



PTTEP

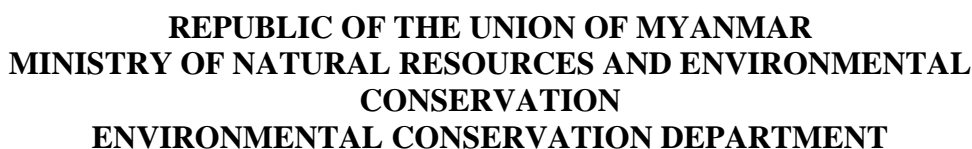
Monitoring Report of PTTEPI's Yangon Office Building (Construction Phase) during January – June 2020

PTTEP International Limited (PTTEPI)



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This is the official submission form of Monitoring Report under *Environmental Impact Assessment Procedure Notification No.616/2015*. This form shall be completed in its entirety and submitted to the Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation, along with all required Monitoring Report according to the issued Environmental Compliance Certificate (ECC).

Proponent Name:	PTTEP International Limited		Company Registration Number by DICA (if any):	84 FC
Contact name of Proponent:	Hsu Myat Maw			
Proponent's address for correspondence:	Vantage Tower, 623 Pyay Road, Kamayut Township, Yangon, Republic of the Union of Myanmar			
Telephone (fixed/mobile):	09784443327	Fax:	01 661814	Email address: hsumyatm@pttep.com

Project Title	PTTEPI's Yangon New Office Building
Project Location (Address)	No. (2), Sei-Myaung Yeiktha Street, 8 ½ Mile, Mayangone Township, Yangon.
ECC number	Letter No. Forest 3(2)/ 6(D) (3423/2017) dated on 25 th October 2017

This provides an overview of the project's compliance with the conditions set in the ECC. It shall be summarized in the following table:

This provides an overview of the compliance to the EMP committed by the proponent during the review of the ECC application. It shall be summarized as in the following Table:

[illegible]

Validation of Project scale and predicted impact

In case of any change of the project scale or parameters of the predicted impacts, the proponent shall provide the status of the changes as in the following table. If the changes are significant, the Ministry may request additional survey to the proponent as to update the issued ECC.

Items (scale, predicted impact)	Scale / Parameters at the survey phase	Actual scale / parameters	Remark

Signature (Representative of the project proponent)

I, the undersigned Proponent (or representative, there of), hereby state that the information provided in/with the application and the report ensure that the Monitoring Report are undertaken in a professional manner and in accordance with EIA Procedure Notification No. 616/2015 and any applicable legislations issued or adopted by the Ministry.

Signature:



Date of
submission:
(dd/mm/yyyy)

Print
name:

Hsu Myat Maw

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Date received:

Project Identification Number:

The proponent submitted the reports
with the forms of;

☐

Paper copy

☐

Digital copy

Recorded by:

Additional comments, notes or recommendations (attached if necessary):

Executive Summary

အစီရင်ခံစာအကျဉ်းချုပ်

PTTEPI သည် စောင့်ကြည့်စစ်ဆေးခြင်းအစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန (ECD) ကိုတင်ပြခြင်း အပါအဝင်ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ပါးရေးနှင့် စောင့်ကြည့်စစ်ဆေးခြင်း အစီအမံများကိုလိုက်နာဆောင်ရွက်ရန်တာဝန်ရှိပါသည်။ ထို့ကြောင့် PTTEPI သည် စီမံကိန်းပိုင်ရှင်အနေဖြင့် အသိအမှတ်ပြု တတိယအဖွဲ့အစည်းဖြစ်သော REM-UAE ဓာတ်ခွဲခန်းနှင့် အကြံပေးကုမ္ပဏီ(REM-UAE)ကို ထိခိုက်မှုလျော့ပါးရေး အစီအမံများလိုက်နာဆောင်ရွက်မှုစစ်ဆေးခြင်းနှင့် ကနဦးပတ်ဝန်းကျင် ဆန်းစစ်ခြင်း(IEE)တွင်ပါရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်တွင်ဖော်ပြထားသည့် အကြိမ်အရေအတွက်အတိုင်း စောင့်ကြည့်စစ်ဆေးခြင်းလုပ်ငန်းများ ဆောင်ရွက်ခြင်းကိုပြုလုပ်စေခဲ့ပါသည်။ ၎င်းတွင် စီမံကိန်းအနေဖြင့် ထိခိုက်မှုလျော့ပါးရေး ဆိုင်ရာနည်းလမ်းများနှင့် စောင့်ကြည့်စစ်ဆေးခြင်းဆိုင်ရာနည်းလမ်းများကို လိုက်နာဆောင်ရွက်ခြင်းအခြေအနေအား စစ်ဆေးမှု များပါဝင်ပါသည်။

ကမ္ဘာနှင့်အဝှမ်းတွင် Covid-19 ကပ်ရောဂါဖြစ်ပွားလျက်ရှိရာ မြန်မာနိုင်ငံသည်လည်း အလားတူရင်ဆိုင်နေရပါသည်။ PTTEP မြန်မာအဖွဲ့အနေဖြင့် အဖွဲ့အစည်းလုပ်ငန်းနေရာများတွင် Covid-19 ရောဂါပြန့်ပွားမှုကိုတားဆီးရန် အထူးဦးစားပေး ဆောင်ရွက်လျက်ရှိပြီး အစိုးရ၏လမ်းညွှန်ချက်များနှင့်အညီ Covid-19 ဖြစ်ပွားမှုများပြားသည့် ကာလအတွင်း လူတစ်ယောက်စီတိုင်း အန္တရာယ်ကင်းစေရန် ဘေးကင်းလုံခြုံရေးအစီအမံများနှင့် လျော့ပါးရေးအစီအစဉ်များသေချာစွာ စီမံထားရှိပါသည်။ ရန်ကုန်ရုံးအဆောက်အအုံ ဆောက်လုပ်ရေးလုပ်ငန်း အပါအဝင်လုပ်ငန်းခွင်နေရာများအားလုံးတွင် ဘေးကင်းလုံခြုံရေး အစီအမံများကို တင်းကြပ်စွာဆက်လက်ကျင့်သုံးနေဆဲဖြစ်သည်။ PTTEPI ရန်ကုန်ရုံး တည်ဆောက်ရေး ကာလတွင် ဖြစ်နိုင်ခြေရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာရပ်များနှင့် မရှိမဖြစ်သက်ရောက်မှုများအတွက် ပတ်ဝန်းကျင် ထိခိုက်မှုလျော့ပါးရေး အစီအမံများ အကောင်အထည် ဖော်ခြင်းဆိုင်ရာစစ်ဆေးမှုကို ဒုတိယလပတ် (quarter 2) တွင် ဆောင်ရွက်ရန် စီစဉ်ထားရှိသော်လည်း Covid-19 ဖြစ်ပွားလျက်ရှိသောကြောင့် ပတ်ဝန်းကျင်ဆိုင်ရာထိခိုက်မှုလျော့ပါးရေး အစီအမံများလိုက်နာဆောင်ရွက်မှုစစ်ဆေးခြင်းကို REM-UAE မှနေ၍ Desktop စစ်ဆေးခြင်းအဖြစ် ၂၀၂၀ ဇူလိုင် ၁ ရက်တွင် ပြုလုပ်ခဲ့ရပါသည်။

စစ်ဆေးခြင်း၏ရည်ရွယ်ချက်မှာ IEE အစီရင်ခံစာတွင်ဖော်ပြထားသော ထိခိုက်မှုလျော့ပါးရေးနှင့် စောင့်ကြည့်စစ်ဆေးခြင်း အစီအမံများအပါအဝင် ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်၏ ထိရောက်မှုကို အကဲဖြတ်ရန်ဖြစ်သည်။ စာရင်းစစ်ရလဒ်များကို အစီရင်ခံစာတွင် မှတ်တမ်းတင်ထားပြီး တိုးတက်အောင်ဆောင်ရွက်ရန် အတွက် ဖြစ်နိုင်ခြေရှိသောပြဿနာများ၊ အတားအဆီးများ နှင့် အကြံပြုချက်များကို သတ်မှတ်ဖော်ပြထားပါသည်။

အကဲဖြတ်ခြင်းဖြစ်စဉ်တွင် (၁) PTTEP site မှ REM-UAE သို့ပေးပို့သော စစ်တမ်းကောက်ယူမှုဓာတ်ပုံများ၊ (၂) တာဝန်ရှိသူများ ကိုမေးမြန်းခြင်းနှင့် (၃) စာရွက်စာတမ်းများစစ်ဆေးခြင်း တို့ပါဝင်ပါသည်။

IEEတွင် ဖော်ပြထားသည့်အတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးမှုကို ပြုလုပ်ခဲ့သည်။ ၎င်းသည် အမှုန်အမွှားဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးခြင်း၊ ဆူညံသံအဆင့်စောင့်ကြည့်စစ်ဆေးခြင်း၊ မကျေနပ်ချက်တိုင်ကြားမှု ယန္တရားကိုစောင့်ကြည့်ခြင်း၊ ပြည်သူ့နှင့်လုပ်ငန်းခွင်ဆိုင်ရာ ကျန်းမာရေးနှင့်လုံခြုံရေး စောင့်ကြည့်ခြင်းတို့ဖြစ်သည်။ အမှုန်အမွှားဆိုင်ရာ စောင့်ကြည့်စစ်ဆေးခြင်း နှင့် ဆူညံသံအဆင့်စောင့်ကြည့်စစ်ဆေးခြင်းကို ၂၀၂၀ ပြည့်နှစ်၊ ဇူလိုင်လ ၁ ရက်မှ ၅ ရက်အတွင်းတွင်တိုင်းတာရေးအမှတ် (၃) နေရာတွင်ပြုလုပ်ခဲ့သည်။ ရန်ကုန်ရုံး အဆောက်အအုံဆောက်လုပ်ရေးအဆင့် ကာလအတွင်းဖြစ်သော ၂၀၂၀ ပြည့်နှစ်၊ ဇန်နဝါရီလမှ ဇွန်လအတွင်းတွင် မကျေနပ်ချက် တိုင်ကြားမှု

ယန္တရားစောင့်ကြည့် စစ်ဆေးခြင်းနှင့် အများပြည်သူနှင့်လုပ်ငန်းခွင်ဆိုင်ရာ ကျန်းမာရေးနှင့်ဘေးကင်းရေးစောင့်ကြည့်စစ်ဆေးခြင်းတို့ကိုလည်း PTTEPIက အကောင်အထည်ဖော်ဆောင်ရွက်ခဲ့ပါ သည်။

၁။ စီမံကိန်း အကြောင်းအရာ

PTTEPI (ရန်ကုန်) ရုံး အဆောက်အဦးသည် အမှတ် (၂)၊ ဆည်မြောင်းရိပ်သာလမ်း၊ ၈ မိုင်ခွဲ၊ မရမ်းကုန်းမြို့နယ်၊ ရန်ကုန်တွင် တည်ရှိသောလက်ရှိ PTTEPI အပြည်ပြည်ဆိုင်ရာ လီမိတက် (ရန်ကုန်ရုံးခွဲ) နေရာတွင် တည်ရှိမည်ဖြစ်သည်။ စီမံကိန်း နေရာသည် ဆည်မြောင်းရိပ်သာ လမ်း၏ တောင်ဘက် နှင့် ပြည်လမ်း၏ အနောက်ဘက်တွင် တည်ရှိပြီး ၂၃၇၁.၄၆ စတုရန်းမိုင် ကျယ်ဝန်းသည်။ အဆောက်အဦး ၇ ခု (အဆောက်အဦး အမှတ် ၁ မှ အမှတ် ၇ အထိ) ရှိပြီး ကားပါကင်ပါဝင်ပါသည်။ အဆောက်အဦးအသစ်ကို လက်ရှိအဆောက်အဦး ၄ ခုနေရာတွင် အစားထိုးတည်ဆောက်သွားပါမည်။ ၎င်းအဆောက်အဦး နံပါတ်များမှာ (၁)၊ (၂)၊ (၄) နှင့် (၅) တို့ဖြစ်ပြီး ကားပါကင်ပါရှိမည် ဖြစ်ပါသည်။ အဆောက်အဦး အမှတ် (၃)၊ (၆) နှင့် (၇) ၏ ငှားထားသော ဧရိယာများကို ပိုင်ရှင်သို့ ပြန်လည်အပ်နှံသွားမည်ဖြစ်ပါသည်။

၂။ စီမံကိန်းတွင် ပါဝင်သည့် အကြောင်းအရာများ

၂.၁ အဆောက်အဦးအမျိုးအစား နှင့် အတွင်းပိုင်း လုပ်ငန်းလုပ်ဆောင်မှုဧရိယာ အစီအစဉ် အနေအထား

စီမံကိန်းသည် PTTEP အပြည်ပြည်ဆိုင်ရာလီမိတက် (ရန်ကုန် လီမိတက်) ဖြစ်ပြီး အထပ် ၁၂ ထပ်ခွဲရှိသော အဆောက်အဦးတစ်ခုဖြစ်ပါသည်။ စုစုပေါင်း ၅၂.၈၅ မီတာ မြင့်ပြီး လုပ်ငန်းဆောင်ရွက်သော ဧရိယာမှာ ၁၈၇၆၀ စတုရန်းမီတာကျယ်ဝန်းပါသည်။ ထိုအထဲတွင်ကားအစီးရေ ၁၁၀ ဆန့်သော ကားပါကင်ပါရှိပါသည်။ အဆောက်အဦးအတွင်းမှ လုပ်ငန်းဆောင်ရွက်သည့် ဧရိယာကို အောက်ပါအတိုင်း ခွဲခြားနိုင်ပါသည်။

- B2၊ B1 နှင့် ၁ လွှာ၊ ၂ လွှာ၊ ၃ လွှာ တို့ရှိ ကားပါကင် ဧရိယာများ
- ၃ လွှာတွင် ရှိသော အစားအသောက်စားရာ နေရာ
- ၄ လွှာ မှ ၁၁ လွှာ အထိ ရုံးဧရိယာများ

၂.၂ မသန်စွမ်းများအတွက် စီစဉ်ထားရှိမှု ပုံစံများ

Universal Design concept အပေါ်ကို အခြေခံ၍ မသန်စွမ်းများအတွက် စီစဉ်ထားရှိမှုများ ပြုလုပ်ထားပါသည်။

- မသန်စွမ်းများနှင့် သက်ကြီးရွယ်အိုများအတွက် အဆောက်အဦးအတွင်းလာရောက်ရာတွင် အဆင်ပြေစေနိုင်ရန်အတွက် Basement 1 နှင့် ထပ်ခိုးနေရာတွင် ထားရှိပေးပါသည်။
- မသန်စွမ်းများ နှင့် သက်ကြီးရွယ်အိုများအတွက် အိမ်သာများကို မြေညီထပ်တွင် ထားပေးပါသည်။

၂.၃ အတွင်းပိုင်း အသုံးချ နေရာများ တည်ရှိပုံ စနစ်

အတွင်းပိုင်းအသုံးချ နေရာများတည်ရှိပုံ စနစ်တွင် ယာဉ်ကြောစနစ်၊ ရေအထောက်အပံ့စနစ် နှင့် အဆောက်အဦးသုံးရေ၊ စွန့်ပစ်ရေသန့်စင်မှု၊ လျှပ်စစ် စနစ်၊ အစိုင်အခဲ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု၊ မီးအန္တရာယ် ကာကွယ်ရေးနှင့် သတိပေးမှုစနစ်၊ လေဝင်လေထွက်နှင့်လေအေးပေးစနစ်၊ ဓာတ်လျှောကားစနစ်နှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးတို့ ပါဝင်ပါသည်။

၃။ လက်ရှိ လုပ်ငန်းဆောင်ရွက်မှု အခြေအနေ

အဆောက်အဦးအဟောင်းကို ဖြိုဖျက်ပြီးချိန်တွင် PTTEPI သည် ရုံးအဆောက်အဦးအသစ်ကို ၂၀၁၈ ခုနှစ် ဇန်နဝါရီလမှ စ၍ တည်ဆောက်ခြင်းပြုလုပ်ပြီး ၂၀၂၁ ခုနှစ် ဇန်နဝါရီလတွင် ပြီးစီးမည်ဟု ခန့်မှန်းထားပါသည်။

၄။ လိုက်နာဆောင်ရွက်မှု အခြေအနေ

စာရင်းစစ်နှင့်စောင့်ကြည့်စစ်ဆေးခြင်းရလဒ်များအရ စီမံကိန်းသည် တည်ဆောက်ရေးကာလအတွင်း ၂၀၂၀ ခုနှစ် ဇန်နဝါရီလမှ ဇွန်လတွင် အခြေအနေရှိသော ထိခိုက်မှုလျော့ပါးရေး အစီအမံများ (the mitigation that have situation) နှင့်ပတ်သက်ပြီး ၁၀၀ ရာခိုင်နှုန်း လိုက်နာဆောင်ရွက်မှုရှိသည်ကို တွေ့ရပါသည်။ သို့သော် စစ်ဆေးမှု ကာလအတွင်း အခြေအနေမရှိသောထိခိုက်မှုလျော့ပါးရေးအစီအမံ (the mitigation that do not have situation) အချို့ရှိပြီး ၎င်းမှာ လျော့ပါးရေးအစီအမံများအားလုံး၏ ၂ ရာခိုင်နှုန်းဖြစ်ပါသည်။

PTTEPI သည် IEE တွင် ဖော်ပြထားသော ထိခိုက်မှုလျော့ပါးရေး နည်းလမ်းအများစုကို လိုက်နာဆောင်ရွက်မှုရှိပါသည်။ ဆောက်လုပ်ရေးကာလအတွက် လျော့ပါးရေးအစီအမံများကို အောက်တွင်အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

၄.၁ ဆောက်လုပ်ရေးကာလအတွင်း ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှု လျော့ပါးရေးနည်းလမ်းများနှင့် ပတ်သက်၍ လိုက်လျောညီထွေဖြစ်မှု

စီမံကိန်းသည် ဘိုးပိုင်ရိုက်ခြင်း (piling) နှင့် အုတ်မြစ်ချခြင်း (foundation) လုပ်ငန်းများပြီးဆုံးခဲ့ပါသည်။ ၂၀၂၀ ခုနှစ် ဇန်နဝါရီ-ဇွန်လအတွင်း အဓိကလုပ်ဆောင်မှုများမှာ ကိုယ်ထည်ပုံစံဖော်ပြခြင်း (structural) လုပ်ငန်းပိုင်းနှင့်ကွန်ကရစ်ဆိုင်ရာလုပ်ငန်း (concrete work) များဖြစ်ပါသည်။

- **လေထုညစ်ညမ်းမှု** - စီမံကိန်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ပါးရေးအစီအမံများကို တင်းကြပ်စွာလိုက်နာခဲ့သည်။ တာဝန်ရှိဝန်ထမ်းမှနေ၍ ဆောက်လုပ်ရေးဧရိယာတဝိုက်ကို ခြောက်သွေ့ရာသီတွင် တစ်နေ့လျှင် အနည်းဆုံး ၂ ကြိမ် (သို့မဟုတ်) ၂ ကြိမ်ထက်ပို၍ရေဖြန်းခြင်း (သို့မဟုတ်) ရာသီဥတုအခြေအနေကိုလိုက်၍ ဆောင်ရွက်စေပါသည်။ လက်ရှိလမ်းသည် ကောင်းမွန်သောအခြေအနေတွင်ရှိပါသည်။ အမှုန်အမွှားများ ပျံ့လွင့်ခြင်း နှင့် ဆောက်လုပ်ရေးဧရိယာဝန်းကျင် နှင့် သယ်ယူပို့ဆောင်ရေးလမ်းကြောင်းတစ်လျှောက်ရှိ လူထုအပေါ် ထိခိုက်မှုများကို လျှော့ချရန်အတွက် PVC mesh sheet များ ကာရံပေးထားပါသည်။ စီမံကိန်းသည် ဘိုးပိုင်ရိုက်ခြင်း (piling) နှင့် အုတ်မြစ်ချခြင်း (foundation) လုပ်ငန်းများပြီးဆုံးခဲ့ပါသည်။ ၂၀၂၀ ခုနှစ် ဇန်နဝါရီ - ဇွန်လအတွင်း အဓိကလုပ်ဆောင်မှုများမှာ ကိုယ်ထည်ဖော်ခြင်း (structural) လုပ်ငန်းနှင့် ကွန်ကရစ်ဆိုင်ရာ လုပ်ငန်းများဖြစ်ပြီး ကွန်ကရစ်များကို ကွန်ကရစ်ဆိုင်ရာ ထရပ်ကားများဖြင့် သယ်ယူပို့ဆောင်ပါသည်။ ဆောက်လုပ်ရေးဆိုင်ရာ ပစ္စည်းများကို သယ်ယူပို့ဆောင်ရာတွင် ထရပ်ကားကြီးများကို ဖုံးအုပ်၍ သယ်ယူမှုပြုပါသည်။ ထို့အပြင် ကန်ထရိုက်တာမှနေ၍ အလုပ်သမားများကို ဖုန်မှုန့်ကာ နှာခေါင်းစည်းများ ထောက်ပံ့ပေးပြီး လုပ်ငန်းများလုပ်ဆောင်နေချိန်တွင် တပ်ဆင်ခြင်းပြုစေပါသည်။
- **ဆူညံသံ အလွန်အကျွံဖြစ်ခြင်း နှင့် တုန်ခါမှု** - ကန်ထရိုက်တာသည် အနီးဝန်းကျင်ရှိ လူထုအပေါ် ဆူညံသံဖြင့် ထိခိုက်မှုမရှိစေရန် အလုပ်သမားများအနေဖြင့် ဆူညံသံနှင့် တုန်ခါမှုမြင့်မားသော လုပ်ငန်းများကို နေ့ဘက်တွင်သာ ဆောင်ရွက်ရန် နေ့စဉ် သတိပေး စကားများပြောကြားရာတွင်

အထူးဂရုပြု၍ သတိပေးပါသည်။ ကန်ထရိုက်တာသည် အလုပ်သမားများကို နားကာပစ္စည်း (ear muffs) များ ထောက်ပံ့ပေးပြီး ဆူညံသံနှင့် တုန်ခါမှု မြင့်မားစွာဖြစ်ပေါ်စေသော ဆောက်လုပ်ရေး လုပ်ငန်းများ လုပ်ဆောင်ချိန်တွင် သေချာအသုံးပြုရန် ကြီးကြပ်ကွပ်ကဲပါသည်။ ထို့အပြင် ဆူညံသံ ကိုတားဆီးရန်အကာအကွယ်အဖြစ် (metal sheet) ကို ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ဝန်းကျင်တွင် တပ်ဆင်ထားပြီး အနီးဝန်းကျင်ရှိ လူထုအပေါ်ဆူညံသံသက်ရောက်မှုကို လျော့ကျစေပါသည်။

- **ယာဉ်အသွားအလာ** - ကန်ထရိုက်တာသည် အနီးအနားရှိ ဒေသခံပြည်သူများကို ဆောက်လုပ်ရေး အစီအစဉ်နှင့် ဆောက်လုပ်ရေးပစ္စည်းများနှင့်စက်ယန္တရားကြီးများ သွားလာမှုလမ်းကြောင်းကို အသိ ပေးထားပါသည်။ ၂၀၂၀ ခုနှစ် ဇန်နဝါရီ - ဇွန်လအတွင်းအဓိကလုပ်ဆောင်မှုများမှာ ကိုယ်ထည် ဖော်ခြင်း (structural) လုပ်ငန်းနှင့် ကွန်ကရစ်ရစ်ဆိုင်ရာ လုပ်ငန်းများဖြစ်ပြီး ကွန်ကရစ်များကို ကွန်ကရစ်ဆိုင်ရာထရပ်ကားများဖြင့် သယ်ယူပို့ဆောင်ပါသည်။ အကယ်၍ ဆောက်လုပ်ရေးဆိုင်ရာ ပစ္စည်း များကို သယ်ယူပို့ဆောင်ရန်ရှိပါက လျော့ပါးရေးအစီအမံများတွင် ဖော်ပြထားသည့်အတိုင်း သယ်ယူ ပို့ဆောင်ရေးကားကိုဖုံးအုပ်၍ မောင်းနှင်စေပြီး ယာဉ်အသွားအလာကို ထိန်းညှိရန်အလံကိုင် အချက် ပြဝန်ထမ်း (flag man) ကိုလည်း ထားရှိပေးထား ပါသည်။ ထို့အပြင် အများပြည်သူဆိုင်ရာ လမ်းမ (ဆောက်လုပ်ရေးဧရိယာ အရှေ့ဘက်ရှိ) နှင့် ဆောက်လုပ်ရေးလုပ်ငန်း ဧရိယာအတွင်းတွင် သတိ ပေးဆိုင်းဘုတ်များကို ထင်ထင်ရှားရှားပြသထားပါသည်။ လမ်းများပျက်စီးခြင်းမှ ကာကွယ်ရန် ပစ္စည်းအလွန်အကျွံတင်ဆောင်ခြင်းမပြုရန် ကန်ထရိုက်တာက တင်းကျပ်စွာထိန်းသိမ်းကွပ် ကဲပါ သည်။ ဆောက်လုပ်ရေးဧရိယာ အရှေ့ဘက်ရှိ ပြည်သူပိုင်လမ်းမှာ ကောင်းမွန်သော အခြေအနေတွင် ရှိပြီး အနီးနားဝန်းကျင်ရှိ ပြည်သူလူထုထံမှ တိုင်ကြားခြင်းများမရှိပါ။ ကန်ထရိုက်တာသည် ခရီး အသွားအလာ စီမံခန့်ခွဲမှုနှင့် သယ်ယူပို့ဆောင်ရေး ဘေးကင်းလုံခြုံမှုအစီအစဉ်ကို ပြုစုထားပြီး အလုပ်သမားများကို ယင်းအစီအစဉ်အတိုင်း လိုက်နာစေသည်။ အရေးပေါ်တုန့်ပြန်မှု အစီအစဉ်ကို လည်းပြုစုထားပြီး ၎င်းတွင် ထိခိုက်မှု၊ မီးအန္တရာယ်၊ နှင့် ရှေးဦးသူနာပြု စသည့် အကြောင်းအရာ များပါဝင်သည်။ ကန်ထရိုက်တာသည် မူးယစ်ဆေးဝါး နှင့် အရက်သုံးစွဲခြင်း ထိန်းချုပ်မှုမူဝါဒကို ပြုစု ထားပြီး အလုပ်သမားများကို လိုက်နာစေသည်။ အရက်သောက်ထားခြင်း ရှိ/မရှိကို လုပ်ငန်းမစမီ တွင်အလုပ်သမားများကို နေ့စဉ်စစ်ဆေးသည်။ သုညရာခိုင်နှုန်းထက် ကျော်လွန်သော အရက်ပမာဏသုံးစွဲထားခြင်းကိုတွေ့ပါက အလုပ်သမားကို အလုပ်လုပ်ခြင်းမှ ရပ်နားစေမည်။ မူးယစ်ဆေးဝါး သုံးမှု ရှိ/မရှိ စမ်းသပ်ခြင်းပြုလုပ်ရာတွင် အလုပ်သမားများကို ပုံမှန်မဟုတ်သော အစီအစဉ်အတိုင်း ရွေးချယ်၍ စစ်ဆေးမှုများ ပြုလုပ်ခဲ့သည်။ စမ်းသပ်မှုပြုလုပ်ရာတွင် သုံးစွဲထားသည်ဟု တွေ့ရှိပါက ထိုအလုပ်သမားအား အစိုးရအသိအမှတ်ပြု ဌာနတွင် ပြန်လည်ထူထောင်ရေးများနှင့် အကြံပြု ဆွေးနွေးခြင်းတို့ကို ဆောင်ရွက်စေပါသည်။ သို့သော် ၂၀၂၀ ခုနှစ် ဇန်နဝါရီ - ဇွန်လအတွင်း မူးယစ် ဆေးဝါးသုံးစွဲမှုစစ်ဆေးခြင်းပြုလုပ်မှုများအရ အလုပ်သမားများအားလုံး မူးယစ်ဆေးဝါး သုံးစွဲထား ခြင်းမရှိကြောင်း စစ်ဆေးတွေ့ရှိခဲ့ပါသည်။

- **အစိုင်အခဲ စွန့်ပစ်ပစ္စည်း**
 - **အန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်း** - ကန်ထရိုက်တာသည် ဆောက်လုပ်ရေးပစ္စည်းများ ယာယီသိုလှောင်ရန်အတွက် နေရာထားရှိပေးပါသည်။ စွန့်ပစ်ပစ္စည်းစွန့်ပစ်ရာ သီးသန့်ပုံး များတွင်အဖုံးအကာများပါရှိပြီး အောက်ပါအတိုင်း ပုံးအမျိုးအစား (၅) မျိုးရှိပါသည်။

၎င်းတို့မှာ အခြေခံ စွန့်ပစ်ပစ္စည်း (အပြာရောင်)၊ ပြန်လည်အသုံးပြုနိုင်သော စွန့်ပစ်ပစ္စည်း (အဝါရောင်)၊ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း (အနီရောင်)၊ အော်ဂဲနစ် စွန့်ပစ်ပစ္စည်း (အစိမ်းရောင်) နှင့် ဇီဝဆိုင်ရာ အန္တရာယ်ရှိသည့် စွန့်ပစ်ပစ္စည်း တို့ဖြစ်ပါသည်။ ထွက်ရှိသည့် စွန့်ပစ်ပစ္စည်းပမာဏကို မှတ်တမ်းထားရှိပါသည်။ ကန်ထရိုက်တာသည် စွန့်ပစ်ပစ္စည်း စုဆောင်းစွန့်ပစ်ရန်အတွက် ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ (YCDC) နှင့် ပူးပေါင်း၍ ဆောက်လုပ်ရေးဧရိယာတွင် အကြွင်းအကျန်များမရှိအောင် ဆောင်ရွက်လျက် ရှိပါသည်။ ထို့အပြင် အလုပ်သမားများအား ဆောက်လုပ်ရေး ဧရိယာအတွင်း အမှိုက် မီးရှို့မှုများ မပြုလုပ်ရန် တားမြစ်ထားပါသည်။

- **အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း** - အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ ထည့်သည့်ပုံး (အနီရောင်) ကို ဆောက်လုပ်ရေးဧရိယာတွင် ထားရှိပေးထားပါသည်။ သို့သော် ၂၀၂၀ ခုနှစ် ဇန်နဝါရီ - ဇွန်လ ဆောက်လုပ်ရေးကာလအတွင်းတွင် အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း ထွက်ရှိမှု မရှိပါ။ အကယ်၍ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း ထွက်ရှိမှုရှိပါက ၎င်းတို့ကို စုဆောင်း၍ စွန့်ပစ်ရန် လိုင်စင်ရလုပ်ငန်း (သို့မဟုတ်) အစိုးရအဖွဲ့အစည်းများနှင့် ပူးပေါင်းဆောင်ရွက်ပါမည်။
- **စွန့်ပစ်ရေ** - ကန်ထရိုက်တာသည် အလုပ်သမား ၃၇၀ ယောက်အတွက် ဆောက်လုပ်ရေးဧရိယာ အတွင်းတွင် ရွှေ့လျားအိမ်သာ ၆ လုံး၊ ဆောက်လုပ်ရေးဧရိယာအနောက်ဘက်တွင် အိမ်သာ ၂လုံး မှ ၃လုံး၊ နှင့် PTTEPI ရုံးအတွင်းတွင် အိမ်သာ ၉ လုံးထားရှိပေးထားပါသည်။ ကန်ထရိုက်တာသည် စီမံ ကိန်းဧရိယာမှ ရေဆိုးစွန့်ပစ်မှုမပြုလုပ်ခင်တွင် စွန့်ပစ်ရေကို ထိန်းထားရန်အတွက် ဆောက်လုပ်ရေး ဧရိယာအတွင်းတွင် ရေဆင်းစနစ်တစ်ခုကို ထားရှိပါသည်။ အလုပ်သမားများအားလုံးကို စွန့်ပစ် ပစ္စည်းများကို သင့်လျော်စွာ စနစ်တကျ စွန့်ပစ်စေသည်။ ဆောက်လုပ်ရေး ဧရိယာအတွင်းတွင် စွန့်ပစ်ပစ္စည်းများကို အမျိုးအစားခွဲခြား၍ စွန့်ပစ်ရန်အတွက် အမှိုက်ပုံး အသီးသီး လည်းထားရှိပေး ထားပါသည်။
- **လူမှုစီးပွားရေး** - ကန်ထရိုက်တာသည် အလုပ်ခန့်အပ်မှု လုပ်ထုံးလုပ်နည်းနှင့် အလုပ်ခေါ်စာအရ ရန်ကုန်မြို့နှင့် အနီးအနားရှိမြို့များမှ ဒေသခံလူထုကို ခန့်အပ်ရန် သတ်မှတ်ထားပါသည်။ ကန်ထ ရိုက်တာသည် အလုပ်သမားများနှင့် အနီးဝန်းကျင်ရှိလူထုနှင့် ပဋိပက္ခဖြစ်ပွားခြင်းမှ ကာကွယ်ရန် လုပ်ငန်းစဉ်များစည်းကမ်းများကို အလုပ်သမားများအား ချမှတ်ပေးထားပြီး ထိုအတိုင်းလိုက်နာစေ ပါသည်။ ထို့အပြင် နေ့စဉ်လုပ်ငန်းများ စတင်မလုပ်ဆောင်မီတွင် လိုက်နာဆောင်ရွက်ရမည့်အချက် များကို ခေါင်းဆောင် (သို့မဟုတ်) ဘေးကင်းလုံခြုံရေးအရာရှိက သတိပေးပြောကြား ပေးပါသည်။ ကန်ထရိုက်တာသည် အနီးဝန်းကျင်ရှိ လူထုအား ဆောက်လုပ်ရေး အစီအစဉ်နှင့် ဆောက်လုပ်ရေး ပစ္စည်းများသယ်ယူပို့ဆောင်ရေးနှင့် စက်ယန္တရားကြီးများသွားရာ လမ်းကြောင်းအခြေအနေများကို အသိပေးထားပါသည်။ စစ်ဆေးမှုများ ပြုလုပ်ရန်အတွက် မြို့ပြအင်ဂျင်နီယာ ၁၂ ယောက်နှင့် ဘေး အန္တရာယ်လုံခြုံရေးဆိုင်ရာ ဝန်ထမ်း ၇ ယောက်ကို ဆောက်လုပ် ရေးကာလတစ်လျှောက်တွင်ထား ရှိထားပါသည်။ PTTEPI သည် မကျေနပ်ချက်ဖြေရှင်းခြင်း စနစ်လက်စွဲရှိပြီး သက်ဆိုင်သည့်သူများ ထံမှလက်ခံရရှိသော မကျေနပ်ချက်များကို ချက်ချင်း ဖြေရှင်းပါသည်။ စီမံကိန်းအကြောင်းအရာ

ဖော်ပြချက်ဆိုင်းဘုတ်ကို ဆောက်လုပ်ရေး ဧရိယာအရှေ့တွင် စိုက်ထူပြသထားပြီး ၎င်းတွင် စီမံကိန်းအသေးစိတ်အချက်အလက်များဖြစ်သော စီမံကိန်းအမည်၊ ပိုင်ရှင်၊ အကြံပေး၊ ကန်ထရိုက်တာ၊ ဆောက်လုပ်ရေးကာလ နှင့် အရေးပေါ်ဖုန်းနံပါတ်တို့ကို ဖော်ပြထားပါသည်။ သို့ရာတွင် ၂၀၂၀ခုနှစ်၊ ဇန်နဝါရီလမှ ဇွန်လအတွင်း မကျေနပ်ချက်တိုင်ကြားမှု လုံးဝမရှိခဲ့ပါ။

• လူထု ကျန်းမာရေး နှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး

- ကျန်းမာရေး - စီမံကိန်း၏ IEE တွင်ပါရှိသည့် ထိခိုက်မှုလျော့ပါးရေးနည်းများကို စေ့စေ့စပ်စပ် အကောင်အထည်ဖော်သည်။
- ဘေးအန္တရာယ်ကင်းရှင်းရေး - ဆောက်လုပ်ရေးကာလအတွင်း အမြင့်တွင် အလုပ်လုပ်ရခြင်း၊ အပူချိန်များသောအလုပ်များလုပ်ရခြင်းနှင့် ကန့်သတ်ဧရိယာများ(confined space)တွင် အလုပ်လုပ်ရခြင်းကဲ့သို့သော လုပ်ငန်းများအတွက် အလုပ်ခွင့်ပြုစနစ် (Work Permit System) ရှိသည်။ ထို့အပြင် ကန်ထရိုက်တာသည် HSE မူဝါဒများကိုချမှတ်ထားပြီး အလုပ်သမားများကိုလိုက်နာဆောင်ရွက်စေပါသည်။ အလုပ်သမားများအားလုံးကိုသင့်လျော်သော တစ်ကိုယ်ရည်အကာအကွယ်ပစ္စည်းများ(PPE)ထောက်ပံ့ပေးထားပြီး အလုပ်လုပ်ချိန်တွင်လိုက်နာအသုံးပြုစေ သည်။ ထို့အပြင် နှစ်စဉ် SSHE သင်တန်းအစီအစဉ်ပါ အချက်အလက်များအတိုင်း သင်တန်းပေးခြင်းရှိသည်။ ကန်ထရိုက်တာ/ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာအရာရှိမှနေ၍ အလုပ်သမားများကို Tool box talk နေ့စဉ်ပြုလုပ်ပြောပြပေးသည်။ ဆေးပညာတတ်ကျွမ်းသည့်သူတစ်ယောက်ဆေးခန်းတွင် နာရီပတ်လုံး အလှည့်ကျစနစ်ဖြင့် အမြဲတမ်းရှိပြီး ဆေးဘက်ဆိုင်ရာ ကုသမှုများ၊ ရှေးဦးသူနာပြုစုပေးခြင်းများပြုလုပ်ပေးသည်။ စီမံကိန်းမှနေ၍ အရေးပေါ်ကိစ္စရပ်များရှိလာပါက လက်ခံဆောင်ရွက်ပေးနိုင်ရန် ဝိတိုရိယဆေးရုံနှင့် ညှိနှိုင်းဆောင်ရွက်ထားပါသည်။ ထို့အပြင် အရေးပေါ်ကိစ္စရပ်များဖြေရှင်းရန်အတွက်အရေးပေါ်တုန့်ပြန်ရေးလုပ်ငန်းစဉ်နှင့် သင်တန်းကိုလည်း စီစဉ်ပေးထားပါသည်။ အလုပ်သမားများကို အန္တရာယ်ရှိနိုင်မှုများကို သတိပေးရန်အတွက် ဆောက်လုပ်ရေး ဧရိယာအတွင်းတွင် သတိပေးဆိုင်းဘုတ်များကို တပ်ဆင်ပေးထားပါသည်။ ထို့အပြင် ကန်ထရိုက်တာသည် ဘေးကင်းလုံခြုံစိတ်ချရသော လုပ်ငန်းခွင်တစ်ခုကို ထိန်းသိမ်းထား နိုင်ရန်အတွက် အလုပ်ရပ်ဆိုင်းမှုမူဝါဒ (Stop Work Policy) ကိုလည်း ချမှတ်ပေးထားပါသည်။ စစ်ဆေးရေးအစီအစဉ်အတိုင်း စက်ပစ္စည်းကိရိယာများကို ပုံမှန်စစ်ဆေး၍ ပြုပြင်ထိန်းသိမ်းမှုများ ပြုလုပ်သည်။ ထို့အပြင် ဆောက်လုပ်ရေး ဧရိယာတွင် မီးသတ်ကိရိယာများကို ထားရှိပေးထားပြီး လစဉ်စစ်ဆေးသည်။ ဆေးလိပ်သောက်ခြင်းကို ဆောက်လုပ်ရေးဧရိယာ၏ အရှေ့ဘက်နှင့် အနောက်ဘက်တို့တွင် ထားရှိပေးသည်။

၄.၂ ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြည့်စစ်ဆေးခြင်း ရလဒ်

ဤစီမံကိန်းသည်ကနဦး ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ချက် (IEE) တွင်ဖော်ပြထားသောပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြည့်စစ်ဆေးခြင်းကို အပြည့်အဝလိုက်နာဆောင်ရွက်ခြင်းရှိပါသည်။ ၎င်းတို့တွင် အမှုန်အမွှားစောင့်ကြည့် စစ်ဆေးခြင်း၊ ဆူညံသံအဆင့်အတန်းစောင့်ကြည့်စစ်ဆေးခြင်း၊ တိုင်ကြားချက်ကိုင်တွယ်ဖြေရှင်းမှုစနစ်အား စောင့်ကြည့်စစ်ဆေးခြင်း၊ လူထုနှင့်လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းမှု စောင့်ကြည့်စစ်ဆေးခြင်းတို့ ပါဝင်ပါသည်။ အသေးစိတ်ကို အောက်တွင် ဖော်ပြထားပါသည်။

(၁) အမှုန်အမွှားများ စောင့်ကြည့်စစ်ဆေးခြင်း

အမှုန်အမွှားနမူနာကောက်ယူစစ်ဆေးခြင်းများကို ဆောက်လုပ်ရေးနေရာအတွင်းတွင် ၂၀၂၀ ခုနှစ် ဇူလိုင်လ ၁ ရက်နေ့မှ ၅ ရက်နေ့အတွင်းတွင် နေရာ ၃ နေရာတွင် ပြုလုပ်ခဲ့ပါသည်။ ၎င်းအမှတ်နေရာ ၃ ခုမှာ ဆောက်လုပ်ရေး ဧရိယာခြံစည်းရိုး၏မြောက်ဘက် (A1)၊ ဆောက်လုပ်ရေးဧရိယာခြံစည်းရိုး၏အနောက်ဘက် (A2) နှင့် ဆောက်လုပ်ရေးဧရိယာခြံစည်းရိုး၏ အရှေ့တောင်ဘက် (A5) တို့ဖြစ်ပါသည်။ စောင့်ကြည့်စစ်ဆေးခြင်းမှ ရလဒ်အားလုံးသည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (EQEG) နှင့် WHO နှင့် IFC တို့၏ ထိတွေ့ဝန်းကျင်လေထုအရည်အသွေးစံသတ်မှတ်ချက်များနှင့် ကိုက်ညီမှုရှိသည်ကို တွေ့ရှိရပါသည်။ သို့သော်လည်း ဤစီမံကိန်းတွင် ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့ပါးရေး အစီအစဉ်များဖြစ်သော ရေဖြန်းခြင်း နှင့် ဆောက်လုပ်ရေးဧရိယာပတ်လည်တွင် PVC mesh sheet များ ကာရံခြင်း တို့ပြုလုပ်ကာ ပတ်ဝန်းကျင်လေထုအပေါ် ထိခိုက်နိုင်သည့် အမှုန်အမွှားလွင့်ခြင်းမှ ကာကွယ်ရန် နှင့် လျော့ချရန် စီမံထားရှိပါသည်။

(၂) ဆူညံသံ အဆင့်အတန်း စောင့်ကြည့်စစ်ဆေးခြင်း

ဆူညံသံအဆင့်အတန်းစောင့်ကြည့်စစ်ဆေးခြင်းကို ဆောက်လုပ်ရေး ဧရိယာ နှင့် PTTEPI ရန်ကုန်ရုံးအဆောက်အအုံ၏ ဆောက်လုပ်ရေးဧရိယာတွင် ၂၀၂၀ ခုနှစ် ဇူလိုင်လ ၁ ရက်နေ့မှ ၅ ရက်နေ့အထိ တိုင်းတာရေးနေရာ ၃ ခုတွင် ပြုလုပ်ခဲ့ပါသည်။ ၎င်းနေရာ ၃ ခုမှာ ဆောက်လုပ်ရေးဧရိယာခြံစည်းရိုး၏မြောက်ဘက် (N1)၊ ဆောက်လုပ်ရေးဧရိယာခြံစည်းရိုး၏အနောက်ဘက် (N2) နှင့် ဆောက်လုပ်ရေးဧရိယာခြံစည်းရိုး၏ အရှေ့တောင်ဘက် (N5) တို့ဖြစ်ပါသည်။ ထိုနေရာများအားလုံးရှိ နေ့အချိန် နှင့် ညအချိန် LAeq-1 hr တန်ဖိုးသည် အမျိုးသားပတ်ဝန်းကျင်အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅) တွင်ပါရှိသော စက်မှု/စီးပွား ဆိုင်ရာ ဧရိယာများအတွက် စံနှုန်းဖြစ်သည့် 70 dB(A) ထက် မကျော်လွန်ဘဲ ကိုက်ညီမှုရှိပါသည်။

သို့သော်လည်း နေ့ဘက်ဆောက်လုပ်ရေးလုပ်ငန်းများလုပ်ကိုင်ရာမှ ဆိုးရွားစွာအသံဆူညံမှု ထွက်ပေါ်ခြင်းကဲ့သို့သော အလွန်အကျွံအသံဆူညံခြင်းကြောင့် အနီးနားဝန်းကျင်ရှိလူထုအား ထိခိုက်မှုမရှိစေရန် စီမံကိန်းအနေဖြင့် ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုလျော့ပါးရေးနည်းလမ်းများကို ပြုစုထားပါသည်။ PTTEPI သည် ဆောက်လုပ်ရေး ဧရိယာပတ်လည်တွင် အနီးရှိလူထုအား အသံကြောင့်ထိခိုက်မှုမရှိစေရန်အတွက် အသံကာပစ္စည်းများ (သတ္တုပြား) များကို တပ်ဆင်ထားပါသည်။ ထို့အပြင် PTTEPI သည် ဆူညံသံအဆင့်အတန်း စောင့်ကြည့်စစ်ဆေးမှု ပြုလုပ်ခြင်းကို ထိခိုက်မှုလျော့ပါးရေးအစီအမံတွင် ဖော်ပြထားသည့်အတိုင်း စဉ်ဆက်မပြတ် ဆက်လက် လုပ်ဆောင်သွားမည်ဖြစ်ပါသည်။

(၃) တိုင်ကြားချက်ကိုင်တွယ်ဖြေရှင်းမှုစနစ်အား စောင့်ကြည့်စစ်ဆေးခြင်း

PTTEPI (ရန်ကုန်) ရုံးအတွက် တိုင်ကြားချက် ကိုင်တွယ်ဖြေရှင်းခြင်းစနစ် စောင့်ကြည့်လေ့လာခြင်းကို PTTEPI က ၂၀၂၀ ခုနှစ် ဇန်နဝါရီလမှ ဇွန်လများအတွင်း ဆောင်ရွက်ခဲ့ပါသည်။ ဆောက်လုပ်ရေးကာလတစ်လျှောက်တွင် မည်သို့သော မကျေနပ်ချက်ထုတ်ဖော်ခြင်းမျိုးမှ မရှိပါ။

(၄) အများပြည်သူ နှင့် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းမှုအတွက်စောင့်ကြည့်စစ်ဆေးခြင်း

PTTEPI (ရန်ကုန်) ရုံး အဆောက်အဦး ၏ ဆောက်လုပ်ရေးကာလအတွက် လူထု နှင့် လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းမှု စောင့်ကြည့်စစ်ဆေးခြင်း များကို ၂၀၂၀ ခုနှစ် ဇန်နဝါရီလမှ ဇွန်လအထိ ကန်ထရိုက်တာက

ဆောင်ရွက်ခဲ့ပါသည်။ ဆောက်လုပ်ရေးကာလအတွင်းတွင် မတော်တဆဖြစ်မှု စုစုပေါင်း ၉ ခုရှိခဲ့ပါသည်။ ၎င်းတို့မှာ မီးမတော်တဆဖြစ်မှု ၁ ခု၊ near miss ဖြစ်ရပ် ၄ ခု၊ ရှေးဦးသူနာပြုဆိုင်ရာဖြစ်ရပ် ၃ ခု၊ လုပ်ငန်းကိစ္စနှင့် ဆက်စပ်မှုမရှိသောဖြစ်ရပ် ၁ ခု တို့ဖြစ်ပါသည်။ အလားတူဖြစ်ရပ်များ ပြန်လည်ဖြစ်ပေါ်ခြင်းမရှိစေရန် ပြုပြင်ရေးလုပ်ဆောင်မှုများကို ဆောင်ရွက်ရန် အဆိုပြုထားပါသည်။

Executive Summary

PTTEPI has the responsibility to follow the environmental mitigation and monitoring measures including submits the monitoring report to ECD . Therefore, PTTEPI, as the project owner, has assigned a qualified third party, REM-UAE Laboratory and Consultant Company Limited to perform compliance audit of the mitigation measures and perform the monitoring at frequency specified in the IEE's environmental management plan which the project has complied both on the mitigation measures and the environmental monitoring.

As the world faces the Covid-19 pandemic, and Myanmar is no exception. PTTEP Myanmar Asset has set a very high priority on preventing the spread of the COVID-19 on its organization grounds and put safety measures and mitigation plans that comply with Government's instructions to ensure everyone is safe during the COVID-19 outbreak. Safety measures continue to be strictly enforced at all operating sites including Yangon Office Building Construction site. The environmental mitigation measures implementation audit which considered environmental issues and essential impacts that may occur during construction phase of PTTEPI's Yangon Office Building has plan to conduct in quarter 2 but during the ongoing COVID-19 pandemic, the environmental mitigation measures implementation audit had to conducted as desktop audit on July 1, 2020 by REM-UAE Laboratory and Consultant Company Limited.

The objective of the audit was to assess the effectiveness of implementation of the Environmental Management Plan, including both mitigation and monitoring measures, defined in the IEE report. Audit results have been documented in the report and specified to covers potential problems, obstacles and recommendations for improvement.

The evaluation process includes (1) PTTEP team supporting site survey photos to REM-UAE, (2) personnel interview, and (3) document review.

For environmental monitoring was conducted as specified in IEE which including Fugitive dust monitoring, Noise level monitoring, Grievance mechanism monitoring, Public and occupational health and safety monitoring. Fugitive dust monitoring and Noise level monitoring were monitored 3 stations during July 1-5, 2020. While Grievance mechanism monitoring, Public and occupational health and safety monitoring for construction phase during January - June 2020 of PTTEPI's Yangon Office Building were done by PTTEPI.

1. Project Description

The PTTEPI's Yangon Office Building will replace the existing building of PTTEP International Limited (Yangon Branch) which is located at No. 2, Sei-Myaung Yeiktha Street, 8 ½ Mile, Mayangone Township, Yangon. The project site is located on the south of the Sei-Myaung Yeiktha Street and the west of the Pyay Road, Mayangon Township, Yangon, covering 2,371.46 sq.m. There are 7 Buildings (Building 1 to Building 7) with car park space. The new building will be constructed to replace the 4 existing Buildings i.e. Building 1, Building 2, Building 4, Building 5 including car park space. The rented area of existing Building 3, Building 6 and Building 7 will be returned to the owner.

2. Project Components

2.1 Type of Building and Internal Function Area Arrangement

The project is a 12 ½ storey office building of PTTEP International Limited (Yangon Branch) with total height of 52.85 meters, function area of 18,760.0 sq.m. and internal parking area for 110 cars.

The function area within the building can be divided as follows: -

- Parking areas are on B2, B1 and floor 1, 2, 3;
- Canteen is on floor 3; and
- Office areas are on floors 4-11

2.2 Design of Facilities for the Disabled

The design of facilities for the disabled of this office building has been based on Universal Design concept.

- Car parking lots for the disabled and elders are provided on Basement 1 and Mezzanine to facilitate convenient accessibility into the building.
- Toilets for the disabled and elders are provided on the ground floor.

2.3 Internal Utilities System

Internal utilities system is comprised of traffic system, water supply system and water for domestic use, wastewater treatment, electricity system, solid waste management, fire protection and warning system, ventilation and air condition system, lift system, and safety.

3. Status of Current Operation

Once the demolition of old building finished, PTTEPI started the construction of new office building since January 2018 and expected to complete in January 2021.

4. Compliance Status

The audit and monitoring results determined that the project completely complied on the Mitigation Measures during January – June 2020 in construction phase with 100% for the mitigation that have situation. However, there are some mitigation that do not have situation during the audit period equal to 2.2% of all mitigation measure.

PTTEPI complied with most of the mitigation measures prescribed in the IEE. Mitigation Measures in Construction Phase are summarized below.

4.1 Environmental Mitigation Measures Compliance Result in Construction Phase

The project has finished piling and foundation work, the main activity during January – June 2020 was structural work, concrete work.

- **Air Pollution** - The project complied with the environmental mitigation measures strictly such as assigned staff to spray water around construction area at least three time a day or more in dry season or depending on the atmospheric conditions and the existing road was in a good condition. The project provided PVC mesh sheets around the construction areas in order to prevent dust dispersion and reduced effected to the communities nearby the construction site and along the transportation route. The project has finished piling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area as specified in measure. Moreover, the contractor provided dust masks for workers and controlled all worker wear dust mask during working.
- **Excessive Noise and Vibration** - The contractor emphasized workers in toolbox talk which provided in daily before working to carried out the construction activities with high noise and vibration level at day time in order to reduce noise and vibration impact to nearby communities. The contractor provided ear muffs for workers and controlled to use during working in high noise area. Moreover, Noise barrier (metal sheet) was installed around the construction site to reduce noise impact to nearby communities.
- **Traffic** - The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. The project has finished piling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area and the contractor provided flag man to give the signal and facilitate the traffic during transportation as specified in measure. Moreover, warning signs were installed and can be clearly seen at the public road (in front of the construction area) and within construction area. Routine inspection and preventive maintenance for all vehicles conducted as per the inspection plan. The contractor has strictly controlled of overloaded heavy vehicles to

prevent road deterioration. Moreover, the public road (in front of the construction area) was in good condition and there was no complaint from nearby communities.

The contractor provided journey management and transportation safety procedure and enjoined workers to follow regulation. The emergency response procedure was set up including incident, fire action, first aid action. The contractor prepared drug and alcohol abuse policy and enforced all workers to follow. Alcohol testing was conducted before working every day. The worker will immediately stop working if alcohol is found more than 0%. For drug testing, workers were random tested. Random drug testing was implemented, worker who found to be positive in drug testing shall be required to undergo rehabilitations and counseling in government accredited center. However, during January-June 2020 there were no workers found positive in drug test.

- **Solid Waste**

- Non-Hazardous Waste - The contractor provided temporary storage area for construction materials. separate waste containers with cover are provided for 5 types; general waste (blue), recycle waste (yellow), hazardous waste (red), organic waste (green) and biohazard infectious waste. The quantity of waste was recorded by contractor. The contractor cooperated with YCDC to collect and dispose of waste in order to prevent residual waste in construction area. Moreover, the constructor enforced all workers not to burn any wastes in the construction area.
- Hazardous Waste - Hazardous waste container (red) was provided at the construction area. However, there are no hazardous waste during construction phase in January – June 2020. If there are occurred, the contractor will cooperate with licensed contractor or authorities to collect and dispose.

- **Wastewater** - The contractor has provided 6 mobile toilets within construction area 2-3 toilets at the back of construction area and 9 toilets within PTTEPI Office for 370 workers. The contractor installed drainage system in the construction area to hold wastewater before discharged out of the project. The contractor enforced all worker to dispose of waste properly including provided separate waste containers with cover for waste collection in the construction area.

- **Social and Economic** - The contractor considered to hired local people in Yangon and nearby city as per recruitment procedure and announcement. The contractor provided work regulation and enforced all workers to follow in order to prevent the conflict between workers and nearby communities. Moreover, tool box talk was provided in daily before working by the header of contractor/safety officer. The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. 12 Civil engineers and 7 safety staffs were provided to closely inspect construction activities throughout the construction period. PTTEPI provided grievance handling guideline to receive any complaints from the stakeholder and resolve the complaint in the immediate. Project's signboard was installed in front of the construction area to inform the project details

such as project name, owner, consultant, contractor, period of construction and emergency contact number. However, there was no any complaints during January – June 2020.

- **Public health and safety**

- **Health** – The project strictly implemented mitigation measures as per IEE report.
- **Safety** - Work permit system was implemented for specific work during construction period such as working at height, hot work, and confined space. Moreover, the contractor has provided HSE Policy and enforced all workers to follow. The contractor provided suitable PPE and sufficiently for all workers and controlled to use PPE during working. In addition, the training was regularly performed as per the annual SSHE Training Plan. Tool box talk was provided in daily before working by the header of contractor/safety officer. The medic person was stand by 24/7 (day-night shift) at medic room for medical treatment included first aid kit and medical supplies. The project also coordinates with Victoria hospital for admission in case of accidents Moreover, emergency respond procedure and training were provided to respond in emergency case. Warning signs were installed in construction area to warns workers from dangers. Moreover, the contractor has provided Stop Work Policy to maintain a safe and secure work environment. Routine inspection and preventive maintenance for all equipment were conducted as per inspection plan. Moreover, Firefighting equipment were provided in the construction area and inspected monthly. Smoking areas was provided in the west and in front of construction area.

4.2 Environmental Monitoring Result

The project has completely complied the environmental monitoring as specified in IEE, including Fugitive dust monitoring, Noise level monitoring, Grievance mechanism monitoring, Public and occupational health and safety monitoring. The details as follow;

1) Fugitive Dust Monitoring

Fugitive dust samples were monitored at construction site during 1-5 July 2020 at 3 stations North of construction fence (A1), West of construction fence (A2) and South-east of construction fence (A5). All the results are complied with National Environmental Quality (Emission) Guideline (EQEG) and the Ambient Air Quality Standard of WHO and IFC.

However, the project provided environmental mitigation measure to prevent and reduce the impacts on air quality from dust dispersion resulting from project activities including water spraying, PVC mesh sheets around the construction areas.

2) Noise Level Monitoring

Noise level monitoring of PTTEPI's Yangon Office Building were monitored at construction site during 1-5 July 2020 at 3 stations North of construction fence (N1), West of construction fence (N2) and South-east of construction fence (N5). The result of L_{Aeq} -1 hr daytime and night-time of all stations are complied with EQEG, 2015 for Industrial/ Commercial Area which determined L_{Aeq} -1 hr daytime and night-time not more than 70 dB(A).

However, the project provided environmental mitigation measure to reduce the impacts on excessive noise to disturb the nearby communities including carried out the construction activities with high noise level only at day time. PTTEPI also installed noise barrier (metal sheet) around the construction site to reduce noise impact to nearby communities. In addition, PTTEPI will continually monitor noise level as specified in the measure.

3) Grievance Mechanism Monitoring

Grievance mechanism monitoring results for construction phase of PTTEPI's Yangon Office Building during January - June 2020 were done by PTTEPI. There was no any complaint from the community throughout the construction period.

4) Public and Occupational Health and Safety Monitoring

Public and occupational health and safety monitoring results for construction phase of PTTEPI's Yangon Office Building were done by the contractor during January – June 2020. There were total 9 cases of incident from project activity in the construction period including 1 case of fire incident, 4 cases of near miss, 3 cases of first aid case and 1 case of non-work related. Corrective actions were proposed/implemented to prevent reoccurrence.

Chapter 1

Introduction

Chapter 1

Introduction

1.1 Introduction

PTTEP International Limited (PTTEPI) plans to construct new office building in Yangon in order to support the expansion of company's E&P business in Myanmar. The new office building will replace the existing office building located at No. (2), Sei-Myaung Yeiktha Street, 8 ½ Mile, Mayangone Township, Yangon. Regarding the determination about PTTEPI's new office building construction project, Initial Environmental Examination (IEE) shall be required in accordance with Myanmar EIA Procedure, 2015. The IEE Report for PTTEPI's Yangon Office Building was submitted and approved by Environmental Conservation Department (ECD) of Ministry of Natural Resources and Environment Conservation (MONREC) on November 25th, 2017, according to the letter no.(Forest) 3(2)/16(D) (3423/2017) (Appendix A). As per commitment in IEE Report, PTTEPI has the responsibility to follow the environmental mitigation and monitoring measures including submits the monitoring report to ECD. Therefore, PTTEPI, as the project owner, has assigned a qualified third party, REM-UAE Laboratory and Consultant Company Limited to perform compliance audit of the mitigation measures and perform the monitoring at frequency specified in the IEE's environmental management plan and report the results to ECD as prescribing in IEE.

This report is the monitoring report of PTTEPI's Yangon Office Building (Construction Phase) during January – June 2020.

1.2 Objective

The main objectives of this report are:

- To evaluate the effectiveness of implementation of the Environmental Management Plan, including both mitigation and monitoring measures, defined in the IEE report; and
- To report any potential problems or obstacles and propose recommendation for improvement in order to ensure the effectiveness of the prevention and mitigation measures.

1.3 Briefly Information of The Project

The project site is located in the area of the existing PTTEPI's Yangon Office Building (so-called existing Building), covering 2,371.46 sq.m. There are 7 PTTEPI Buildings (Building 1 to Building 7) with car park space. The new building will be constructed to replace the 4 existing PTTEPI Buildings i.e. Building 1, Building 2, Building 4, Building 5 including car park space (Figure 1-2) The rented area of existing Building 3, Building 6 and Building 7 will be returned to the landowner.

1.4 General Information and Project Location

The PTTEPI's Yangon Office Building will replace the existing building of PTTEP International Limited (Yangon Branch) which is located at No. 2, Sei-Myaung Yeiktha Street, 8 ½ Mile, Mayangone Township, Yangon.

The project site is located on the south of the Sei-Myaung Yeiktha Street and the west of the Pyay Road, Mayangon Township, Yangon. An Aerial view of project location is presented in Figure 1-1. The general information and project location concluded as follow:

- | | |
|-----------------------------------|---|
| 1) <u>Project Name:</u> | PTTEPI's Yangon Office Building
Construction Phase |
| 2) <u>Project Location:</u> | No. (2), Sei-Myaung Yeiktha Street, 8 ½ Mile, Mayangone
Township, Yangon |
| 3) <u>Project Owner:</u> | PTTEP International Limited (Yangon Branch) |
| 4) <u>Report Preparation:</u> | REM-UAE Laboratory and Consultant Company Limited |
| 5) <u>Period of Construction:</u> | Tentatively 29 Months (2018 – 2021) |



Figure 1-1 Project Location

Reference: Initial Environmental Examination (IEE) for PTTEPI's Yangon Office Building Construction, May 2017

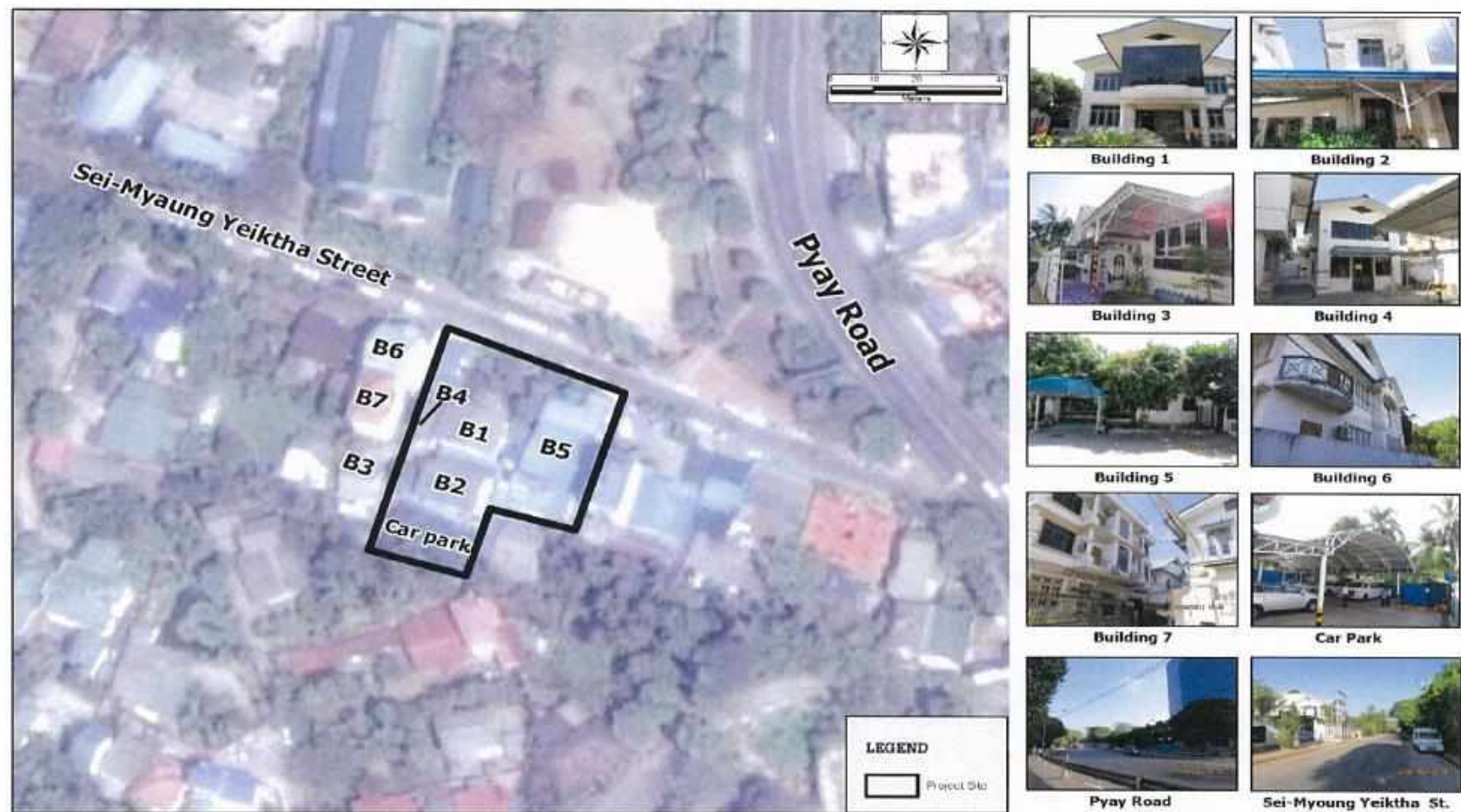


Figure 1-2 Site Condition

Reference: Initial Environmental Examination (IEE) for PTTEPI's Yangon Office Building Construction, May 2017

1.5 Status of Current Operation

Once the demolition of old building finished, PTTEPI started the construction of new office building since January 2018 and expected to complete in January 2021 . The main activity during January – June 2020 was structural work. The example for construction activity as shown in Figure 1-3.



Figure 1-3 PTTEPI's Yangon Office Building in construction phase during January – June 2020

1.6 Compounds nearby the Project Site

There are a number of buildings, houses and utilized areas nearby the project site. Information about buildings, houses, roads and office adjacent to project site is present in Table 1-1.

The existing land use around 500 meters adjacent to the project site is the mix of residential, religious and commercial areas; i.e. restaurant, house, temple, hotel and offices.

Table 1-1 Built-up Area Adjacent to the Project Site

Geographic Location	Name	Nature
North	- Ministry of Agriculture, Livestock and Irrigation	Government Office
	- Bamboo Threat Make Buddha Statue (Phra Inn San Temple)	Religious place
	- Sei-Myaung Yeiktha Street	Street
East	- Yangon Yoma Hotel	Hotel
	- Lucky Seven Restaurant	Restaurant
	- Basic Education Primary School (B.E.P.S.), Mayangone Township	School
	- Pyay Road	Road
South	- House (1 Storey) near car park of PTTEPI Building	Local Residence
	- House (2 Storeys) near car park of PTTEPI Building	Local Residence
	- Road Transportation Administration Department	Government Office
	- Kyaik Waing Pagoda Road	Road
West	- House (2 Storeys) near car park of PTTEPI Building 6	Local Residence
	- Bealanga Myanmar Pte Ltd.	Office
	- House (1 storey)	Local Residence

1.7 Project Components

1.7.1 Type of Building and Internal Function Area Arrangement

The project is a 12 ½ storey office building of PTTEP International Limited (Yangon Branch) with total height of 52.85 meters (Figure 1-4), function area of 18,760.0 sq.m. or 190,700 sq.ft.; and internal parking area for 110 cars.

The project building is located on Sei-Myaung Yeiktha Street. The street's width is 7.0 m.

It branches off from the main road namely Pyay road. The project building has been designed with the total height complying with legal setback requirement from Sei-Myaung Yeiktha Street. The highest point of the building is at an altitude of 73.5 meters from Mean Sea Level while the highest point of Shwedagon Pagoda is at an altitude of 127.10 meters from Mean Sea Level. According to YCDC's regulations concerning visual impact, the height of building to be constructed in the vicinity of important cultural site has to be controlled to avoid visual obstruction and decrease of aesthetic quality of the cultural site.

The building has been designed with consideration on seismic risk and safety . Moreover, the design is modern, easy for maintenance, compatible with surrounding physical context and environmental friendly .All facilities and utility systems have been provided for servicing working staff and clients.

The function area within the building can be divided as follows- :

- Parking areas are on B2, B1 and floors 1, 2, 3
- Canteen is on floor 3
- Office areas are on floors 4-11

Central area/facilities such as corridor, stair, toilet, mechanical room, lift, etc . are provided on every floor .The details of function areas on each floor of the building can be summarized as follows- :

- Basement 2 (B2) consists of stair, lift, corridor, mechanical room and parking lots with total function area of 1,330.50 sq.m.
- Basement 1 (B1) consists of stair, lift, corridor, mechanical room and parking lots with total function area of 1,203.50 sq.m.
- Ground floor consists of stair, lift, corridor, lobby and information, mechanical room, toilet, janitor room, mail room, telephone, operator room, cashier room, entrance, drop-off and ramp parking with toilet function area of 1,518.00 sq.m.
- Mezzanine floor consists of stair, lift, corridor, lobby, mechanical room, security, housekeeping, toilet, storage room and car parking lots with total function area of 542.00 sq.m.
- The 1st floor consists of stair, lift, corridor, lobby, mechanical room, G&G Server room, infrasturure room, IT & Communication room, and car parking lots with total function area of 1,154.00 sq.m.
- The 2nd floor consists of stair, lift, corridor, lobby, mechanical room, driver room, quiet driver room, storage room, and car parking lots with total function area of 1,157.00 sq.m.
- The 3rd floor consists of stair, lift, corridor, lobby, mechanical room, canteen & pantry, cooking room, toilet, etc. with total function area of 1,163.00 sq.m.
- The 4th floor consists of stair, lift, corridor, lobby, mechanical room, meeting area, mail & photocopy room, pantry & maid room, toilet, etc. with total function area of 1,059.00 sq.m.
- The 5th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, pantry & maid room, toilet, etc. with total function area of 1,062.00 sq.m.
- The 6th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, pantry & maid room, toilet, library room, etc. with total function area of 1,161.00 sq.m.
- The 7th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, pantry & maid room, toilet, library room, etc. with total function area of 1,161.00 sq.m.

- The 8th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, pantry & maid room, toilet, etc. with total function area of 1,062.00 sq.m.
- The 9th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, pantry & maid room, toilet, etc. with total function area of 1,062.00 sq.m.
- The 10th floor consists of stair, lift, corridor, lobby, mechanical room, office space area, mail & photocopy room, emergency response room, pantry & maid room, toilet, etc. with total function area of 1,447.00 sq.m.
- The 11th floor consists of stair, lift, corridor, lobby, mechanical room, executive office space are, pantry & maid room, toilet, roof garden, etc. with total function area of 1,161.00 sq.m.
- The 12th and 12 ½ floor consists of stair, lift, corridor, lobby, mechanical room, pantry, toilet, roof slab etc. with total function area of 1,417.00 sq.m.

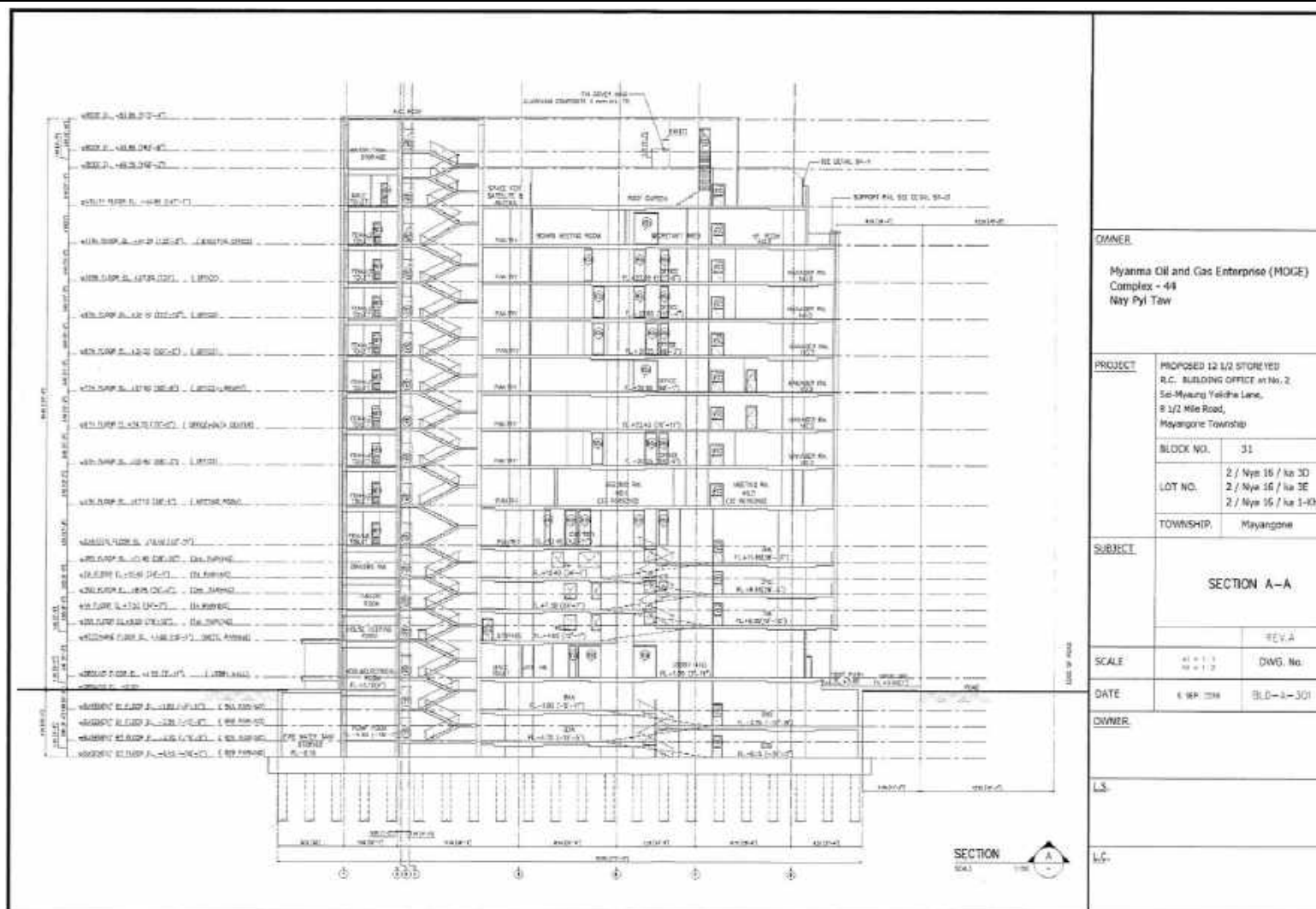


Figure 1-4 Height of PTTEPI's Yangon Office Building

1.7.2 Design of Facilities for the Disabled

The design of facilities for the disabled of this office building has been based on Universal Design concept

- 1) Car parking lots for the disabled and elders are provided on Basement 1 (B1) and Mezzanine to facilitate convenient accessibility into the building.
- 2) Toilets for the disabled and elders are provided on the ground floor.

1.7.3 Internal Utilities System

The project has provided facilities and utilities system as follow- :

1) Traffic System

(1) Entrance, Exit and Internal Road

Entrance and exit have been designed with total width of 4.5 meters and 6.0 meter, respectively to join with Sei-Myaung Yeiktha Street on the North of the building. Sei-Myaung Yeiktha Street is a public road with width of 7.0 meters branching off from the main road namely Pyay road on the East of the building.

(2) Parking Lots

According to YCDC prescription, area required for car parking is 1 lot / 200 sq.m. of floor area of the building (106 parking lots). Therefore, the project has provided 110 parking lots comprising 108 lots for PTTEP staff and clients on B2, B1, Mezzanine, floor 1, floor 2, and floor 3 and 2 lots for the disabled on B1 and Mezzanine.

2) Water Supply System and Water for Domestic Use

(1) Water Source

The project would use groundwater for domestic use and fire fighting. The groundwater would be stored in the 3 storage tanks on B2 comprising 1 raw water storage tank with capacity of 30,000 UK gallons, 1 fire water storage tank with capacity of 30,000 UK gallons, and 1 cold water storage tank with capacity of 30,000 UK gallons, there is a filter system for production of tap water for domestic use within the building.

(2) Quantity of Water Demand

In operation period the water demand for domestic use will be 22,884 UK gallon/day while water demand for firefighting will be 22,300 UK gallon for 60 minutes.

(3) Water Distribution System

The project has 2 separated water distribution systems comprising domestic use system and fire water system.

- **Domestic Use System:** Groundwater will be contained in storage tank with capacity of 30,000 UK gallon. There is a float valve in the storage tank to control automatic function of water pump. Groundwater will be pumped to be stored in the tank with 15,000 UK gallons capacity on the roof floor and then water will be distributed to each floor via pipes by gravity. Since there would be problem on decreased pressure of pump for water distribution, the project has Provided Booster Pumps (PBS) to increase pressure for water distribution on floor 7 to Roof Floor.
- **Fire Water Distribution System:** Groundwater will be pumped to storage tank with capacity of 10,000 UK gallon at roof floor. Fire water will be distributed via main type to distribute water for firefighting equipment i.e. Fire Hose Cabinet: FHC, Sprinkler System on every floor by fire water pump with capacity of 833 UK gallon/minute.

3) Wastewater Treatment

(1) Total Volume of Wastewater

During operation period, total volume of wastewater to be generated from activities in the building has been estimated at 20,596 UK gallons/day.

(2) Wastewater and Sewage Collection System within the Building

All type of sewage drained from toilet, bathroom and other areas in which there is water usage would be collected into main wastewater collection pipes for further sending to the project wastewater treatment system.

(3) Wastewater Treatment System

The project wastewater treatment system is of Activated Sludge Treatment Process: A/S type installed on floor B1 with capacity of 21,000 UK gallons/day. This capacity could accommodate wastewater volume to be generated in the project (20,596 UK gallons/day). BOD of wastewater would be 250 mg/l; the efficiency of the treatment plant is 92% , therefore BOD of the treated wastewater would be less than 20 mg/l. The treated wastewater shall be discharged into public drain in front of the project site.

4) Electricity System

The project would receive electric power via main transmission line of EPC 2 sets of Oil Type Transformer with capacity of 2,000 KVA will be installed to distribute to several parts of the building. The total electric power demand of the project is 1,800 KVA.

Moreover, the project would provide 2 sets of supporting Generator with capacity of 1,000 KVA which could automatically function in case EPC Electric Supply System fail. The supporting generators would be able to generate electric power for at least 8 hours.

5) Water Drainage and Flood Protection

(1) Internal Drainage System

- **Waste Pipe:** Within the building, there will be wastewater drainage pipe with 4-inch diameter to collect wastewater to send to the project wastewater treatment system.
- **Soil Pipe:** Within the Building there will be soil pipe with 6-inch diameter to drain sewage.
- **Wastewater Pipes from Kitchen and Dish Washing Sink:** Within the building there will be drainage pipe with 4-inch diameter to drain wastewater from cooking in kitchen area into the project wastewater treatment system.

(2) Rain Water Drainage System

Internal rain water drainage system consists of drainage pipes with diameter of 0.3 m., 0.4 m. and slope of 1: 1,000 to collect rain water in the project area to drain into 5 manholes in front part of the project area prior to discharge outside.

(3) Flood Protection

The project site is located on Sei-Myaung Yeiktha Street. This area has never been suffered from flood problems. However, the project has already provided internal rainwater drainage system in connection with public drainage system outside the project area to prevent flood problem.

6) Solid Waste Volume

(1) Solid Waste Volume

Solid waste to be generated within the building consist of wet solid waste, e.g. food debris, dry solid waste e.g. paper, plastic bag, hazardous waste e.g. fluorescent tube, battery. Solid waste generates from 300 staff will be 135 kg/day.

(2) Solid Waste Management

Waste bins will be provided on each floor to receive wet solid waste, dry solid waste, hazardous waste and recycle waste. Each of waste bin will be lined with black plastic waste bag.

Cleaning staff will be assigned to collect solid waste from waste bins on each floor and transport via emergency lift to be stored in solid waste storage area outside the building to wait for solid waste truck of YCDC to get for further disposal every day.

7) Fire Protection and Warning System

The project has provided fire protection and fire warning system.

8) Ventilation and Air Condition System

(1) Ventilation System

The project ventilation systems consist of natural ventilation system and mechanical ventilation system. The mechanical ventilation system is provided in stair, toilet, canteen, kitchen, lift area, and car parking.

(2) Air Condition System

The project air condition system is Chilled Water System using Air Cooled Liquid Chiller with total capacity of 489 tons. The system is provided in meeting room, canteen, etc.

9) Lift System

There are 3 lifts comprising 2 passengers lifts with loading capacity of 1,350 kg/for 18 passengers and speed of 1.75 m/ second and 1 firefighting lift normally used for passengers but during fire incident fireman can use this lift. The firefighting lift has loading capacity of 750 kg for 12 passengers and speed of 1.00 m/second.

10) Safety

There would be security guards within the building and to facilitate entry/ exit of PTTEPI staff and clients for 24 hours. Moreover, there would be close-circuit television system, entrance and exit control system and security room in the front part of the building. In case of emergency, the building control staff and security guards would promptly be informed.

1.8 Environmental Monitoring and Mitigation Measure Implementation Compliance

As the world faces the Covid-19 pandemic, and Myanmar is no exception. PTTEP Myanmar Asset has set a very high priority on preventing the spread of the COVID-19 on its organization grounds and put safety measures and mitigation plans that comply with Government's instructions to ensure everyone is safe during the COVID-19 outbreak. Safety measures continue to be strictly enforced at all operating sites including Yangon Office Building Construction site. The environmental mitigation measures implementation audit which considered environmental issues and essential impacts that may occur during construction phase of PTTEPI's Yangon Office Building has plan to conduct in quarter 2 but during the ongoing COVID-19 pandemic, the environmental mitigation measures implementation audit had to conducted as desktop audit on July 1, 2020 by REM-UAE, as the environmental consultant of the project together with the representation from PTTEPI . The results are described in Chapter 2 . The results of environmental monitoring measures are presented in Chapter 3 and the conclusion is summarized in Chapter 4.

Chapter 2
Environmental Mitigation Measures
Implementation Compliance Audit

Chapter 2

Environmental Mitigation Measures Implementation Compliance Audit

Environmental Mitigation Measures Implementation Compliance audit was carried out by REM-UAE Laboratory and Consultant Company Limited together with representatives from PTTEPI. The audit conducted against the mitigation measures specified in Initial Environmental Examination (IEE) as detailed in Appendix B.

As the Covid-19 pandemic, Audit of construction phase was performed as desktop audit at PTTEPI's Yangon Office Building on July 1, 2020 (Figure 2-1) and document checking by setting 4 levels of evaluation as follows;

- Completely complied on the Mitigation Measures (✓) refers the project can complete comply with the measure without any barriers.
- Mostly complied on the Mitigation Measures (✓) refers the project can mostly comply with the measure without any barriers.
- Do not complied on the Mitigation Measures (✗) refers the project cannot comply with the measure because of some barriers.
- Do not have situation follows the Mitigation Measures (NA) refers during the project operations do not have any of situation follow the Mitigation Measures.



KST Site Office (Myanmar)



REM-UAE Office (Thailand)

Figure 2-1 Mitigation Measures Compliance Audit (Desktop Audit)

In case found that project does not comply with the mitigation measures, REM- UAE Laboratory and Consultant Company Limited will identify the cause of problems, barriers and solutions ways. However, the project have a 100% compliance with mitigation measure that have situation The details are shown in Table 2-1 as followed;

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
Environmental Mitigation Measures							
Air Pollution	<ul style="list-style-type: none"> Impacts on air quality from dust dispersion resulting from foundation and structural work cause adverse effected to the communities nearby the construction site and along the transportation route. 	<ul style="list-style-type: none"> Water spraying twice a day at and around the construction areas 	Project Site	Construction Phase	✓	The project has assigned staff to spray water around construction area at least twice a day or more in dry season or depending on the atmospheric conditions.	Figure 2-2 and Appendix J
		<ul style="list-style-type: none"> Polyester/ PVC mesh sheet should be covered around the construction areas 			✓	The project provided PVC mesh sheets around the construction areas in order to prevent dust dispersion and reduced effected to the communities nearby the construction site and along the transportation route.	Figure 2-3
		<ul style="list-style-type: none"> Cover construction materials by tarpaulin during transportation, materials should be dampened, if necessary, before transportation 			✓	The project has finished pilling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area as specified in measure.	Figure 2-5
		<ul style="list-style-type: none"> Restore, resurface, and rehabilitate the disturbed areas as soon as practicable after completion of construction or disturbance 			NA	The project will rehabilitate the disturbed areas after completion of construction.	-

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		<ul style="list-style-type: none"> Dust masks should be provided (where applicable) to specified construction workers. 			✓	The contractor provided dust masks for workers and controlled all worker wear dust mask during working.	Figure 2-4
Excessive Noise and Vibration	<ul style="list-style-type: none"> Impacts on excessive noise and vibration from foundation and structural work to disturb the nearby communities. 	<ul style="list-style-type: none"> Provide noise protection equipment such as ear muff, ear plugs to the construction workers working in the area 	Project Site	Construction Phase	✓	The contractor provided ear muffs for workers and controlled to use during working in high noise area.	Figure 2-4
		<ul style="list-style-type: none"> Try to carry out construction activities with high noise and vibration level at day time, some activities need to be carried out in the nighttime. 			✓	The project has finished piling and foundation work, the main activity during January – June 2020 was structural work which generally concrete work. The contractor emphasized all workers in daily toolbox talk before working to carried out the construction activities with high noise and vibration level at daytime in order to reduce noise and vibration impact to nearby communities. However, there was no any complaints during January – June 2020.	Appendix J
		<ul style="list-style-type: none"> Install metal sheet as temporary noise barrier at construction site to reduce noise impact nearby communities 			✓	Noise barrier (metal sheet) was installed around the construction site to reduce noise impact to nearby communities.	Figure 2-6

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
Traffic	<ul style="list-style-type: none"> The increasing number of vehicle especially heavy truck and trailer for construction materials and heavy equipment at day time might cause traffic congestion. Increased number of heavy truck and trailer might cause damage along the construction transportation route. 	<ul style="list-style-type: none"> Inform concerned authorities and local people about the construction plan with transportation route for construction materials and heavy vehicles. 	Project Site	Construction Phase	✓	The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. Moreover, the project has provided flag man to give the signal and facilitate the traffic during transportation.	Appendix D-2 and Appendix J
		<ul style="list-style-type: none"> All Project drivers and transportation activities have to follow the laws related to transportation of Myanmar and follow PTTEPI's driving Policy which include vehicle safety rules and journey management. 			✓	The contractor provided journey management and transportation safety procedure and enjoined workers to follow regulation.	Appendix F

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		<ul style="list-style-type: none"> Install warning signs that can be clearly seen to show the access road and construction area. 			✓	Warning signs were installed and can be clearly seen at the public road (in front of the construction area) and within construction area.	Figure 2-7
		<ul style="list-style-type: none"> Avoiding/ lessening mobilization of material and equipment at day time. 			✓	The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. Moreover, avoiding transportation of materials and equipment at day time.	Appendix D-2
		<ul style="list-style-type: none"> Prepare security guard and signal man at guard house close to access road to give the sign in and out of vehicle from project area. 			✓	Security guard are stationed at guardhouse in front of construction area for 24 hr. (2 shift) and the project also provided signal man while transportation of construction materials to give the sign in and out of vehicle/truck from project area.	Figure 2-8 and Appendix J
		<ul style="list-style-type: none"> Carry out regular, routine check and maintenance of vehicles following safety instruction. 			✓	Routine inspection and preventive maintenance for all vehicles as per inspection plan.	Appendix E-4
		<ul style="list-style-type: none"> Strictly control on over loading of heavy truck to prevent damage on road surface. 			✓	The contractor has strictly controlled of overloaded heavy vehicles to prevent road deterioration. Moreover, the public road (in front of the construction area) was in good condition and there was no complaint from nearby communities.	Figure 2-9

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		<ul style="list-style-type: none"> Cover construction materials by tarpaulin during transportation to prevent falling and spreading of materials. 			✓	The project has finished pilling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area as specified in measure.	Appendix J
		<ul style="list-style-type: none"> In case of accident, the concerned sections must be promptly follow the emergency response plan. 			✓	The emergency response procedure was set up including incident, fire action, first aid action. Moreover, the project provided muster point opposite the construction area.	Figure 2-10 and Appendix E-3
		<ul style="list-style-type: none"> Test alcohol and drug on drivers before transportation. 			✓	The contractor prepared drug and alcohol abuse policy and enforced all workers to follow. Alcohol testing was conducted before working every day. The worker will immediately stop working if alcohol is found more than 0%. For drug testing, workers were random tested (3 times/month, the worker who found to be positive in drug testing shall be required to undergo rehabilitation and counseling in government accredited center. However, during January-June 2020 there were no workers found positive in drug test	Figure 2-11 Appendix H-1 and Appendix H-2

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
Solid waste	<ul style="list-style-type: none"> Improper management of construction waste will cause the adverse effect to the environmental. 	Non-Hazardous Waste <ul style="list-style-type: none"> Provide storage area for construction materials. 	Project Site	Construction Phase	✓	The contractor has provided temporary storage area for construction materials.	Figure 2-12
		<ul style="list-style-type: none"> Prepare proper waste bins or containers covered with garbage bag for waste collection at the construction site. 			✓	Waste containers with cover are provided at the construction area for 5 types; general waste (blue), recycle waste (yellow), hazardous waste (red), organic waste (green) and biohazard infectious waste. Moreover, the quantity of waste was recorded by contractor.	Figure 2-13 and Appendix G-2
		<ul style="list-style-type: none"> Inform concerned authorities (YCDC) to collect and dispose of waste every day. 			✓	The contractor cooperated with YCDC to collect and dispose waste to prevent residual waste in construction area.	Appendix G-1
		<ul style="list-style-type: none"> If possible, reuse construction residues such as wood scrap and steel, or inform concerned authorities to collect and dispose. 			✓	The contractor cooperated with YCDC to collect and dispose of waste to prevent residual waste in construction area.	Appendix G-1
		<ul style="list-style-type: none"> Prohibit burning waste in construction area. 			✓	The constructor enforced all workers not to burn any wastes in the construction area. Moreover, the contractor has provided separate waste containers with cover at the construction area	Figure 2-13 and Appendix G

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		Hazardous Waste • Separate hazardous waste from solid waste and store the specific containers with clear label.			✓	The contractor has provided separate waste containers with cover for waste collection at the construction area. However, there are no hazardous waste during construction phase in January – June 2020.	Figure 2-13
		• Hazardous waste will be disposed by licensed contractor or authorities			✓	Hazardous waste container (red) was provided at the construction area. However, there are no hazardous waste during construction phase in January – June 2020. In case of hazardous waste generated, the project will strictly implement as specified in the measure.	Appendix G-1
Wastewater	• Improper management of sanitary system within the site will caused the adverse effect to the environmental	1) Wastewater from workers • Provide appropriate sanitary facilities in construction site and properly maintained for construction workers.	Project Site	Construction Phase	✓	The contractor has provided 6 mobile toilets within construction area 2-3 toilets at the back of construction area and 9 toilets within PTTEPI Office for 370 workers.	Figure 2-14
		2) Surface runoff • Provide temporary drainage system to hold wastewater before being discharged out of the project.			✓	The contractor provided temporary drainage system in the construction area to hold wastewater before discharged out of the project.	Figure 2-15 and Appendix G-3

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		<ul style="list-style-type: none"> Prohibit to throw and dispose of waste from demolition close to drainage system to obstruct the flow of surface runoff. 			✓	The project has finished demolition, the main activity during January – June 2020 was structural work, concrete work. However, the contractor enforced all worker to dispose of waste properly including provided separate waste containers with cover for waste collection in the construction area.	Appendix C
Social and economic	Positive Impact <ul style="list-style-type: none"> The project employment would boost up the local economy. Generate income in nearby communities by related business. 	<ul style="list-style-type: none"> Consider to recruit the qualified person in Yangon. 	Project Site/ House nearby construction site	Construction Phase	✓	The contractor considered to hired local people in Yangon and nearby city as per recruitment procedure and announcement.	Appendix I
	<ul style="list-style-type: none"> An employment opportunity for the locals. 	<ul style="list-style-type: none"> Inform the workers about regulations during construction period in order to prevent the conflict between workers and nearby communities. 			✓	The contractor provided work regulation and enforced all workers to follow in order to prevent the conflict between workers and nearby communities. Moreover, toolbox talk was provided in daily before working by the header of contractor/safety officer.	Appendix J

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
	Negative impact <ul style="list-style-type: none"> Fugitive dust, excess noise, soil erosion and transportation of materials during construction will cause inconveniences to the livelihood of the residents living nearby the construction site. There might be problem arising from conflicts between the host and the workers. 	<ul style="list-style-type: none"> Promote relationship between the project and nearby communities. 			✓	The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people.	Appendix D-2
		<ul style="list-style-type: none"> Distribute project information to people for their better understanding and positive attitude towards the project 			✓	The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people.	Appendix D-2
		<ul style="list-style-type: none"> Implement all measures to mitigate dust, excess noise, waste management and transportation. 			✓	The project strictly implemented mitigation measures as per IEE report.	Appendix B
		<ul style="list-style-type: none"> Provide skillful and experienced engineers to closely inspect construction activities and duty permanently during the entire construction period. 			✓	The contractor provided 12 civil engineer and 7 safety staff to closely inspect construction activities throughout the construction period.	Figure 2-16

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
		<ul style="list-style-type: none"> Assign project staff with 24/ 7 available telephone number to handle any complaint/ issue from surrounding. In case of any damage by project activities PTTEPI will investigate and solve the problem. 			✓	PTTEPI provided grievance handling guideline to receive any complaints from the stakeholder and resolve the complaint in the immediate. Moreover, project' s signboard was installed in front of the construction area to inform the project details such as project name, owner, consultant, contractor, period of construction and emergency contact number. However, there was no any complaints during January – June 2020.	Figure 2-17 and Appendix D-1
		<ul style="list-style-type: none"> Install signboard in front of the Project site in order to inform about construction area with the name of the Project, Contractor company, permission license, PTTEP representative name and telephone number etc. 			✓	Project' s signboard was installed in front of the construction area to inform the project details such as project name, owner, consultant, contractor, period of construction and emergency contact number.	Figure 2-17
Public health and safety	On Local People nearby Project Site Unsuitable management during construction may have impact on local people health due to pollution and accident. They are:	Health Strictly implement mitigation measures for Air Quality, Noise, Waste Management, and Transportation during construction phase	Project Site/ House nearby construction site	Construction Phase	✓	The project strictly implemented mitigation measures for Air Quality, Noise, Waste Management, and Transportation during construction phase as per IEE report. Moreover, the contractor has provided HSE Policy and enforced all workers to follow.	Appendix B and Appendix E-1

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
	<ul style="list-style-type: none"> Dust diffusion, increased noise level, and unsuitable waste management during construction activities; and Accident from construction materials, heavy equipment, and worker transportation to construction area. 	Safety <ul style="list-style-type: none"> Implement work permit system for specific work 			✓	Work permit system was implemented for specific work during construction period such as working at height, hot work, and confined space. Moreover, the contractor has provided HSE Policy and enforced all workers to follow.	Appendix E-1 and Appendix E-6
		<ul style="list-style-type: none"> Provide all concerned staff with Personal Protective Equipment (PPE) such as helmets, safety shoes, glasses, gloves, etc. during construction phase. 			✓	The contractor provided PPE sufficiently for all workers and controlled to use PPE suitably with work.	Figure 2-4
		<ul style="list-style-type: none"> Provide safety training for workers. 			✓	The training was regularly performed as per the annual SSHE Training Plan. Moreover, the contractor has provided tool box talk in daily before working by the header of contractor/safety officer.	Appendix E-5 and Appendix J
	On Workers <ul style="list-style-type: none"> Increased pollution in working zone of project site such as dust diffusion, excess noise. 	<ul style="list-style-type: none"> Provide sufficient first aid kits at the construction area and coordinate with nearby hospital for admission in case of accidents. 			✓	The medic person was stand by 24/7 (day-night shift) at medic room for medical treatment included first aid kit and medical supplies. The project also coordinates with Victoria hospital for admission in case of accidents Moreover, emergency respond procedure and training were provided to respond in emergency case.	Figure 2-18

Table 2-1 Environmental Mitigation Measure Implementation Compliance Result Summary in Construction Phase of PTTEPI's Yangon Office Building

Aspects	Potential Impacts	Mitigation Measures	Location	Period/ Frequency	Status	Details	Remarks/ Reference
	<ul style="list-style-type: none"> Carelessness of workers may cause fire, injuries and death. 	<ul style="list-style-type: none"> Install appropriate warning signs, markings and safety signs. 			✓	The contractor has installed warning signs and safety sign in construction area to warns workers from dangers. Moreover, the contractor has provided Stop Work Policy to maintain a safe and secure work environment.	Figure 2-7 and Appendix E-2
		<ul style="list-style-type: none"> Regular checking all equipment to ensure it can be used without defect. 			✓	Routine inspection and preventive maintenance for all equipment were conducted as per inspection plan.	Appendix E-4
		<ul style="list-style-type: none"> Firefighting equipment and portable fire extinguishers shall be properly provided in construction area. 			✓	The contractor has provided firefighting equipment in the construction area and inspected monthly.	Figure 2-19
		<ul style="list-style-type: none"> Provide smoking area in the construction zone. 			✓	The contractor has provided smoking areas in the west and in front of construction area.	Figure 2-20



Figure 2-2 Water Spray



Figure 2-3 PVC Mesh Sheet



Figure 2-4 Personal Protective Equipment (PPE)



Figure 2-5 Structural Work



Figure 2-6 Noise Barrier



Figure 2-7 Warning Sign



Figure 2-7 (Cont.) Warning Sign



Figure 2-8 Security Guard



**Figure 2-9 Public Road
(In front of the construction area)**



Figure 2-10 Muster Point



Figure 2-11 Alcohol Test



Figure 2-12 Storage Area



Figure 2-13 Waste Containers



Figure 2-14 Toilets and Mobile Toilets



Figure 2-15 Temporary Drainage System



Figure 2-16 Civil Engineer and Safety Staff



Figure 2-17 Signboard in front of the Construction Area



Figure 2-18 Medic Room



Figure 2-19 Firefighting Equipment Inspection



Figure 2-20 Smoking area

Chapter 3

Environmental Monitoring Results

Chapter 3

Environmental Monitoring Results

Environmental monitoring was conducted as specified in IEE which the project has assigned REM-UAE Laboratory and Consultant Company Limited to performed the environmental monitoring. This chapter presents the environmental monitoring results of PTTEPI's Yangon Office Building during construction phase, the detail is presented as follow;

3.1 Environmental Monitoring Plan

Environmental monitoring for PTTEPI's Yangon Office Building during construction phase is shown in Table 3-1.

Table 3-1 Environmental Monitoring Plan of PTTEPI's Yangon Office Building in Construction Phase during January – June 2020

Environmental Quality	Parameter	Duration/Frequency of Monitoring	Location	Implemented	
				Complied	Not complied
1.Environmental Issues					
1.1 Fugitive Dust	<ul style="list-style-type: none">• Total Suspended Particulate (TSP)• Particulate Matter less than 10 micron (PM10)	<u>Duration</u> 2 consecutive days during construction period including weekday and weekend <u>Frequency</u> Twice a year during construction period	<ul style="list-style-type: none">• 1 station at construction site : North of construction fence (A1)• 2 stations at buildings nearby construction site, comprising: 1) PTTEPI Building 7 : West of construction fence (A2) 2) House behind PTTEPI Office : South- east of construction fence (A5)	<ul style="list-style-type: none">• Monitored by REM- UAE Laboratory and Consultant Co., Ltd. during July 1-5, 2020. The result as shown in Section 3.2.1.	-
1.2 Noise	<ul style="list-style-type: none">• LAeq-1 hr (day time)• LAeq-1 hr (night-time)	<u>Duration</u> 2 consecutive days during construction period including weekday and weekend <u>Frequency</u> Twice a year during construction period	<ul style="list-style-type: none">• 1 station at construction site : North of construction fence (N1)• 2 stations at buildings nearby construction site, comprising: 1) PTTEPI Building 7 : West of construction fence (N2) 2) House behind PTTEPI Office : South- east of construction fence (N5)	<ul style="list-style-type: none">• Monitored by REM- UAE Laboratory and Consultant Co., Ltd. during July 1-5, 2020 The result as shown in Section 3.3.4.	-

Table 3-1 (Cont.) Environmental Monitoring Plan of PTTEPI's Yangon Office Building in Construction Phase during January – June 2020

Environmental Quality	Parameter	Duration/Frequency of Monitoring	Location	Implemented	
				Complied	Not complied
2. Social Issues					
2.1 Grievance Mechanism	<ul style="list-style-type: none">Complaints from stakeholders/neighborsComplaints' resolution is undertaken in a timely manner	Throughout construction period	<ul style="list-style-type: none">House nearby construction site	<ul style="list-style-type: none">Monitored by PTTEPI throughout construction phase. The result as shown in Section 3.4.2.	-
2.2 Public and Occupational Health and Safety	<ul style="list-style-type: none">Incident/accident records	Throughout construction period	<ul style="list-style-type: none">Construction site and working areasHouse nearby construction site	<ul style="list-style-type: none">Monitored by PTTEPI throughout construction phase. The result as shown in Section 3.5.3.	-

3.2 Fugitive Dust Monitoring

Fugitive dust monitoring was conducted by REM-UAE Laboratory and Consultant Company Limited on July 1-3, 2020 and July 3-5, 2020. The detail as shown in Table 3-2.

Table 3-2 Fugitive Dust Quality Monitoring Plan

Environmental Quality	Parameter	Location	Period
Fugitive Dust	<ul style="list-style-type: none"> Total Suspended Particulate (TSP) Particulate Matter less than 10 Micron (PM10) 	<ul style="list-style-type: none"> 1 station at construction site : North of construction fence (A1) 	July 3-5, 2020
		<ul style="list-style-type: none"> 2 stations at buildings nearby construction site, comprising: <ol style="list-style-type: none"> 1) PTTEPI Building 7 : West of construction fence (A2) 2) House behind PTTEPI Office : South- east of construction fence (A5) 	July 1-3, 2020
			July 1-3, 2020

3.2.1 Fugitive Dust Monitoring Station

The detail and coordinate of fugitive dust monitoring station as shown in Table 3-3 and Figure 3-1.

Table 3-3 Fugitive Dust Monitoring Stations in Construction Phase (July 2020)

Monitoring Station	Coordinate (UTM Datum WGS 84)		
	Zone	East (X)	North (Y)
1. Construction site : North of construction fence (A1)	47Q	195194	1867484
2. PTTEPI Building 7 : West of construction fence (A2)	47Q	195149	1867448
3. House behind PTTEPI Office : South-east of construction fence (A5)	47Q	195187	1867446



Figure 3-1 Fugitive Dust Monitoring Station

3.2.2 Fugitive Dust Analysis Method

Details of fugitive dust monitoring including parameters and analysis methods are shown in Table 3-4.

Table 3-4 Sampling Method, Analysis Method and Standard Methods for Fugitive Dust Monitoring

Parameters	Sampling Method	Analysis Method	Standard Methods
1. Total Suspended Particulate (TSP)	High Volume Air Sampler	Gravimetric Method	40 CFR-Chapter I-Part 50, Appendix B
2. Particulate matter less than 10 Micron (PM-10)	High Volume PM-10 Air Sampler	Gravimetric Method	40 CFR-Chapter I-Part 50, Appendix J

3.2.3 Fugitive Dust Monitoring of PTTEPI's Yangon Office Building

Fugitive dust samples were monitored at PTTEPI Building 7 and House behind PTTEPI Office during July 1-3, 2020. Construction site was monitored during July 3-5, 2020 as shown in Figure 3-2.



Construction site : North of construction fence (A1)



PTTEPI Building 7 : West of construction fence (A2)



House behind PTTEPI Office : South-east of construction fence (A5)

Figure 3-2 Fugitive Dust Monitoring

3.2.4 Fugitive Dust Monitoring Result

Referring to analysis number T20AK860-0001 to T20AK860-0006 fugitive dust samples were conducted during July 1-5, 2020 in construction phase which monitored at PTTEPI Building 7 and House behind PTTEPI Office on July 1-3, 2020 and Construction site was monitored during July 3-5, 2020.

Fugitive dust monitoring results found that Total Suspended Particulate (TSP) of all station including Construction site : North of construction fence (A1), PTTEPI Building 7 : West of construction fence (A2) and House behind PTTEPI Office: South-east of construction fence (A5) have complied with Ambient Air Quality of WORLD BANK GROUP which determined that Average 24 hours TSP should not exceed $230 \mu\text{g}/\text{m}^3$. For the results of Particulate matter less than 10 Micron (PM-10) found that all stations have complied with National Environmental Quality (Emission) Guideline (EQEG) and the Ambient Air Quality Standard of WHO and IFC which determined that PM10 should not exceed $50 \mu\text{g}/\text{m}^3$ and $150 \mu\text{g}/\text{m}^3$, respectively.

Moreover, the project provided environmental mitigation measure to prevent and reduce the impacts on air quality from dust dispersion resulting from project activities including water spraying, PVC mesh sheets around the construction areas.

The comparison of fugitive dust monitoring results in the construction phase in July 2020 and baseline data found that most of the results of Total Suspended Particulate (TSP) and Particulate matter less than 10 Micron (PM-10) of all stations have higher than baseline data.

However, most of the results have complied with National Environmental Quality (Emission) Guideline (EQEG), Ambient Air Quality Standard of WHO and IFC, and Ambient Air Quality of WORLD BANK GROUP.

Fugitive dust monitoring results are shown in Table 3-5. The analysis results, certificate for laboratory instrument and approval registration certificate of laboratory are shown in Appendix K, L and M.

Table 3-5 Fugitive Dust Monitoring Results during Baseline (in 2017) and Construction Phase in 2020

Stations	Date	Result	
		Total Suspended Particulate (TSP)	Particulate matter less than 10 Micron (PM-10)
1. Construction site : North of construction fence (A1)	March 12-13, 2017 ^{1/}	58.4	26.6
	March 13-14, 2017 ^{1/}	74.3	37.3
	July 3-4, 2020	73	39
	July 4-5, 2020	150	44
2. PTTEPI Building 7 : West of construction fence (A2)	March 12-13, 2017 ^{1/}	45.2	30.1
	March 13-14, 2017 ^{1/}	62.5	39.2
	July 1-2, 2020	75	30
	July 2-3, 2020	49	39
3. House behind PTTEPI Office : South-east of construction fence (A5)	March 10-11, 2017 ^{1/}	40.3	20.2
	March 11-12, 2017 ^{1/}	43.7	24.4
	July 1-2, 2020	47	36
	July 2-3, 2020	45	29
National Environmental Quality (Emission) Guideline (EQEG) ^{2/}		-	50
Ambient Air Quality Standard of WHO and IFC^{3/}		-	<u>150</u>
Ambient Air Quality of WORLD BANK GROUP^{4/}		230	-
Unit		µg/m³	µg/m³

Remark:

^{1/} Baseline data from Initial Environmental Examination (IEE) for PTTEPI's Yangon Office Building Construction

^{2/} National Environmental Quality (Emission) Guideline Myanmar, 2015

^{3/} WHO Ambient Air Quality Guideline Stated on Environmental, Health, and Safety Guideline: Environmental Air Emissions and Ambient Quality of International Finance Corporation, 2007

^{4/} Pollution Prevention and Abatement Handbook (WORLD BANK GROUP) Effective July 1998.

3.3 Noise Level Monitoring

Noise monitoring of PTTEPI's Yangon Office Building as per specified in IEE was conducted by REM-UAE Laboratory and Consultant Company Limited in construction phase. The detail as shown in Table 3-7.

Table 3-6 Noise Level Monitoring Plan

Environmental Quality	Parameter	Location	Period
Noise	<ul style="list-style-type: none"> • LAeq-1 hr (day time) • LAeq-1 hr (night-time) 	<ul style="list-style-type: none"> • 1 station at construction site : North of construction fence (N1) • 2 stations at buildings nearby construction site, comprising: <ol style="list-style-type: none"> 1) PTTEPI Building 7 : West of construction fence (N2) 2) House behind PTTEPI Office : South-east of construction fence (N5) 	July 3-5, 2020 July 1-3, 2020 July 1-3, 2020

3.3.1 Noise Level Monitoring Station

The detail and coordinate of noise level monitoring station as shown in Table 3-7 and Figure 3-3.

Table 3-7 Noise Level Monitoring Stations in Construction Phase (July 2020)

Monitoring Station	Coordinate (UTM Datum WGS 84)		
	Zone	East (X)	North (Y)
1. Construction site : North of construction fence (N1)	47Q	195187	1867488
2. PTTEPI Building 7 : West of construction fence (N2)	47Q	195151	1867447
3. House behind PTTEPI Office : South-east of construction fence (N5)	47Q	195187	1867424

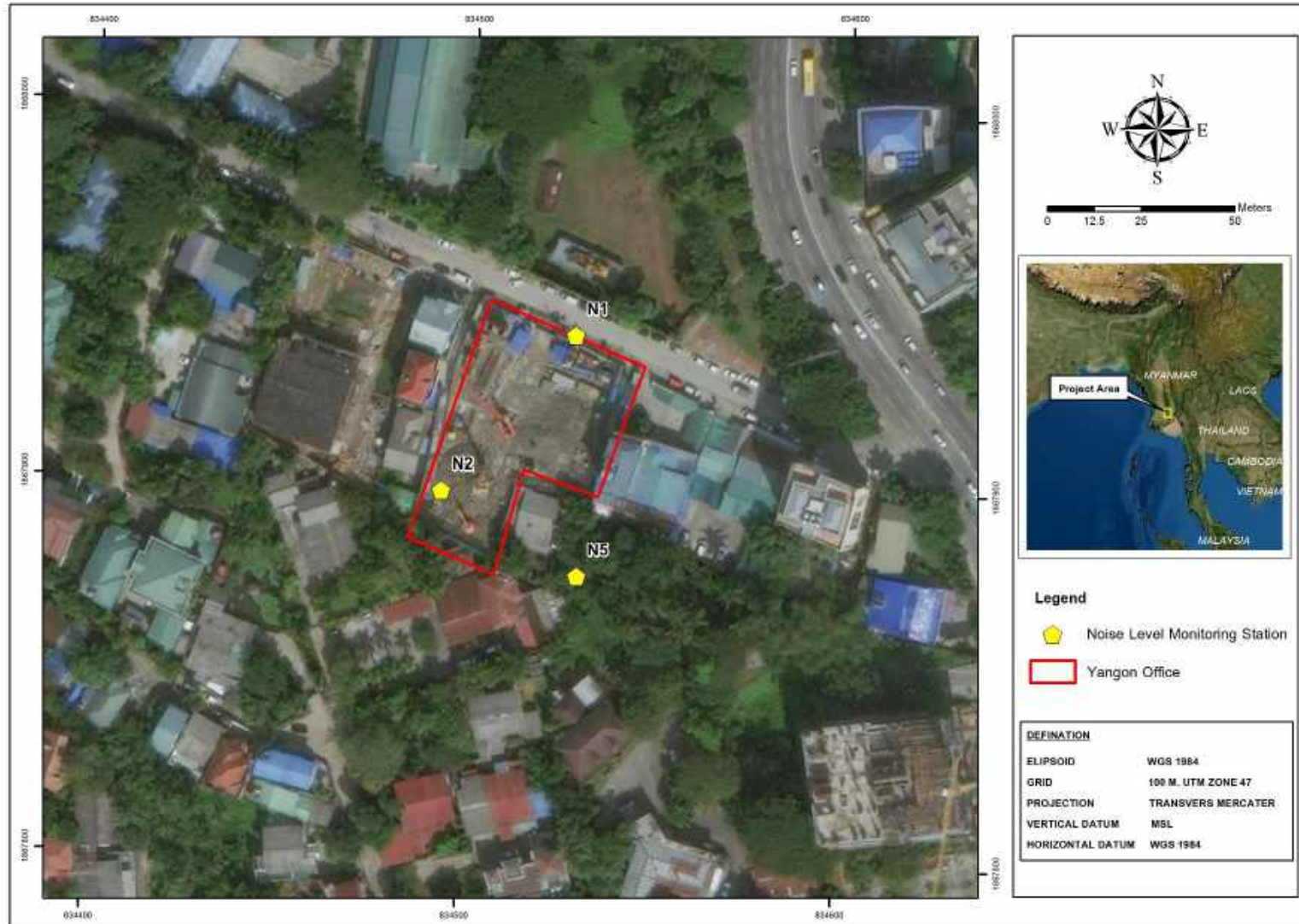


Figure 3-3 Noise Level Monitoring Station

3.3.2 Noise Level Analysis Method

Details of noise level monitoring including parameters and analysis methods are shown in Table 3-8.

Table 3-8 Parameters and Analyses Methods for Noise Level Monitoring

Parameters	Sampling Method	Analysis Methods	Standard Methods
<ul style="list-style-type: none"> L_{Aeq}-1 hr (day time) L_{Aeq}-1 hr (night-time) 	Integrated Sound Level Meter	Integrated Sound Level Meter	ISO 1996/1

3.3.3 Noise Level Monitoring of PTTEPI's Yangon Office Building

Noise level monitoring of PTTEPI's Yangon Office Building were monitored at PTTEPI Building 7 and House behind PTTEPI Office during July 1-3, 2020. Construction site was monitored during July 3-5, 2020 as shown in Figure 3-4.



Construction site : North of construction fence (N1)



PTTEPI Building 7 : West of construction fence (N2)



House behind PTTEPI Office : South-east of construction fence (N5)

Figure 3-4 Noise Level Monitoring

3.3.4 Noise Level Monitoring Results

Referring to analysis number T20AK860-0007 to T20AK860-0012 noise level monitoring were conducted during July 1-5, 2020 in construction phase which monitored at PTTEPI Building 7 and House behind PTTEPI Office on July 1-3, 2020 and Construction site was monitored during July 3-5, 2020.

Noise level monitoring results found that The L_{Aeq} -1 hr daytime of Construction site : North of construction fence (N1), PTTEPI Building 7 : West of construction fence (N2) and House behind PTTEPI Office : South-east of construction fence (N5) were in ranged of 56.0-67.2, 58.6-68.4 and 57.4-62.9 dB(A), respectively. While The L_{Aeq} -1 hr night-time of N1, N2 and N5 were ranged from 59.1-64.3, 57.9-68.6 and 53.0-58.0 dB(A), respectively. All of the result of L_{Aeq} -1 hr daytime and L_{Aeq} -1 hr night-time has complied with EQEG, 2015 for Industrial/ Commercial Area which determined L_{Aeq} -1 hr daytime and night-time not more than 70 dB(A).

However, the project provided environmental mitigation measure to reduce the impacts on excessive noise to disturb the nearby communities including carried out the construction activities with high noise level only at day time. PTTEPI also installed noise barrier (metal sheet) around the construction site to reduce noise impact to nearby communities. In addition, PTTEPI will continually monitor noise level as specified in the measure.

The comparison of noise level monitoring results in construction phase July 2020 and baseline data found that the result of L_{Aeq} -1 hr daytime and L_{Aeq} -1 hr night-time of 3 stations were slightly higher than baseline data. However, all of the result of L_{Aeq} -1 hr daytime and night-time in construction phase in July 2020 has complied with EQEG, 2015 for Industrial/ Commercial Area which determined L_{Aeq} -1 hr daytime and night-time not more than 70 dB(A). In addition, the project has continually monitoring, as specified in the measure for surveillance of environmental impact from the project construction activity.

The comparison of noise level monitoring results were summarized as Table 3-9.

The analysis results, certificate for laboratory instrument and approval registration certificate of laboratory are shown in Appendix K, L and M.

Table 3-9 Noise Level Monitoring Results between Baseline (in 2017) and Construction Phase in 2020

Stations	Date	Result ^{1/}	
		L _{Aeq} -1 hr (day time) 07.00-22.00	L _{Aeq} -1 hr (night-time) 22.00-07.00
1. Construction site : North of construction fence (N1)	March 12-13, 2017 ^{1/}	55.0-63.2	53.0-59.7
	March 13-14, 2017 ^{1/}	55.9-61.2	51.8-62.5
	July 3-4, 2020	56.4-67.2	59.1-64.3
	July 4-5, 2020	56.0-66.6	60.8-64.1
2. PTTEPI Building 7 : West of construction fence (N2)	March 12-13, 2017 ^{1/}	61.2-63.2	61.6-62.8
	March 13-14, 2017 ^{1/}	60.9-63.5	62.4-64.8
	July 1-2, 2020	58.6-67.1	57.9-65.7
	July 2-3, 2020	58.6-68.4	58.4-68.6
3. House behind PTTEPI Office : South-east of construction fence (N5)	March 10-11, 2017 ^{1/}	51.5-58.0	51.1-55.8
	March 11-12, 2017 ^{1/}	50.9-57.0	52.2-56.1
	July 1-2, 2020	57.4-62.9	54.9-57.7
	July 2-3, 2020	57.8-62.8	53.0-58.0
National Environmental Quality (Emission) Guideline of Myanmar for Industrial/Commercial Area ^{2/}		70.0	70.0
Unit		dB(A)	dB(A)

Remark: ^{1/} Baseline data from Initial Environmental Examination (IEE) for PTTEPI's Yangon Office Building Construction

3.4 Grievance Mechanism Monitoring

Grievance mechanism monitoring was conducted for construction phase of PTTEPI's Yangon Building during January – June 2020 in construction phase by PTTEPI. The detail as shown in Table 3-10.

Table 3-10 Grievance Mechanism Monitoring Plan

Environmental Quality	Parameter	Location	Period
Social	<ul style="list-style-type: none"> Complaint from stakeholders/ neighbors Comliants' resolution is undertaken in a timely manner 	- House nearby construction site	Throughout construction period

3.4.1 Grievance Mechanism Monitoring Methods

Grievance mechanism monitoring is the investigation of complaints from the community. PTTEPI provided grievance handling guideline to receive any complaints from the stakeholder and resolve the complaint in the immediate (Appendix D-1). If any damage occurs, PTTEPI will be responsible to solve and track them. In addition, problem's cause will be analyzed to prevent same problem occurring again. Grievance handling process is shown in Figure 3-5.



Figure 3-5 Grievance Handling Process

3.4.2 Grievance Mechanism Monitoring Result

Grievance mechanism monitoring results for construction phase of PTTEPI's Yangon Office Building during January – June 2020 were done by PTTEPI. There was no any complaint from the community throughout the construction period.

3.5 Public and Occupational Health and Safety Monitoring

Public and occupational health and safety monitoring was conducted for construction phase of PTTEPI's Yangon Office Building during January – June 2020 by the contractor. The detail as shown in Table 3-13.

Table 3-11 Public and Occupational Health and Safety Monitoring Plan

Environmental Quality	Parameter	Location	Period
Public and Occupational Health and Safety	<ul style="list-style-type: none"> Incident/ accident records 	<ul style="list-style-type: none"> Construction site and working areas House nearby construction site 	Throughout construction period

3.5.1 Public and Occupational Health and Safety Monitoring Method

Emergency Response Plan and training program on Safety, Health and Environment and other concerned safety standards have been provided to the contractor for follow. Public and occupational health and safety monitoring was conducted by recording the incident and accident during working time; including causes, accident level, and performed mitigation measures. Monitoring program and report were conducted throughout construction period following the specified measures in IEE report.

3.5.2 Public and Occupational Health and Safety Monitoring Results

Public and occupational health and safety monitoring results for construction phase of PTTEPI's Yangon Office Building were done by the contractor during January – June 2020. There were total 9 cases of incident from project activity in the construction period including 1 case of fire incident, 4 cases of near miss, 3 cases of first aid case and 1 case of non-work related. The details as shown in Table 3-12. Corrective actions were proposed/implemented to prevent reoccurrence.

Table 3-12 Summarization of Incident Cases

No.	Activity/Package	Incident date & time	Root Case	Preventance action	Incident one-line summary
1	Fire incident	January 15, 2020 12:01 PM	<ul style="list-style-type: none"> • Skipping safe work procedure, • Fail to recheck the working area 	<ul style="list-style-type: none"> • Refresh training to involved persons 	<ul style="list-style-type: none"> • Fire incident at concrete curing jute clothes to fire sparks from rebar cutting
2	First-aid	March 4, 2020 10:30 PM	<ul style="list-style-type: none"> • Lack of supervision, Inadequate lighting at the working area, 	<ul style="list-style-type: none"> • Refresh ladder safety training to involved persons • Provided sufficient lighting at working area 	<ul style="list-style-type: none"> • Slip and fall incident at first floor stair-04
3	First-aid	March 10, 2020 10:05 PM	<ul style="list-style-type: none"> • Employees fatigue, • Crews shift change 	<ul style="list-style-type: none"> • Notify all persons at TBT about dizzy • Refresh ERP training 	<ul style="list-style-type: none"> • Dizzy attack at Kubota tank area
4	Near miss	March 17, 2020 04:20 PM	<ul style="list-style-type: none"> • Lack of supervision, Skipping safe work procedure • Failure to provide proper scaffold 	<ul style="list-style-type: none"> • Refresh training to involved persons 	<ul style="list-style-type: none"> • Falling from unsafe scaffold platform
5	Sewage water flooded directly to the ground	March 19, 2020 08:30 AM	<ul style="list-style-type: none"> • Failure to provide basic welfare facility for workers • Failure to follow IEE requirement 	<ul style="list-style-type: none"> • Pumped out sewage water with vaccum truck • Provide more toilets 	<ul style="list-style-type: none"> • Sewage water overflow from temporary mobile toilets
6	First-aid	May 25, 2020 03:20 PM	<ul style="list-style-type: none"> • Employees fatigue • Crews shift change 	<ul style="list-style-type: none"> • Notify all persons at TBT about dizzy • Close supervision and educate more about health 	<ul style="list-style-type: none"> • Dizzy attack at B-1 area

Table 3-12 Summarization of Incident Cases

No.	Activity/Package	Incident date & time	Root Case	Preventance action	Incident one-line summary
7	Near miss	June 15, 2020 11:05 AM	<ul style="list-style-type: none"> • Failure to provide site requirement (catch board) • No toolbags and layand 	<ul style="list-style-type: none"> • Refresh training to involved persons • Provided scaffold catch platform 	<ul style="list-style-type: none"> • Dropped object of electrical power drill machine and its attachment of power bruch
8	Near miss	June 23, 2020 05:45 PM	<ul style="list-style-type: none"> • Lack of supervision • Skipping safe work procedure • Failure to re-check 	<ul style="list-style-type: none"> • Refresh training to involved persons 	<ul style="list-style-type: none"> • Gas hose accidently took off from its connection near torch
9	Near miss	July 2, 2020 08:50 AM	<ul style="list-style-type: none"> • Failure to provide site requirement (catch board) 	<ul style="list-style-type: none"> • Refresh training to involved persons • Provided scaffold catch platform 	<ul style="list-style-type: none"> • Dropped object of rebar

Chapter 4
Environmental Mitigation Measures
Compliance Audit and Environmental
Monitoring Result

Chapter 4

Environmental Mitigation Measures Compliance Audit and Environmental Monitoring Result

From the implementation of Environmental Mitigation Measures Compliance Audit and Environmental Monitoring in construction phase of PTTEPI's Yangon Office Building, it was found that the project has implemented the measures as specified in IEE and the results are summarized as following details:

4.1 Environmental Mitigation Measures Compliance Audit and Environmental Monitoring Result

Environmental Mitigation Measures Implementation Compliance audit was carried out by REM-UAE Laboratory and Consultant Company Limited together with representatives from PTTEPI. The audit conducted against the mitigation measures specified in Initial Environmental Examination (IEE).

Audit and document checking by setting 4 levels of evaluation as follows;

- Completely complied on the Mitigation Measures (✓) refers the project can complete comply with the measure without any barriers.
- Mostly complied on the Mitigation Measures (✓) refers the project can mostly comply with the measure without any barriers.
- Do not complied on the Mitigation Measures (✗) refers the project cannot comply with the measure because of some barriers.
- Do not have situation follows the Mitigation Measures (NA) refers during the project operations do not have any of situation follow the Mitigation Measures

In case found that the project does not comply with the mitigation measures, REM-UAE Laboratory and Consultant Company Limited will identify the cause of problems, barriers and solutions ways.

The results determined that the project completely complied on the Mitigation Measures during January - June 2020 in construction phase with 100% for the mitigation that have situation. However, there are some mitigation that do not have situation during the audit period equal to 2.2% of all mitigation measure. The results are shown in Figure 4-1.

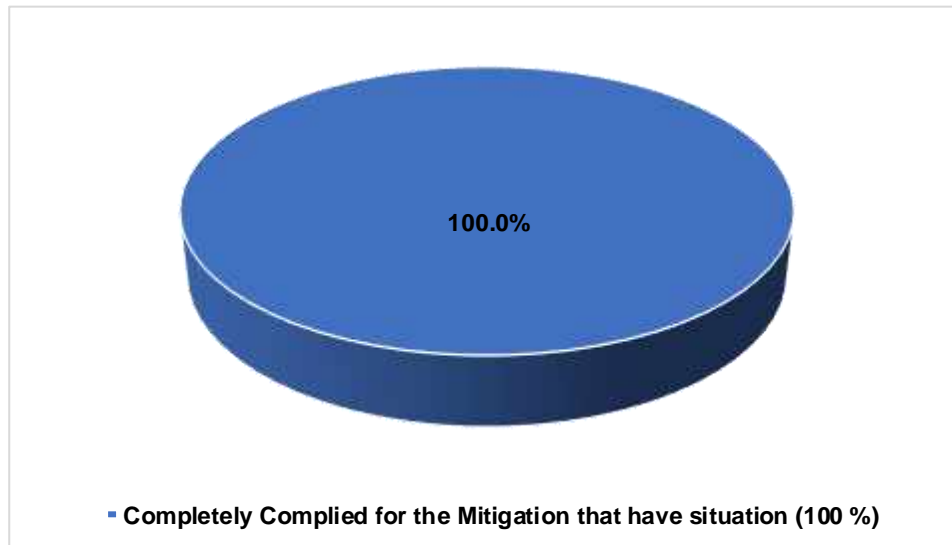


Figure 4-1 The Results of Environmental Mitigation Measures Compliance in Construction Phase during January-June 2020

4.1.1 Environmental Mitigation Measures Compliance Result in Construction Phase

The project has finished pilling and foundation work, the main activity during January – June 2020 was structural work, concrete work.

- **Air Pollution** - The project complied with the environmental mitigation measures strictly such as assigned staff to spray water around construction area at least three time a day or more in dry season or depending on the atmospheric conditions and the existing road was in a good condition. The project provided PVC mesh sheets around the construction areas in order to prevent dust dispersion and reduced effected to the communities nearby the construction site and along the transportation route. The project has finished pilling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area as specified in measure. Moreover, the contractor provided dust masks for workers and controlled all worker wear dust mask during working.
- **Excessive Noise and Vibration** - The contractor emphasized workers in toolbox talk which provided in daily before working to carried out the construction activities with high noise and vibration level at day time in order to reduce noise and vibration impact to nearby communities. The contractor provided ear muffs for workers and controlled to use during working in high noise area. Moreover, Noise barrier (metal sheet) was installed around the construction site to reduce noise impact to nearby communities.

- **Traffic** - The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. The project has finished piling and foundation work, the main activity during January – June 2020 was structural work, concrete work which transported by concrete truck. However, in case of the project has activity about construction materials transportation, the truck was covered during transport material to the construction area and the contractor provided flag man to give the signal and facilitate the traffic during transportation as specified in measure. Moreover, warning signs were installed and can be clearly seen at the public road (in front of the construction area) and within construction area. Routine inspection and preventive maintenance for all vehicles conducted as per the inspection plan. The contractor has strictly controlled of overloaded heavy vehicles to prevent road deterioration. Moreover, the public road (in front of the construction area) was in good condition and there was no complaint from nearby communities.

The contractor provided journey management and transportation safety procedure and enjoined workers to follow regulation. The emergency response procedure was set up including incident, fire action, first aid action. The contractor prepared drug and alcohol abuse policy and enforced all workers to follow. Alcohol testing was conducted before working every day. The worker will immediately stop working if alcohol is found more than 0%. For drug testing, workers were random tested. Random drug testing was implemented, worker who found to be positive in drug testing shall be required to undergo rehabilitations and counseling in government accredited center. However, during January-June 2020 there were no workers found positive in drug test.

- **Solid Waste**
 - Non-Hazardous Waste - The contractor provided temporary storage area for construction materials. separate waste containers with cover are provided for 5 types; general waste (blue), recycle waste (yellow), hazardous waste (red), organic waste (green) and biohazard infectious waste. The quantity of waste was recorded by contractor. The contractor cooperated with YCDC to collect and dispose of waste in order to prevent residual waste in construction area. Moreover, the constructor enforced all workers not to burn any wastes in the construction area.
 - Hazardous Waste - Hazardous waste container (red) was provided at the construction area. However, there are no hazardous waste during construction phase in January – June 2020. If there are occurred, the contractor will cooperate with licensed contractor or authorities to collect and dispose.
- **Wastewater** - The contractor has provided 6 mobile toilets within construction area 2-3 toilets at the back of construction area and 9 toilets within PTTEPI Office for 370 workers. The contractor installed drainage system in the construction area to hold wastewater before discharged out of the project. The contractor enforced all worker to dispose of waste properly including provided separate waste containers with cover for waste collection in the construction area.

- **Social and Economic** - The contractor considered to hire local people in Yangon and nearby city as per recruitment procedure and announcement. The contractor provided work regulation and enforced all workers to follow in order to prevent the conflict between workers and nearby communities. Moreover, tool box talk was provided in daily before working by the header of contractor/safety officer. The contractor informed about construction plan and transportation route for construction materials and heavy vehicles to local people. 12 Civil engineers and 7 safety staffs were provided to closely inspect construction activities throughout the construction period. PTTEPI provided grievance handling guideline to receive any complaints from the stakeholder and resolve the complaint in the immediate. Project's signboard was installed in front of the construction area to inform the project details such as project name, owner, consultant, contractor, period of construction and emergency contact number. However, there was no any complaints during January – June 2020.
- **Public health and safety**
 - **Health** – The project strictly implemented mitigation measures as per IEE report.
 - **Safety** - Work permit system was implemented for specific work during construction period such as working at height, hot work, and confined space. Moreover, the contractor has provided HSE Policy and enforced all workers to follow. The contractor provided suitable PPE and sufficiently for all workers and controlled to use PPE during working. In addition, the training was regularly performed as per the annual SSHE Training Plan. Tool box talk was provided in daily before working by the header of contractor/safety officer. The medic person was stand by 24/7 (day-night shift) at medic room for medical treatment included first aid kit and medical supplies. The project also coordinates with Victoria hospital for admission in case of accidents. Moreover, emergency response procedure and training were provided to respond in emergency case. Warning signs were installed in construction area to warn workers from dangers. Moreover, the contractor has provided Stop Work Policy to maintain a safe and secure work environment. Routine inspection and preventive maintenance for all equipment were conducted as per inspection plan. Moreover, Firefighting equipment were provided in the construction area and inspected monthly. Smoking areas were provided in the west and in front of construction area.

4.2 Environmental Monitoring Result

The project has completely complied the environmental monitoring as specified in IEE, including Fugitive dust monitoring, Noise level monitoring, Grievance mechanism monitoring, Public and occupational health and safety monitoring as shown in Figure 4-2.

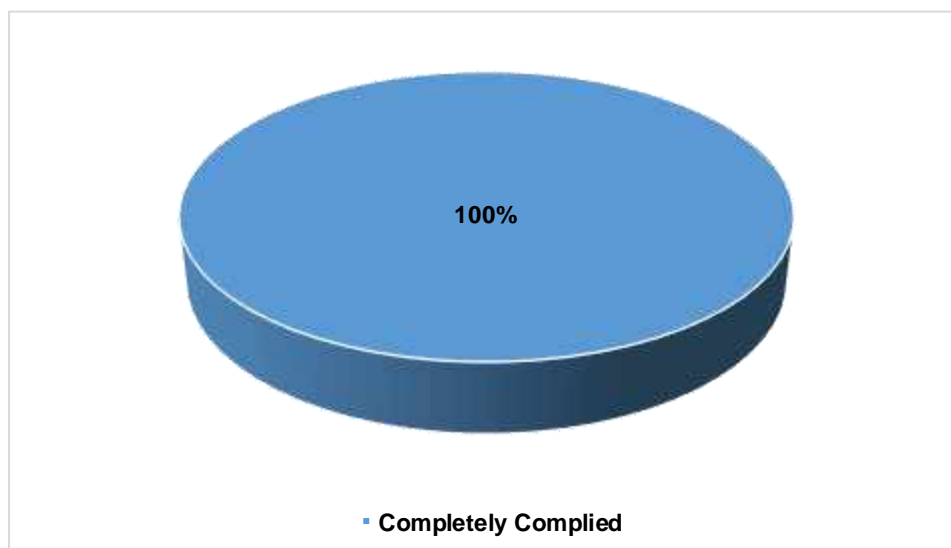


Figure 4-2 The Results of Environmental Monitoring in Construction Phase during January - June 2020

4.2.1 Fugitive Dust Monitoring

Fugitive dust samples were monitored at construction site: North of construction fence (A1) during July 3-5, 2020. PTTEPI Building 7: West of construction fence (A2) and House behind PTTEPI Office: South-east of construction fence (A5) were monitored during July 1-3, 2020.

Fugitive dust monitoring results found that Total Suspended Particulate (TSP) of all station including Construction site : North of construction fence (A1), PTTEPI Building 7 : West of construction fence (A2) and House behind PTTEPI Office: South-east of construction fence (A5) have complied with Ambient Air Quality of WORLD BANK GROUP which determined that Average 24 hours TSP should not exceed $230 \mu\text{g}/\text{m}^3$. For the results of Particulate matter less than 10 Micron (PM-10) found that all stations have complied with National Environmental Quality (Emission) Guideline (EQEG) and the Ambient Air Quality Standard of WHO and IFC which determined that PM10 should not exceed $50 \mu\text{g}/\text{m}^3$ and $150 \mu\text{g}/\text{m}^3$, respectively.

Moreover, the project provided environmental mitigation measure to prevent and reduce the impacts on air quality from dust dispersion resulting from project activities including water spraying, PVC mesh sheets around the construction areas.

The comparison of fugitive dust monitoring results in the construction phase in July 2020 and baseline data found that most of the results of Total Suspended Particulate (TSP) and Particulate matter less than 10 Micron (PM-10) of all stations have higher than baseline data.

However, most of the results have complied with National Environmental Quality (Emission) Guideline (EQEG), Ambient Air Quality Standard of WHO and IFC, and Ambient Air Quality of WORLD BANK GROUP.

4.2.2 Noise Level Monitoring

Noise level monitoring of PTTEPI's Yangon Office Building were monitored at PTTEPI Building 7 and House behind PTTEPI Office during July 1-3, 2020. Construction site was monitored during July 3-5, 2020. The results of noise level are summarized as below;

Noise level monitoring results found that The L_{Aeq} -1 hr daytime of Construction site : North of construction fence (N1), PTTEPI Building 7 : West of construction fence (N2) and House behind PTTEPI Office : South-east of construction fence (N5) were in ranged of 56.0-67.2, 58.6-68.4 and 57.4-62.9 dB(A), respectively. While The L_{Aeq} -1 hr night-time of N1, N2 and N5 were ranged from 59.1-64.3, 57.9-68.6 and 53.0-58.0 dB(A), respectively. All of the result of L_{Aeq} -1 hr daytime and L_{Aeq} -1 hr night-time has complied with EQEG, 2015 for Industrial/ Commercial Area which determined L_{Aeq} -1 hr daytime and night-time not more than 70 dB(A).

However, the project provided environmental mitigation measure to reduce the impacts on excessive noise to disturb the nearby communities including carried out the construction activities with high noise level only at day time. PTTEPI also installed noise barrier (metal sheet) around the construction site to reduce noise impact to nearby communities. In addition, PTTEPI will continually monitor noise level as specified in the measure.

The comparison of noise level monitoring results in construction phase July 2020 and baseline data found that the result of L_{Aeq} -1 hr daytime and L_{Aeq} -1 hr night-time of 3 stations were slightly higher than baseline data. However, all of the result of L_{Aeq} -1 hr daytime and night-time in construction phase in July 2020 has complied with EQEG, 2015 for Industrial/ Commercial Area which determined L_{Aeq} -1 hr daytime and night-time not more than 70 dB(A). In addition, the project has continually monitoring, as specified in the measure for surveillance of environmental impact from the project construction activity.

4.2.3 Grievance Mechanism Monitoring

Grievance mechanism monitoring results for construction phase of PTTEPI's Yangon Office Building during January - June 2020 were done by PTTEPI. There was no any complaint from the community throughout the construction period.

4.2.4 Public and Occupational Health and Safety Monitoring

Public and occupational health and safety monitoring results for construction phase of PTTEPI's Yangon Office Building were done by the contractor during January – June 2020. There were total 9 cases of incident from project activity in the construction period including 1 case of fire incident, 4 cases of near miss, 3 cases of first aid case and 1 case of non-work related. Corrective actions were proposed/implemented to prevent reoccurrence.