့နှံ့သော မည်သည့်အချိန်တွင်ဆို သဲမြေတူးခြင်းကို ရပ်နားရမည်။
- အနည်ထိုင်ပိုက်များ ပျက်စီးခြင်းဖြစ်ပါကလည်း တူးထုတ်ခြင်းရပ်နားမည်။ စီမံကိန်းတည်ဆောက် သူအား စီမံကိန်း အင်ဂျင်နီယာမှ ဤသို့တူးဖော်ခြင်း၊ ပင်လယ်တွင်းနှင့် ကမ်းစပ်သို့ စုပုံခြင်း စွန့်ပစ် ခြင်းများကို တင်းကြပ်စွာ တားမြစ်ရမည်။
- သက်ဆိုင်ရာ ဌာနများ အဖွဲ့အစည်းများသို့ ပင်လယ်ကမ်းရိုးတန်း ရေအရည်အသွေး စောင့်ကြည့် ကြီးကြပ်ခြင်း ရလဒ်များကို ဖော်ထုတ်ပြသသင့်သည်။

စီမံကိန်းတည်ဆောက်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

➢ ထိခိုက်သက်ရောက်နိုင်ခြင်း

- (၄) စီမံကိန်းတည်ဆောက်ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်းနှင့် စက်ယန္တယားများကြောင့် ယာဉ်အသွားအလာများပြားခြင်းနှင့် ဒေသခံတို့ ကျန်းမာရေး ထိခိုက်မှုများ၊

  သို့သော် တိုတောင်းသော အချိန်ကာလဖြစ်သဖြင့် ထိခိုက်သက်ရောက်မှု နိမ့်ပါသည်။

➢ လျှော့ချနည်းလမ်း

- တည်ဆောက်မှုအစီအစဉ်များအား သက်ဆိုင်ရာဌာနများ၊ အာဏာပိုင်များသို့ အသိပေး ထားရှိခြင်း။
- ယာဉ်အရှိန်အား တစ်နာရီ ၄၀ ကီလိုမီတာနှုန်းထက် မပိုလွန်ရန် ထိန်းချုပ်ခြင်း။
- စီမံကိန်း တည်ဆောက်နေရာများကို သိသာထင်ရှားစွာ ဖော်ပြထားရှိခြင်း၊ ယာဉ်အန္တရာယ်နှင့် လမ်းညွှန်သင်္ကေတများ လုံလောက်စွာ ထားရှိခြင်း

စီမံကိန်းတည်ဆောက်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

➢ ထိခိုက်သက်ရောက်ခြင်း

- (၅) လူမှုစီးပွါး

ကောင်းကျိုး

-အလုပ်အကိုင်အခွင့်အလမ်းမြင့်တက်ခြင်း

-အခြားဒေသမှ လာရောက်လုပ်ကိုင်သူများကြောင့် ဒေသခံတို့ ဝင်ငွေမြင့်လာနိုင်ခြင်း

ဆိုးကျိုး

-အခြားမှလာရောက်လုပ်ကိုင်သူများနှင့် ဒေသခံများကြား

-ပဋိပက္ခတည်ဆောက်မှုကြောင့် ညစ်ညမ်းမှုများ၊ ယာဉ်အသွားအလာများပြားခြင်း၊

-သို့သော် တိုတောင်းသော အချိန်ကာလဖြစ်သဖြင့် ထိခိုက်သက်ရောက်မှု နိမ့်ပါသည်။

TEAM GROUP

စီမံကိန်းတည်ဆောက်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

- ➢ လျှော့ချနည်းလမ်း

- ပဋိပက္ခလျော့နည်းစေရန် ဒေသခံတို့အတွက် အလုပ်အကိုင်ကို ဦးစားပေး စဉ်းစားခြင်း
- အလုပ်ခန့်ထားရာတွင်လည်း မျှတ၍ ပွင့်လင်းမြင်သာရှိစေခြင်းဖြင့် အရည်အချင်းအလိုက် သင့်တင့် မျှတသော လုပ်အားခပေးခြင်း
- စီမံကိန်းတည်ဆောက်ခြင်းကြောင့် အနီးတဝိုက်ရှိ ရွာများအတွင်း လေထုအရည်အသွေး၊ အသံနှင့် လမ်းပန်းဆက်သွယ်ရေးများမှ ထိခိုက်သက်ရောက်မှုများ လျော့နည်းစေရန် လျှော့ချနည်းလမ်းများ တင်းကြပ်စွာ ဆောင်ရွက်ရန်။
- ဒေသခံရွာသားများ၏ တိုင်ကြားချက်များ၊ စောဒကများကို လျင်မြန်စွာ ဖြေရှင်းပေးရန်။

စိမ့်တိန်းလည်ပတ်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

- ထိခိုက်သက်ရောက်နိုင်ခြင်း

  (၁) ဆိပ်ကမ်းငယ်အသုံးပြုနေသောကြောင့်ယာဉ်များဝင်ထွက်သွားလာမှုများခြင်း

- လျှော့ချနည်းလမ်း

- ယာဉ်အရှိန် တစ်နာရီ မိုင် ၄၀ နှုန်းထက်မပိုရန်ထိန်းချုပ်ခြင်း
- ယာယီအသံလျှော့စနစ်ဆောင်ရွက်ခြင်း
- သယ်ယူပို့ဆောင်သောယာဉ်များအားနေ့ဖက်တွင်သာအသုံးပြုခွင့်ပေးခြင်း

  (၂) ရေတားနစ်ခု တည်ဆောက်ခြင်းကြောင့် ကမ်းရိုးတန်းတိုက်စားနိုင်ခြင်း

- လျှော့ချနည်းလမ်း

- ပင်လယ်ကမ်းခြေတိုက်စားခြင်း ကာကွယ်မှုများ ပြင်ဆင်၍ ပုံမှန်လုပ်ငန်းအဖြစ် ကမ်းခြေအား ဖြည့်တင်းခြင်း။
- အကယ်၍ လိုအပ်ပါက ကမ်းခြေတိုက်စားမှု ကာကွယ်စေသော အရံအတား တစ်ခုတည်ဆောက် ရန် အဆိုပြုခြင်း။

TEAM GROUP

စီမံကိန်းလည်ပတ်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

- ထိခိုက်သက်ရောက်နိုင်ခြင်း

(၃) ပင်လယ်ပြင်အောက်ခြေသဲမြေများ တူးထုတ်ခြင်းဖြင့် ပင်လယ်ကြမ်းခင်းအနည်အနှစ်များ ဆုံးရှုံးခြင်းနှင့် ရေများ နောက်ကျိခြင်း (တစ်နှစ်လျှင် သုံးကြိမ် မှ ငါးကြိမ် ခန့်)

- လျှော့ချနည်းလမ်း

စီမံကိန်းတည်ဆောက်စဉ် ကာလအတွင်း အဆိုပြုထားသည့် နည်းလမ်းအတိုင်း ဆောင်ရွက်ရန်။

(၄) စီမံကိန်းတည်ဆောက်ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်းကြောင့် ယာဉ်အသွားအလာများပြားခြင်း၊ မတော်တဆမှုများတိုးပွါးလာနိုင်ခြင်း

- လျှော့ချနည်းလမ်း
  - ယာဉ်အန္တရာယ်ကင်းဝေး၍လုံခြုံသောစနစ်ကိုစီစဉ်ရာတွင်ဒေသတွင်းသွားလာမှုများ၊ တိုးတက်လာမှုများကိုစီမံကိန်း လည်ပတ်ကာလတွင် အကောင်အထည်ဖေါ်ရန်

စီမံကိန်းလည်ပတ်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

- ယာဉ်အရှိန်အား တစ်နာရီ ၄၀ ကီလိုမီတာနှုန်းထက် မပိုလွန်ရန် ထိန်းချုပ်ခြင်း။
- စီမံကိန်း တည်ဆောက်နေရာများကို သိသာထင်ရှားစွာ ဖော်ပြထားရှိခြင်း၊ ယာဉ်အန္တရာယ်နှင့် လမ်းညွှန်သင်္ကေတများ လုံလောက်စွာ ထားရှိခြင်း

➢ ထိခိုက်သက်ရောက်နိုင်ခြင်း

(၅)သင်္ဘောများ ဝင်ထွက်သွားလာမှု လုံခြုံစေရန် အချက်ပြစနစ်

- သင်္ဘောများ ဝင်ထွက်သွားလာ မှုကို သေချာအောင် စီမံဆောင်ရွက်ခြင်း နှင့် သင်္ဘောများမှ ဆိပ်ကမ်းသို့ ဆက်သွယ်ခေါ်ယူမှုများကို တိကျသေချာစွာ မှတ်တမ်းတင်ထားရှိရန်။
- ဆိပ်ကမ်းဧရိယာအတွင်း သင်္ဘောလမ်းကြောင်းများ ထင်ရှားစွာ မြင်နိုင်သည်။ အမှတ်အသားဘော များကို နံပါတ်စဉ်များအားဖြင့် လုံလောက်စွာ ပြသထားရှိရန်။
- ဒေသခံပြည်သူတို့၏ ငါးဖမ်းသင်္ဘောများအတွက်လည်း ၎င်းအချက်ပြလမ်းကြောင်းများအကြောင်း အသိပေးရှင်းလင်းဖော်ပြပေးရန်။

စီမံကိန်းလည်ပတ်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

(၆) လူမှုစီးပွါး

- ကောင်းကျိုး -

    အလုပ်သမားများအားကုန်ပစ္စည်းအစာရောင်းချခြင်းဖြင့်ဝင်ငွေမြင့်တက်ခြင်း

- ဆိုးကျိုး -

    တည်ဆောက်မှုကြောင့် ညစ်ညမ်းမှုများ၊ သို့သော် တိုတောင်းသော အချိန်ကာလဖြစ်သဖြင့် ထိခိုက်သက်ရောက်မှုနည်းပါးပါသည်။

➢ လျှော့ချနည်းလမ်း

- လူမှုဖွံ့ဖြိုးတိုးတက်ရေးနှင့် အသက်မွေးမှု ပြန်လည်ထူထောင်ရေးအတွက် ရံပုံငွေ ထောက်ပံ့ပေး ခြင်း။
- လူမှုအကျိုးတူပူးပေါင်းဆောင်ရွက်ခြင်း အစီအစဉ် (CSR) ကို ဒေသအာဏာပိုင်များနှင့် ပြည်သူတို့ အတူတကွ ပူးပေါင်းပါဝင်ဆောင်ရွက်ရန် ထူထောင်ခြင်း။

ဆက်သွယ်ရန်

၁။ မစ္စတာ တာနုလတ်ဘိုရာ့

ထားဝယ်ဖွံ့ဖြိုးရေးကုမ္ပဏီ

၂၀၃၄/၇၇အီတယ်- ထိုင်းအဆောက်အဦး (၄၃)ထပ် နယူးဖက်ဘူရီလမ်း၊ ဟွေ့ခွမ်၊ ဘန်ကောက် ၁၀၃၁၀၊ ထိုင်းနိုင်ငံ။

၂။ မစ္စတာ ပလိန်ယံမနီယာ၊ စီမံကိန်းမန်နေဂျာ

TEAM အင်ဂျင်နီယာ နှင့် စီမံအုပ်ချုပ်ရေး ကုမ္ပဏီ

TEAM အဆောက်အဦး၊ (၁၅၅) နူဝင်ကျန်လမ်း၊ ဘန်ခူ၊ ဘန်ကောက် ၁၀၂၃၀။ ထိုင်းနိုင်ငံ

နှင့်

၃။ တိုတယ်ဘစ်နက်ရုံး၊ အမှတ် ၅၄ အခန်း ၇၀၄၊ ဝေဇယန္တာတာဝါ၊ ဝေဇယန္တာလမ်း၊ သင်္ဃန်းကျွန်းမြို့နယ်၊ ရန်ကုန်မြို့၊ မြန်မာ။

TEAM GROUP

စီမံကိန်းတည်ဆောက်စဉ်ကာလ အဓိကထိခိုက်သက်ရောက်နိုင်မှုများ

➢ ထိခိုက်သက်ရောက်နိုင်ခြင်း

(၁) စီမံကိန်းတည်ဆောက်ခြင်းနှင့် စက်ပစ္စည်းများ သယ်ယူမှုကြောင့် ဖုန်ထခြင်း

(၂) လေးလံသော တည်ဆောက်ပစ္စည်းများ သယ်ယူပို့ဆောင်သော ယာဉ်များ၏ အသံဆူညံမှု နှင့် တုန်ခါမှုများ

အသံဆူညံမှု နှင့် ဖုန်ထမှုတို့မှာတိုတောင်းသော အချိန်ကာလဖြစ်သဖြင့် ထိခိုက်သက်ရောက်မှု နည်းပါသည်။

➢ လျှော့ချနည်းလမ်းများ

-မြေနေရာယူမှု သက်သာစေရန် လိုအပ်သော စီမံကိန်းနေရာ၌သာလျှင် မြေညှိမှု ထိန်းချုပ်ခြင်း

-စီမံကိန်းတည်ဆောက်နေရာနှင့် ဝင်ထွက်ရာလမ်း ဝန်းကျင်ကို အချိန်မှန်ရေဖြန်းခြင်း

-အသုံးပြုစက်ယန္တယားနှင့် ကရိယာများမှာ ဆူညံမှု လျှော့နည်းပစ္စည်းများ ဖြစ်ခြင်း

-အသံဆူညံမှု လျှော့ချနိုင်သော တည်ဆောက်ရေးနည်းလမ်း ဥပမာ သံမဏိတိုင်များကို ဖောက်သွင်းခြင်း၊ အခြေချခြင်းများကို အခြားသော ရွေးချယ်နည်းလမ်း ထည့်သွင်းစဉ်းစားခြင်း

မှတ်ချက်ပြုဆွေးနွေးခြင်း

THIRD PUBLIC CONSULTATION

ဆိပ်ကမ်းငယ် တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်နှင့် လူမှုအဝန်းအဝိုင်းဆိုင်ရာ ထိခိုက်မှု ဆန်းစစ်ခြင်း

မြန်မာနိုင်ငံ၏ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှထုတ်ပြန်ထားသော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ၂၅ ဟက်တာ (၆၁.၇၈ ဧက) ထက်ကျယ်ဝန်းသော ဆိပ်ကမ်း စီမံကိန်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ပြုလုပ်ရန် လိုအပ်ပြီး ဆောက်လုပ်ရေး မစတင်ခင် အတည်ပြုချက် ရရှိရန်လိုအပ်ပါသည်။

ထို့ကြောင့် ပျမ်းမျှဧက (၁၀၈) ကျယ်ဝန်းသော ဆိပ်ကမ်းငယ် စီမံကိန်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ပြုလုပ်ရပါမည်။

ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ် သက်ရောက်မှု ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်

- နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို ၂၀၁၇ခုနှစ် ဇန်နဝါရီလ တွင် ရရှိခဲ့ပါသည်။

- ESIA အပြီးသတ်အစီရင်ခံစာမူကြမ်းကို ၂၀၁၇ခုနှစ် မေလတွင် တင်သွင်းခဲ့ပါသည်။

- ပြန်လည်ရေးသားထားသော ESIA အပြီးသတ်အစီရင်ခံစာ မူကြမ်းကို ထပ်မံ တင်သွင်းခဲ့ပါသည်။

- ESIA အစီရင်ခံစာအတွက် အတည်ပြုချက်ကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) မှ ၂၀၁၇ ခုနှစ် နိုဝင်ဘာလတွင် ရရှိခဲ့ပါသည်။

နယ်မြေအတိုင်းအတာသတ်မှတ်ခြင်း အစီရင်ခံစာနှင့် ESIA အစီရင်ခံစာအတွက် MONREC မှ အတည်ပြုချက်

သို့

ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ

အကြောင်းအရာ။ Myandawei Industrial Estate Company Limited မှ ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Small Port စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental and Social Impact Assessment-ESIA)အစီရင်ခံစာအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း

ရည်ညွှန်းချက်။ (၁) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁၈-၂-၂၀၁၆ ရက်စွဲပါစာအမှတ်၊ ထဝ-၁ / DSEZ / ၂၀၁၆ (၁၁၆)

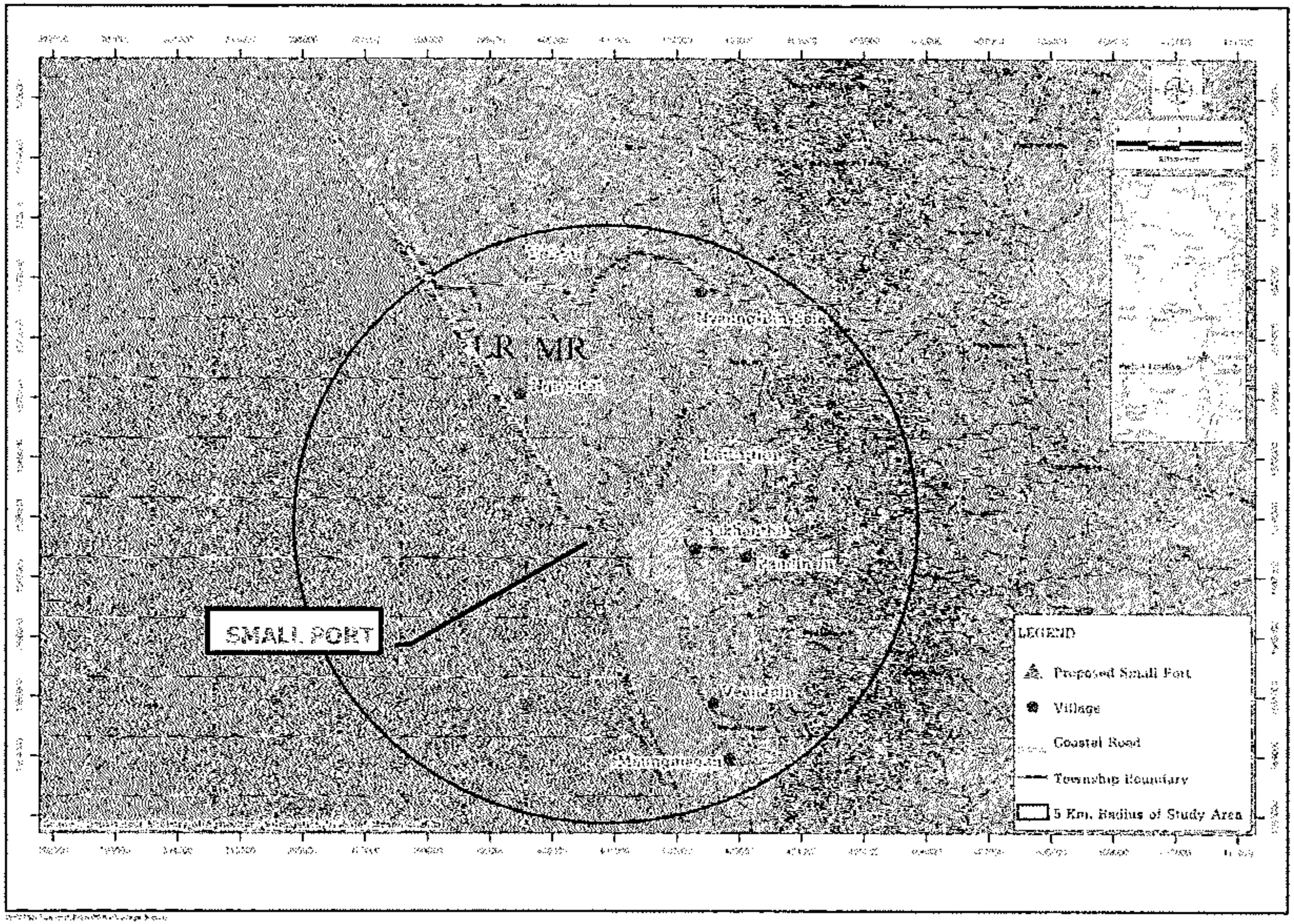
(၂) ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီ၏ ၁-၆-၂၀၁၇ ရက်စွဲပါစာအမှတ်၊ ယဝ-၁၆ / DSEZ / ၂၀၁၇ (၁၈၆)

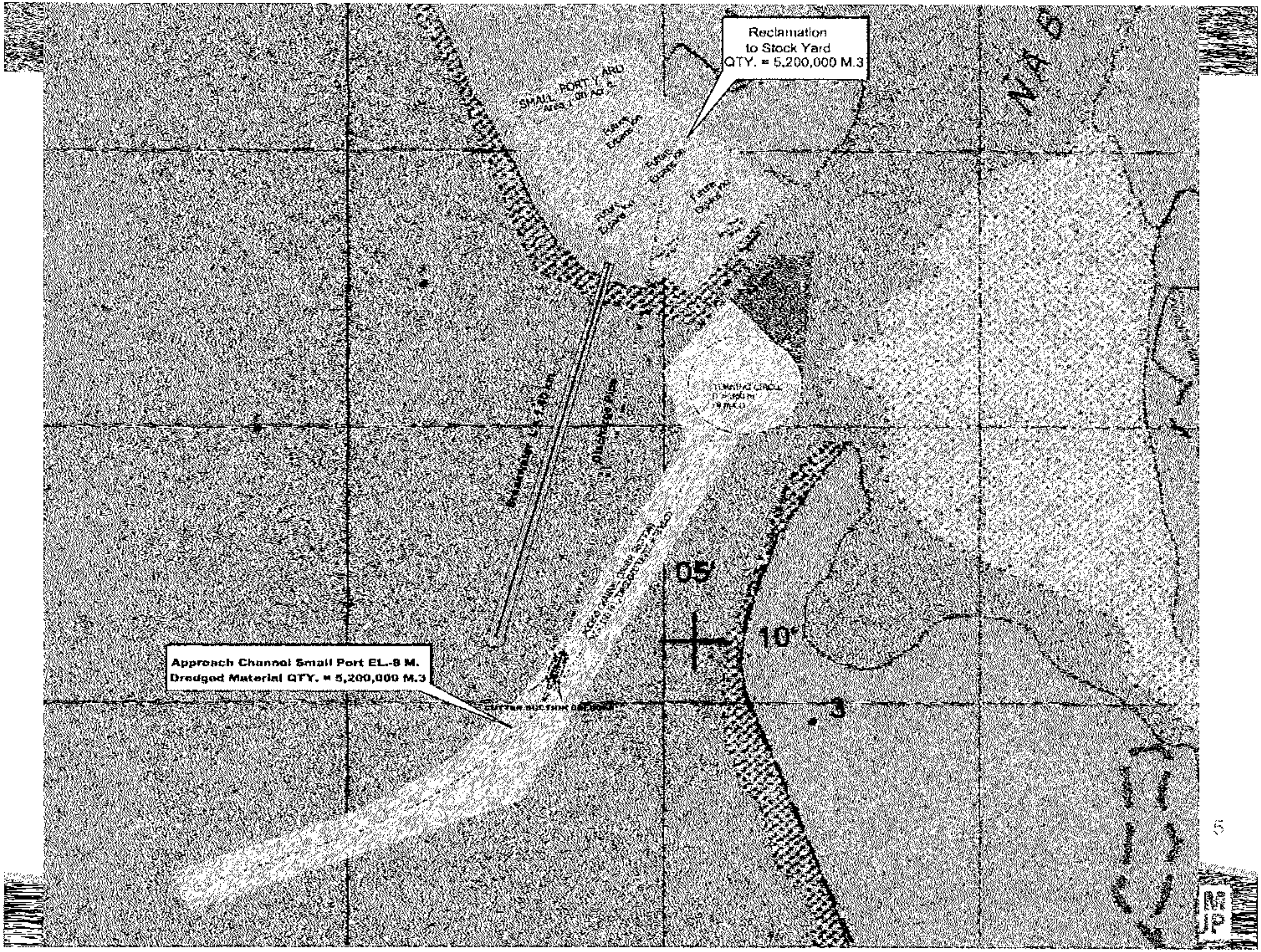
၁။ Myandawei Industrial Estate Company Limited သည် ထားဝယ်အထူးစီးပွားရေးဇုန်တွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် Small Port စီမံကိန်း၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးထိခိုက်မှုဆန်းစစ်ခြင်း(Environmental and Social Impact Assessment-ESIA)အစီရင်ခံစာ တင်ပြလာခြင်းကိစ္စနှင့်ပတ်သက်၍ ထားဝယ်အထူးစီးပွားရေးဇုန်စီမံခန့်ခွဲမှုကော်မတီမှ ရည်ညွှန်း ၁(၂)ဖြင့် ပြန်လည်ပြုစုပေးပို့လာသည့် အပြီးသတ်မူကြမ်းအား သဘောထားမှတ်ချက်ပြန်ကြားပေးပါရန် တင်ပြလာပါသည်။

၂။ အဆိုပါတင်ပြလာမှုနှင့်ပတ်သက်၍ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနအနေဖြင့် စိစစ်ရာ၌ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၃(ပ) အချက်များနှင့် ကိုက်ညီမှုရှိကြောင်း စိစစ်တွေ့ရှိရပါသဖြင့် တင်ပြလာသည့် အစီရင်ခံစာကို အတည်ပြုပါကြောင်းနှင့် ကုမ္ပဏီအနေဖြင့် လုပ်ငန်းဆောင်ရွက်ရာတွင် အောက်ပါအချက်များကို အလေးထားလိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန် လိုအပ်ကြောင်း သဘောထားမှတ်ချက်ပြန်ကြားအပ်ပါသည်-

(က) စီမံကိန်းအဆိုပြုသူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ စီမံကိန်းကတိကဝတ်အားလုံးနှင့်စည်းကမ်းချက်များကို အပြည့်အဝ အကောင်အထည်ဖော်ရမည့်အပြင် ယင်း၏ကိုယ်စား စီမံကိန်းကို ဆောင်ရွက်ပေးသူ ကန်ထရိုက်တာနှင့် လက်ခွဲ

ဆိပ်ကမ်းငယ်တည်နေရာပြ မြေပုံ




Reclamation
to Stock Yard
QTY. = 5,200,000 M.3
Approach Channel Small Port EL.-8 M.
Dredged Material QTY. = 5,200,000 M.3
05'
10'
.3

စီမံကိန်း အချက်အလက်များ

ကမ်းလွန် အဆောက်အဦးများ

- ❑ လိုင်းကာ
  - ➢ပန်ဒအင်မြစ်ဝ ဘယ်ဘက်အခြမ်းမှ လိုင်းကာတစ်ခု = ၁.၄ ကီလိုမီတာ

- ❑ ချဉ်းကပ်တူးမြောင်းတစ်ခု:
  - ➢အရှည် (၃) ကီလိုမီတာ ၊ အကျယ် (၁၅၀) မီတာနှင့် အနက် (၈) မီတာ

- ❑ Turning Circle : အချင်း = (၃၆၀) မီတာနှင့် အနက် (၈) မီတာ

ကုန်းတွင်း အဆောက်အဦးများ

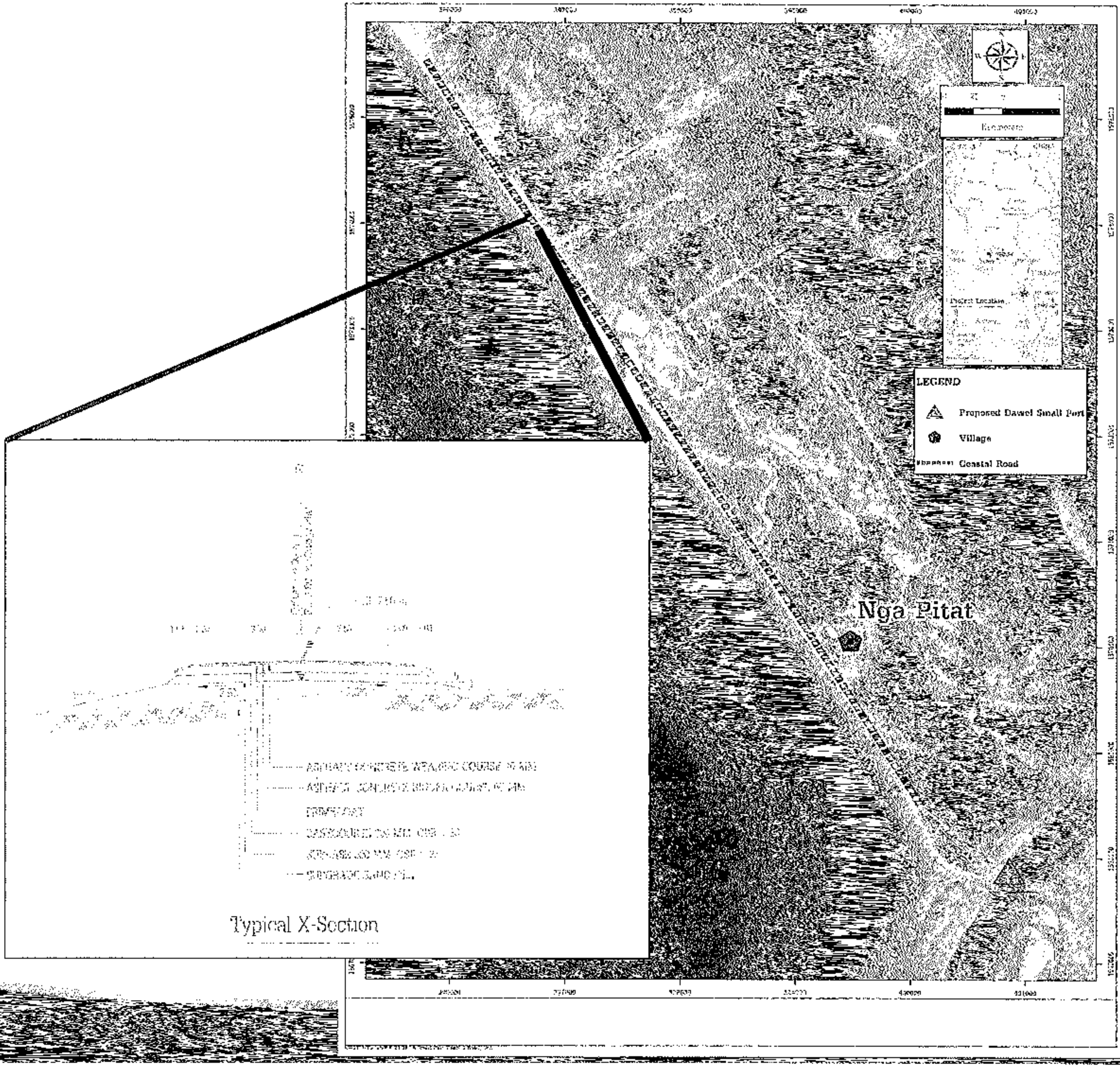
- ❑ ဧက (၁၀၀)

- ❑ Stockyard (၂) ခု (စုစုပေါင်း ဧက ၂၀) နှင့် နောက်တိုးအဆောက်အဦးများ အတွက် ဧက (၈၀)

စီမံကိန်း အချက်အလက်များ

စီမံကိန်း ချဉ်းကပ်လမ်း

- (၈.၃) ကီလိုမီတာ ရှည်လျားပြီး ROW (၁) မီတာပါဝင်နေသော အကျယ် (၇) မီတာရှိသော လမ်း
- စီမံကိန်းချဉ်းကပ်လမ်းသည် ကမ်းခြေဧရိယာမှ အဆိုပြုထားသော ဆိပ်ကမ်းငယ်သို့ km+000 (ITD ၏ အခြေစိုက်စခန်း) ရှည်လျားပါသည်။
- ကီလိုမီတာ 3+000 တွင် ချောင်းကိုဖြတ်သော တံတားကို တည်ဆောက်သွားမည် ဖြစ်ပါသည်။


LEGEND
Proposed Dawei Small Port
Village
Coastal Road
Nga Pitat
Typical X-Section

စီမံကိန်း အချက်အလက်များ

အဓိက လုပ်ဆောင်မှုများ

- ❑ သောင်တူးခြင်း
  - ➢ သောင်တူးခြင်းထုထည် စုစုပေါင်းမှာ ပျမ်းမျှ ကုဗမီတာ ၅,၂၀၀,၀၀၀ ရှိပါသည်။

- ❑ စွန့်ပြစ်ခြင်း
  - ➢ သောင်တူး၍ရရှိသော သောင်များကို ကုန်းတွင်ပိုင်း မြေဖို့ရာတွင် အသုံးပြု သွားမည် ဖြစ်ပါသည်။
  - ➢ သောင်တူး၍ရရှိလာသော သောင်များကို ကမ်းလွန်ပိုင်းနှင့် ကုန်းတွင်းပိုင်း မည့်သည့် နေရာတွင်မှ စွန့်ပြစ်သွားမည် မဟုတ်ပေ။
  - ➢ Stockyard ဧရိယာ ပြန်လည်ပြုပြင်ခြင်းအတွက် တူးဖော်ရရှိသော သောင် ကုဗမီတာ ၂၀၀,၀၀၀ ကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။
  - ➢ တူးဖော်ရရှိသော သောင်ကုဗမီတာ ၅,၀၀၀,၀၀၀ ကို စင်ကာပူသို့ ပို့ဆောင်မည် ဖြစ်ပါသည်။

- ❑ လှိုင်းကာတည်ဆောက်ခြင်း
  - ➢ လှိုင်းကာကို rubble mound လှိုင်းကာပုံစံ တည်ဆောက်သွားမည် ဖြစ်ပါသည်။
  - ➢ ၎င်းကို ကျောက်တုံးကြီးများဖြင့် ကာကွယ်ထားသော ပုံစံတည်ဆောက်သွားမည်။

စီမံကိန်း အချက်အလက်များ

အဓိက လုပ်ဆောင်မှုများ

- ❑ စီမံကိန်းချဉ်းကပ်လမ်း ဖောက်လုပ်ခြင်း
  - ➢ စီမံကိန်းချဉ်းကပ်လမ်းဖောက်လုပ်ခြင်းကြောင့် ငပိတက်ရွာမှ လူနေအိမ် (၁၂) အိမ်ကို ပြန်လည်နေရာချထားပေးရမည် ဖြစ်ပြီး ၎င်းအိမ်များအတွက် ပြန်လည်နေရာချထားခြင်း လုပ်ဆောင်မှု အစီအစဉ်များကို ပြင်ဆင်ထားပြီး မြေ၊ အိမ်နှင့် ပိုင်ဆိုင်မှုများအတွက် အပြည့်အဝ ပေးလျော်ခြင်းများပြုလုပ်ပေးသွားမည် ဖြစ်ပါသည်။

စီမံကိန်း အချိန်ဇယား

- ❑ ဆောက်လုပ်ရေး ပြီးစီးရန် (၁၂) လ လိုအပ်ပါသည်။

သက်ဆိုင်ရာ ဥပဒေနှင့် စည်းမျဉ်းများ

- ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအတွက် အခြေခံများ

  - အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ ပေါ်လစီ (၁၉၉၄)
  - ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)

- EIA ဖြစ်စဉ် နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု လိုအပ်ချက်များ

  - ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)

သက်ဆိုင်ရာ ဥပဒေနှင့် စည်းမျဉ်းများ

- သက်ဆိုင်ရာ ဥပဒေနှင့် စည်းမျဉ်းများ

လူမှုရေး	ပတ်ဝန်းကျင်	စီမံကိန်းနေရာအတွက် သီးခြားဥပဒေ
- ပြည်သူ့ကျန်းမာရေး ဥပဒေ (၁၉၇၂) - လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂) - ယဉ်ကျေးမှုအမွေ အနှစ်ဒေသများ ကာကွယ် ထိန်းသိမ်းရေး ဥပဒေ (၁၉၉၈) - ရှေးဟောင်း အဆောက်အအုံများ ကာကွယ် ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)	- သစ်တော ဥပဒေ (၁၉၉၂) - တောရိုင်းတိရစ္ဆာန်ကာကွယ်ရေးနှင့် သဘာဝဒေသထိန်းသိမ်းစောင့်ရှောက် ရေး ဥပဒေ (၁၉၉၄) - ရေအရင်းအမြစ်နှင့် မြစ်၊ ချောင်းများ ထိန်းသိမ်းရေး ဥပဒေ (၂၀၀၆) - မြန်မာ့ပင်လယ်ငါးလုပ်ငန်း ဥပဒေ (၁၉၉၀) - ရေချိုငါးလုပ်ငန်း ဥပဒေ (၁၉၉၁) - ငါးသားပေါက် ဥပဒေ (၁၉၈၉) - ပင်လယ်ရေပိုင်နက်နှင့် ရေကြောင်းဖုန် ဥပဒေ (၁၉၇၇)	- မြန်မာအထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၄) - ထားဝယ်အထူးစီးပွားရေးဇုန် ဥပဒေ (၂၀၁၁)

သက်ဆိုင်ရာ ဥပဒေနှင့် စည်းမျဉ်းများ

- သက်ဆိုင်ရာ ဥပဒေနှင့် စည်းမျဉ်းများ

မြန်မာ	အပြည်ပြည်ဆိုင်ရာ	
	IFC	အခြား
- အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ၊ ၂၀၁၅ခုနှစ်၊ ဧပြီလ ၂၂ရက်	- ပတ်ဝန်းကျင်နှင့် လူမှုရေး ဆိုင်ရာ ရေရှည်တည်တံ့ရေး လုပ်ဆောင်မှု စံနှုန်းများ ၊ ၂၀၁၂ ခုနှစ် ဇန်နဝါရီလ ၁ရက် - ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာ ယေဘူယျ လမ်းညွှန်ချက်၊ ၂၀၀၇ ခုနှစ် ဧပြီလ ၃၀ရက် - သဘောဆိပ်ကမ်း အတွက် ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာ လမ်းညွှန်ချက် (၂၀၀၇ခုနှစ် ဧပြီလ ၃၀ ရက်)	- MARPOL 73/78 (သင်္ဘောများ၏ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု) - WHO ၏ ပတ်ဝန်းကျင် လေထု အရည်အသွေး လမ်းညွှန်ချက် (၂၀၀၇) - DIN 4150 (တုန်ခါမှု) - အာဆီယံဒေသအတွက် ပင်လယ်ရေ အရည်အသွေး စံနှုန်းများ၊ (၂၀၀၈) - ထိခိုက်မှု ဆန်းစစ်ခြင်းအတွက် အပြည်ပြည်ဆိုင်ရာ အဖွဲ့အစည်း (IAIA) NOAA Screen Quick Reference Table, ၂၀၀၄ခုနှစ် (အနယ်အနှစ်) - WHO ၏ သောက်သုံးရေ အရည်အသွေး၊ ၂၀၁၁ ခုနှစ် - U.S. EPA စံနှုန်း (ဆူညံသံ) - NFPA and ASME (မီးတင်ငွေ့ ပေါက်ကွဲမှု လုံခြုံရေး)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ဖုန်မှုန့်	• စီမံကိန်းပြင်ဆင်ခြင်းနှင့် အမျိုးအစား ခွဲခြင်းတို့မှ ထွက်ပေါ်လာသော ဖုန်မှုန့်များကို ဖိနှိပ်ရပါမည်။ • ဆောက်လုပ်ရေးဇရိယာအတွင်း အမှိုက်မီးရှို့ခြင်းမပြုလုပ်ရပါ။ • ဆောက်လုပ်ရေးဝန်ထမ်းအားလုံး အား ဖုန်မှုန့်ကာကွယ်နိုင်သော မျက်နှာဖုံးများ ထောက်ပံ့ပေး ရပါမည်။	• နေရာ - ငပိတက်ကျေးရွာ၊ စခန်းသစ် ကျေးရွာနှင့် ဆောက်လုပ်ရေး လုပ်ငန်းခွင် • ပါရာမီတာ - TSP and PM-10 • အကြိမ်အရေအတွက် - စီမံကိန်းဆိပ်ကမ်းငယ် နေရာနှင့် စီမံကိန်း ချဉ်းကပ်လမ်းရှင်းလင်းခြင်း အချိန်တွင် (၃)လ တစ်ကြိမ် စစ်ဆေးပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူ ရပါမည်။ • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည်ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက် ရပါမည်။

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ဆူညံသံ	• အသံဆူညံမှုထွက်ပေါ်သော လုပ်ငန်းလုပ်ဆောင်မှုများကို နေ့အချိန်တွင်သာ ပြုလုပ်ရန် ကန့်သတ်ထားရပါမည်။ • ဆူညံသံများ လျော့ကျစေရန် သင့်တော်သော အသံကာတံတိုင်းများကို တပ်ဆင်ပေး ရပါမည်။ • ရွှေ့ပြောင်း၍မရသော ကိရိယာများကို ယာယီအသံကာတံတိုင်းများကို တပ်ဆင်ရပါမည်။ • ဆူညံသော လုပ်ငန်းခွင်တွင် လုပ်ကိုင်နေသော အလုပ်သမားများအား နားကြပ် သို့မဟုတ် နားအကာအကွယ် များကို ထောက်ပံ့ပေးသွားမည် ဖြစ်ပါသည်။	• နေရာ - ငပိတက်ကျေးရွာ၊ စခန်းသစ် ကျေးရွာနှင့် ဆောက်လုပ်ရေး လုပ်ငန်းခွင် • ပါရာမီတာ: Lmax, Leq 24 hr, Ldn, L90 • အကြိမ်အရေအတွက် - စီမံကိန်း နေရာ လမ်းရှင်းလင်းခြင်း အချိန်တွင် (၃)လ တစ်ကြိမ် စစ်ဆေးပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူ ရပါမည်။ • တာဝန်ခံ - စီမံကိန်းအကောင်အထည် ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည် ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက် ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ	• အနယ်အနှစ်များပျံ့နှံ့ခြင်းကြောင့် ရေနေသတ္တဝါများအပေါ် ဆိုးကျိုးသက်ရောက်မှုများကို အနည်းဆုံးဖြစ်အောင် ဆောင်ရွက်ရပါမည်။ • သောင်တူးခြင်းဧရိယာနှင့် စုပုံခြင်းဧရိယာရှိ ကမ်းရိုးတန်းရေ အရည်အသွေးကို အနည်းဆုံး (၃)လ ကြိုတင် စောင့်ကြည့်ပြီး ထိန်းသိမ်းရေးလုပ်ငန်းများ လုပ်ဆောင်ရပါမည်။ • Total suspended solid သည် 50 mg/L ထက်ကျော်လွန်ခဲ့ပါက မည်သည့်အချိန်တွင်မဆို သောင်တူးခြင်းလုပ်ဆောင်မှုများ ကို ရပ်တန့်ဖြစ်ရမည်။	**ကမ်းရိုးတန်းရေ** • နေရာ : ချဉ်ကပ်တူးမြောင်းအနီးတွင် နမူနာ ကောက်ယူမယ့်နေရာ (၁၀) ခု • ပါရာမီတာ : DO, suspended solid, pH, Oil and Grease, နှင့် Nitrate-Nitrogen • အကြိမ်အရေအတွက်: သောင်တူးခြင်းလုပ်ငန်း လုပ်ဆောင်နေစဉ်တွင် တစ်လလျှင် တစ်ကြိမ် **အဏ္ဏဝါဂေဟဗေဒ** • နေရာ : ကမ်းရိုးတန်းရေ နမူနာကောက်ခံမည့် နေရာနှင့် အတူတူ • ပါရာမီတာ: မျောလေး၊ Bentho၊ ငါး နှင့် ကာကွယ်ရမည့် အဏ္ဏဝါမျိုးစိတ် • အကြိမ်အရေအတွက်: သောင်တူးခြင်းလုပ်ငန်း လုပ်ဆောင်နေစဉ်တွင် တစ်လလျှင် တစ်ကြိမ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည် ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည် ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက် ရပါမည်။

တည်ဆောက်ဆဲကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
လမ်းပန်းဆက်သွယ်ရေး	• စီမံကိန်းနေရာနှင့် အနီးအနားရှိ ကျေးရွာများ အနီးတွင် ယာဉ်သွားလာမှုနှုန်းသည် တစ်နာရီလျှင် (၄၀) ကီလိုမီတာထက် မပိုစေရန် ကန့်သတ်ထားရပါမည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းများကြောင့် ဖြစ်ပေါ်လာသော လမ်းပျက်စီးမှုကို ချက်ခြင်း ပြင်ဆင်ရပါမည်။ • ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ကို ညွှန်ပြသော သတိပေးဆိုင်းဘုတ်များကို တပ်ဆင်ထားရပါမည်။ • ညအချိန်တွင် သယ်ယူပို့ဆောင်ခြင်းကို ရှောင်ရှားရပါမည်။ • ယာဉ်မတော်တဆထိခိုက်မှုများအတွက် အရေးပေါ်အစီအစဉ်များကို ပြင်ဆင်ထားရပါမည်။	• နေရာ: စီမံကိန်း ချဉ်းကပ်လမ်း • ပါရာမီတာ: စီမံကိန်းနှင့် ဆက်စပ်နေသော မတော်တဆ ထိခိုက်မှုများ • နည်းလမ်း: ကုန်းလမ်းပို့ဆောင်ရေးကြောင့် ဖြစ်ပေါ်သော မတော်တဆထိခိုက်မှုများကို မှတ်သားထားရပါမည်။ • အကြိမ်အရေအတွက်: နေ့စဉ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည် ဖော်သူနှင့် စီမံကိန်းအကောင်အထည် ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက်ရပါမည်။

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ရေကြောင်းသွားလာခြင်း	• ကမ်းလွန် ဆောက်လုပ်ရေး ဧရိယာ၏ နယ်နိမိတ် (ဆောက်လုပ်ရေးဇုံယာမှ မီတာ ၂၀၀) ကိုပြရန် သတိပေး ဆိုင်းဘုတ် များ ရှင်းလင်းမြင်သာစွာ တပ်ဆင်ထား ရပါမည်။ • ညဘက်တွင် လုပ်ငန်းဆောင်ရွက်မည့် သင်္ဘောအားလုံးသည် အထူးခွင့်ပြုချက် ရယူရန် လိုအပ်ပါသည်။ • ငါးဖမ်းသင်္ဘောများအားလုံးကို ကမ်းလွန်ဆောက်လုပ်ရေး နယ်နိမိတ်ကို သတင်းပေးပို့ထားရပါမည်။ • ရေကြောင်းမတော်တဆထိခိုက်မှုများနှင့် သက်ဆိုင်သော အရေးပေါ်အစီအစဉ်များကို ပြင်ဆင်ထားရန် လိုအပ်ပါသည်။	• နေရာ : ကမ်းလွန်ဧရိယာ၏ အထူးသဖြင့် ချဉ်းကပ်တူးမြောင်းနေရာ • ပါရာမီတာ : စီမံကိန်းနှင့် သက်ဆိုင်သော ရေကြောင်း မတော်တဆထိခိုက်မှုများ • နည်းလမ်း : ရေကြောင်းမတော်တဆ ထိခိုက်မှုများကို မှတ်သားထားရပါမည်။ • အကြိမ်အရေအတွက် : နေ့စဉ် • တာဝန်ခံ - စီမံကိန်းအကောင်အထည်ဖော်သူ နှင့် စီမံကိန်းအကောင်အထည်ဖော်သူ၏ ကြီးကြပ်မှုဖြင့် ကန်ထရိုက်တာမှ ဆောင်ရွက် ရပါမည်။

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ဆူညံသံ	• ထိခိုက်ခံစားရသောဧရိယာများတွင် ဆူညံသံများ လျော့ကျစေရန် ယာယီ အသံကာတံတိုင်းများကို တပ်ဆင်ပေးရပါမည်။ • သယ်ယူပို့ဆောင်ရေးကို နေ့အချိန်တွင်သာ ဆောင်ရွက်ရပါမည်။	• နေရာ : ငပိတက်ကျေးရွာ • ပါရာမီတာ : Lmax, Leq 24 hr, Ldn, L90 • အကြိမ်အရေအတွက် : တစ်နှစ်လျှင် နှစ်ကြိမ် တိုင်းတာပြီး ၇၂နာရီဆက်တိုက် နမူနာကောက်ယူ ရပါမည်။ • တာဝန်ခံ : စီမံကိန်းအကောင်အထည်ဖော်သူ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ကမ်းရိုးတန်းရေ/ အဏ္ဏဝါ ဂေဟဗေဒ	• တည်ဆောက်ဆဲကာလတွင် ဆောင်ရွက်မည့် သောင်တူးဖော်ခြင်းကို လျော့ချသည့် အဆိုပြု နည်းလမ်းများအတိုင်း ပြုလုပ်သွားမည် ဖြစ်ပါသည်။	**ကမ်းရိုးတန်းရေ** • နေရာ : ချဉ်ကပ်တူးမြောင်းအနီးတွင် နမူနာကောက်ယူမယ့်နေရာ (၁၀) ခု • ပါရာမီတာ : DO, suspended solid, pH, Oil and Grease, နှင့် Nitrate-Nitrogen • အကြိမ်အရေအတွက်: သောင်တူးခြင်းလုပ်ငန်းအားထိန်းသိမ်းနေစဉ်တွင် တစ်နှစ်လျှင် နှစ်ကြိမ် **အဏ္ဏဝါဂေဟဗေဒ** • နေရာ : ကမ်းရိုးတန်းရေ နမူနာကောက်ခံမည့်နေရာနှင့် အတူတူ • ပါရာမီတာ: မျောလေ့၊ Benthoı ငါး နှင့် ကာကွယ်ရမည့် အဏ္ဏဝါမျိုးစိတ် • အကြိမ်အရေအတွက်: သောင်တူးခြင်းလုပ်ငန်းအားထိန်းသိမ်းနေစဉ်တွင် တစ်နှစ်လျှင် နှစ်ကြိမ် • တာဝန်ခံ : စီမံကိန်းအကောင်အထည်ဖော်သူ

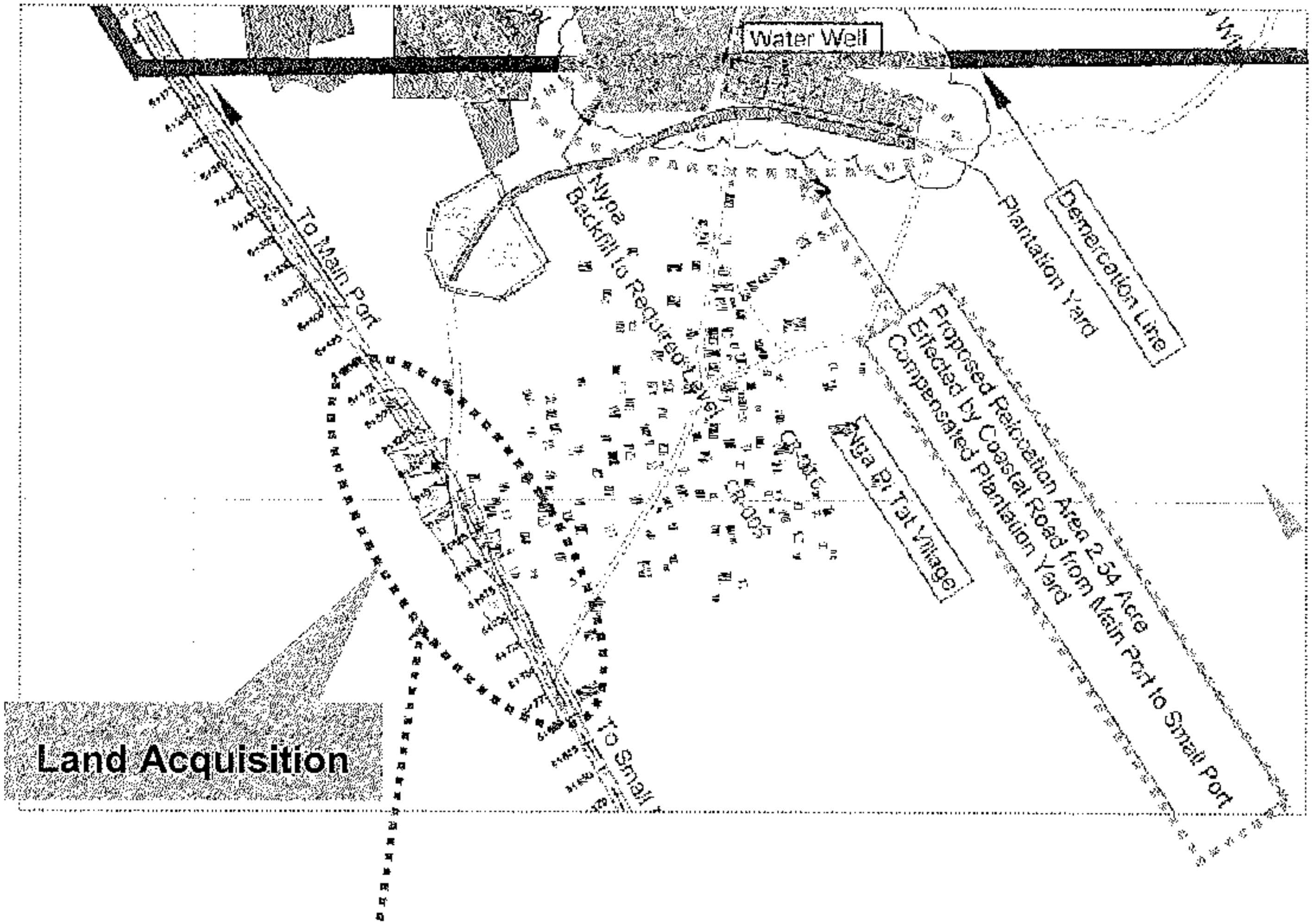
အကြောင်းအရာ	လျှော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ကမ်းရိုးတန်းတိုက်စားမှု	• စီမံကိန်းနေရာအနီးရှိ ကမ်းရိုးတန်း ဆုတ်ယုတ်မှုအပေါ် သဲတို့၏ ခံနိုင်မှုတို့ကို နှစ်စဉ် ပြန်လည်စစ်ဆေးရပါမည်။ • ရုပ်ပိုင်းဆိုင်ရာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ သတင်းအချက်အလက်များ နှင့် အင်ဂျင်နီယာဆိုင်ရာ အကဲဖြတ်မှုများ အပေါ် မူတည်၍ ကမ်းရိုးတန်း စောင့်ကြည့်လေ့လာမှုကို ပြုလုပ်ခြင်းအားဖြင့် လိုအပ်သည့် သတင်းအချက်အလက်များကိုရရှိကာ ၎င်း အချက်အလက်များအပေါ် အခြေခံပြီး ပိုမိုခိုင်မာသော ကျောက်ဆွယ်တန်းကိုဆောက်လုပ်ခြင်းဖြင့် ကမ်းခြေ တိုက်စားခြင်းကို ကာကွယ်နိုင်မည် ဖြစ်ပါသည်။	• နေရာ : ဆိပ်ကမ်းဖွံ့ဖြိုးမှု လုပ်ဆောင်မှုများမှ (၁) ကီလိုမီတာ အကွာအဝေး • ပါရာမီတာ : - ကမ်းရိုးတန်း တိုက်စားခြင်း - ကမ်းခြေလေ့လာခြင်း - ရေအောက်ဆန်းစစ်လေ့လာခြင်း • အကြိမ်အရေအတွက် : - ကမ်းခြေလေ့လာခြင်းနှင့် ရေအောက်ဆန်းစစ်လေ့လာခြင်းအတွက် တစ်နှစ်လျှင် နှစ်ကြိမ်ပြုလုပ်ပါမည်။ - ကမ်းရိုးတန်းတိုက်စားခြင်းအတွက် ပုံမှန်စစ်ဆေးသွားပါမည်။ • တာဝန်ခံ : စီမံကိန်းအကောင်အထည်ဖော်သူ

လုပ်ငန်းလည်ပတ်ဆောင်ရွက်သည့်ကာလအတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (EMP)

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ကုန်လမ်းသွားလာမှု	• ဆိပ်ကမ်းလုပ်ငန်းလည်ပတ်မှုကြောင့် တိုးပွားလာမည့် ယာဉ်သွားလာမှုများကြောင့် ဒေသခံလမ်းများ၏ ဘေးကင်းလုံခြုံမှု အစီအစဉ်ကို ပြင်ဆင် အကောင်အထည်ဖော်ရန် လိုအပ်ပါသည်။ • စီမံကိန်းဧရိယာအနီး ယာဉ်သွားလာမှုနှုန်းသည် တစ်နာရီလျှင် (၄၀) ကီလိုမီတာထက် မကျော်လွန်စေရန် ဒေသခံ အုပ်ချုပ်ရေးမှ စည်းကမ်းသတ်မှတ်ပေးရန် လိုအပ်ပါသည်။	• နေရာ : စီမံကိန်း ချဉ်းကပ်လမ်း • ပါရာမီတာ : စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာသော မတော်တဆ ထိခိုက်မှုများ • နည်းလမ်း : ကုန်လမ်းသွားလာမှုကြောင့် ဖြစ်ပေါ်လာသော မတော်တဆထိခိုက်မှုများကို မှတ်သားထားရပါမည်။ • အကြိမ်အရေအတွက် : နေ့စဉ် • တာဝန်ခံ : စီမံကိန်းအကောင်အထည်ဖော်သူ

TEAM GROUP

အကြောင်းအရာ	လျော့ချရေး နည်းလမ်းများ	စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်
ရေကြောင်းသွားလာခြင်း	• ရေကြောင်းသွားလာရေး ဘေးအန္တရာယ် ကင်းရှင်းရန် သင်္ဘောသွားလာရေး စီမံခန့်ခွဲမှုစနစ်ကို ဆိပ်ကမ်းတွင် ပြုလုပ်သွားမည်ဖြစ်ပြီး ဆိပ်ကမ်းသို့ ဝင်ရောက်သော သင်္ဘောများကို မှတ်သားထားမည် ဖြစ်ပါသည်။ • ဆိပ်ကမ်းနယ်နိမိတ်နှင့် ရေလက်ကြားနေရာကို ညွှန်ပြသည့် ရေကြောင်းပြဖော်ယာ နှင့် ဆိုင်းဘုတ်များကို ရှင်းလင်းမြင်သာအောင် ညွှန်ပြထားရပါမည်။	• နေရာ : ကမ်းလွန်ဧရိယာ၏ အဝိက ချဉ်းကပ်တူးမြောင်း • ပါရာမီတာ : စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာသော ရေကြောင်း မတော်တဆ ထိခိုက်မှုများ • နည်းလမ်း : ရေကြောင်းသွားလာမှုကြောင့် ဖြစ်ပေါ်လာသော မတော်တဆထိခိုက်မှုများကို မှတ်သားထားရပါမည် • အကြိမ်အရေအတွက် : နေ့စဉ် • တာဝန်ခံ : စီမံကိန်းအကောင်အထည်ဖော်သူ

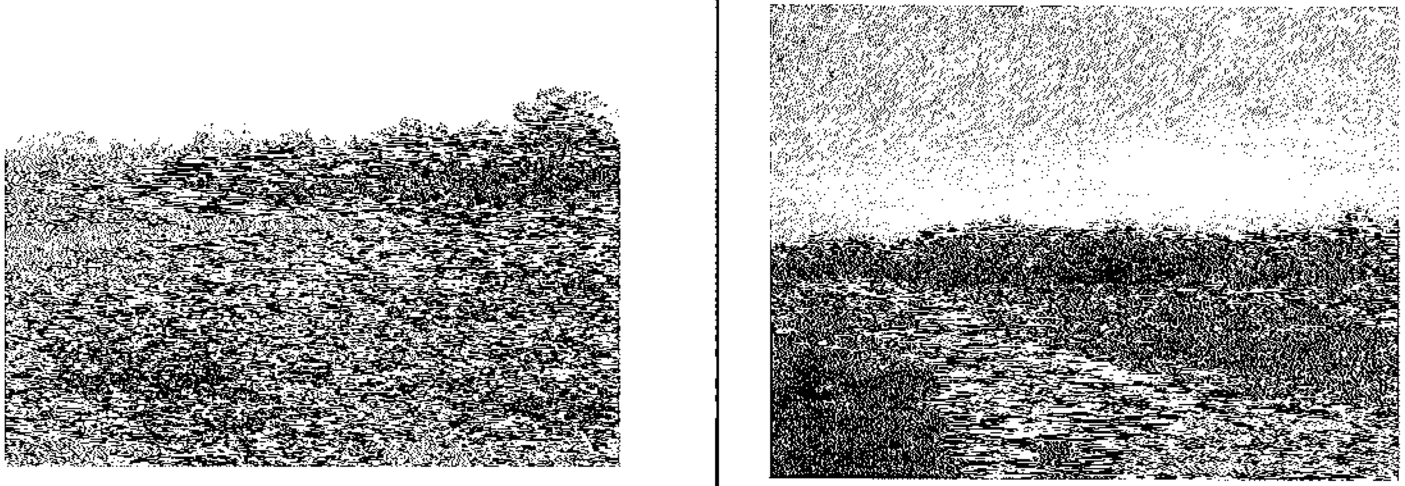


The Existing Households

TEAM GROUP

ထိခိုက်ခံစားရသည့်သူများ (PAPs) အတွက် ပြန်လည်နေရာချထားပေးမည့်နေရာ

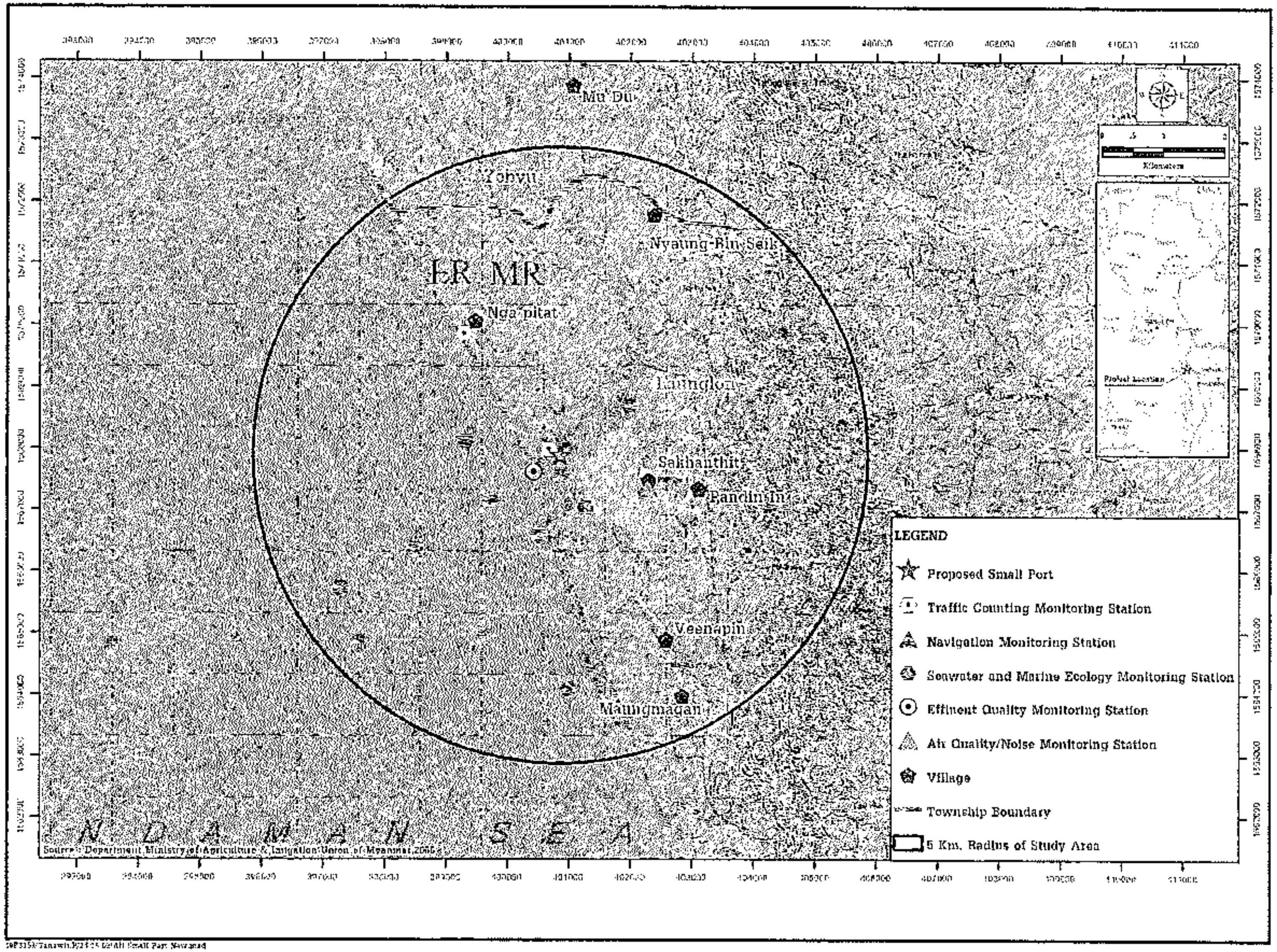
- စီမံကိန်းချဉ်းကပ်လမ်း right-of-way ကြောင့် ငပိတက်ရွာမှ အိမ်ထောင်စု (၁၂) စုကို ပြန်လည်နေရာချထားပေးရန် လိုအပ်ပါသည်။ ထိခိုက်ခံရသော အိမ်ထောင်စုများသည် ငပိတက်ရွာရှိ အဆိုပြုထားသော နေရာသို့ပြောင်းရွှေ့ရန် သဘောတူညီထားပြီးဖြစ်ပါသည်။



ငပိတက်ရွာအတွင်းပြန်လည်နေရာချထားပေးရန် အဆိုပြုထားသော ဧရိယာ

TEAM GROUP

လေထုအရည်အသွေးနှင့် ဆူညံသံ နမူနာကောက်ယူသည့် နေရာများ



TEAM GROUP

စီမံကိန်း အကောင်အထည်ဖော်မှုကာလတွင် လိုက်နာဆောင်ရွက်ရမည့် ကတိကဝတ်များ

- ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) နှင့် ကတိကဝတ်များကို အကောင်အထည်ဖော် ဆောင်ရွက်ရပါမည်။

- စီမံကိန်းအကောင်အထည်ဖော်စဉ်တွင် ကန်ထရိုက်တာနှင့် ကန်ထရိုက်တာခွဲတို့ အားလုံးသည် သက်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေနှင့် လုပ်ထုံးလုပ်နည်းအားလုံးကို လိုက်နာရန် တာဝန်ယူရပါမည်။

- 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။

- လိုက်နာရမည့် စံနှုန်းများ -

အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)

အပြည်ပြည်ဆိုင်ရာ စံနှုန်းများ :

ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံမှုဆိုင်ရာ လမ်းညွှန်ချက်တွင် ဖော်ပြထားသော WHO ၏ ပတ်ဝန်းကျင်လေထု အရည်အသွေး : အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေး ကော်ပိုရေးရှင်း (IFC) ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ လေထုထုတ်လွှတ်မှု နှင့် လေထုအရည်အသွေး (၂၀၀၇) နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်လုံခြုံရေး လမ်းညွှန်ချက်: IFC ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ ဆူညံသံ စီမံခန့်ခွဲမှု (2007)၊ ရေနေသတ္တဝါနေထိုင်မှုအားကာကွယ်ရန်အတွက် အာဆီယံဒေသ အဏ္ဏဝါရေ အရည်အသွေးစံနှုန်း (၂၀၀၈) နှင့် EIA အစီရင်ခံစာတွင် ပါဝင်သော သက်ဆိုင်ရာ စံနှုန်းများကို လိုက်နာရပါမည်။

- စီမံကိန်းတည်ဆောက်မှုဒီဇိုင်းသည် ဖွံ့စည်းပုံဒီဇိုင်းအတွက် ယူရိုကုဒ်၊ ရေကြောင်းဖွံ့စည်းပုံနှင့် တူးမြောင်းဒီဇိုင်းအတွက်စသည့် ဒီဇိုင်းကုဒ်များ၊ စံနှုန်းများနှင့် လမ်းညွှန်ချက်များကို လိုက်နာဆောင်ရွက်ရပါမည်။

- စီမံကိန်းဧရိယာ ပတ်လည်တွင် စိမ်းလန်းသော ကြားခံဇုန်ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရန် လိုအပ်ပါသည်။

- သောင်တူးဖော်ခြင်းမှ စုပုံလာသော အနည်အနှစ်များကြောင့် ရေနေသတ္တဝါများ ထိခိုက်မှုလျော့နည်းစေရေး ဆောင်ရွက်ရန်နှင့် ဆိပ်ကမ်းအနီးတွင်နေထိုင်သော ဒေသတွင်း ငါးဖမ်းသမားများအား ဆောက်လုပ်ရေးလုပ်ဆောင်မှု အချိန်ဇယားနှင့် သောင်တူးဖော်ခြင်းလုပ်ငန်းဧရိယာတို့၏ သတင်းအချက်အလက်များကို ဖြန့်ဝေပေးရန် လိုအပ်ပါသည်။

- စက်သုံးဆီများ ပင်လယ်အတွင်းသို့ ဖိတ်ကျမှုမရှိစေရန် စစ်ဆေးထိန်းသိမ်းခြင်း၊ အနည်အနှစ်များ ပင်လယ်အတွင်းသို့ လွှံကျမှု မရှိစေရန် HD (Hopper Dredger) နှင့် Cutting Suction Dredger (CSD)တို့ကို စစ်ဆေးထိန်းသိမ်းခြင်းတို့ ဆောင်ရွက်ရန် လိုအပ်ပါသည်။

- ကမ်းလွန်ဆောက်လုပ်ရေး ဇရိယာပတ်လည်တွင် အမှတ်အသားများနှင့် သတိပေးအမှတ်အသားများ (ဆောက်လုပ်ရေး ဇရိယာမှ မီတာ ၂၀၀)ကို တပ်ဆင်ရန်နှင့် ရေကြောင်းသွားလာမှု ဇရိယာတွင် လုံလောက်သော ရေကြောင်းမှတ်ဘောများထားရှိပြီး ရေကြောင်းသွားလာမှု တူးမြောင်းနှင့် ဆိပ်ကမ်းနယ်နိမိတ်ကို ရှင်းလင်းစွာ ဖော်ပြထားရန် လိုအပ်ပါသည်။

- သင်္ဘောမှ စွန့်ပစ်သော အညစ်အကြေးများကို MARPOL နှင့်အညီ သင့်တော်သော ထိန်းချုပ်မှုများ ပြုလုပ်ရန် လိုအပ်ပါသည်။

- စီမံကိန်းကမ်းရိုးတန်းလမ်း၏ အခြေအနေကို ပုံမှန်စစ်ဆေးခြင်း၊ ပြင်ဆင်ခြင်း၊ ပြုပြင်ခြင်းတို့ ဆောင်ရွက်ရန်လိုအပ်ပါသည်။

- ဒေသခံပြည်သူများ၏ အကူအညီလိုအပ်ချက်ကို ထောက်ပံ့ပေးနိုင်ရန် CSR အစီအစဉ်ကို ဆောင်ရွက်ရန် လိုအပ်ပါသည်။

- ပိတ်သိမ်းမှုအစီအစဉ် မစတင်ခင် (၃) လနှင့် ပိတ်သိမ်းမှု ပြီးစီးသည့် အချိန်တွင် ကမ်းလွန်အဆောက်အဦးများ အနီးရှိ ကမ်းရိုးတန်းရေ အရည်အသွေးနှင့် အဏ္ဏဝါ ဂေဟစနစ်တို့ကို စောင့်ကြည့်ရန် လိုအပ်ပါသည်။

GROUP

- စီမံကိန်းမတည်ဆောက်မီနှင့် တည်ဆောက်ဆဲကာလအတွင်း Grievance Redress Mechanism ကို ပြင်ဆင်ရန် လိုအပ်ပါသည်။
- ဆုံးရှုံးသွားသော ဒီရေတော ဧရိယာများကို ပြန်လည်အစားထိုးပေးလျော်ရန် ဒီရေတော ပြန်လည်စိုက်ပျိုးတည်ထောင်မည့် လုပ်ငန်းအစီအစဉ်အသေးစိတ်ကို ပြန်လည်တင်ပြရန် လိုအပ်ပါသည်။
- ဒေသခံပြည်သူများနှင့် စဉ်ဆက်မပြတ်တွေ့ဆုံဆွေးနွေးပြီး ၎င်းတို့၏ အကြံပြုချက်နှင့် လိုလားချက်များအား အလေးထား ပေါင်းစပ်ဆောင်ရွက်ရန် လိုအပ်ပါသည်။
- ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးမှု အစီရင်ခံစာကို သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ (၆) လ တစ်ကြိမ် တင်ပြရပါမည်။

TEAM GROUP

ကျေးဇူးတင်ပါသည်။

TEAM GROUP