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Environmental Management Plan

Suggati Hotel Development

Strand Road, Pabedan Ward, Mawlamyine, Mon State, Myanmar

SLP Environmental

SLP Environmental Co., Ltd.

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Southern Myanmar Mawlamyine Hotel Limited

Final Report, Revision 3

14th August 2020

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ACRONYMS AND ABBREVIATIONS

ADB	=	Asian Development Bank
AGAS	=	Asia Least Cost Green House Gas Abatement Strategy As Low
ALARP	=	As Reasonably Practicable
AMSL	=	Above Mean Sea Level
AMWQC	=	ASEAN Marine Water Quality Criteria
APPPC	=	Asia and Pacific Plant Protection Commission
ASEAN	=	Association of South East Asian Nations
AWPT	=	Asia World Port Terminal
BANCA	=	Biodiversity and Nature Conservation Association
CBOs	=	Community Based Organizations
CEnv	=	Chartered Environmentalist
CIA	=	Cumulative Impact Assessment
CITES	=	Convention on International Trade in Endangered Species of Wild Fauna & Flora
COC	=	Chain of Custody
CSci	=	Chartered Scientist
CSOs	=	Civil Society Organizations
CSR	=	Corporate Social Responsibility
CYDL	=	City of Yangon Development Law
DCI	=	Dulwich College International
DHSHD	=	Department of Human Settlements and Housing Development
DOH	=	Department of Health
E&S	=	Environmental and Social
ECC	=	Environmental Compliance Certificate
ECD	=	Environmental Conservation Department
ECD	=	Environmental Conservation Department
ECL	=	Environmental Conservation Law
EIA	=	Environmental Impact Assessment
EMMP	=	Environmental Management and Monitoring Plan
EMP	=	Environmental Monitoring Plan
ENC	=	English National Curriculum
EPAS	=	Environmental Parameter Air Stations
EPAS	=	Environmental Perimeter Air Stations
EPC	=	Engineering Procurement Construction
EQG	=	Environmental Quality Guidelines
EQS	=	Environmental Quality Standards
ERP	=	Emergency Response Plan
ESHS	=	Environmental, Social and Health & Safety
IEE	=	Environmental and Social Impact Assessment
ESMS	=	Environmental and Social Management System
EU	=	European Union
FIC	=	Farmland and other Lands Confiscation Investigation Commission
FIL	=	Foreign Investment Law
FOM	=	Field Operations Manager
GITC	=	Global Infinity Trading and Construction
GoM	=	Government of Myanmar

HPH	=	Hutchison Port Holdings
HSP	=	Health and Safety Plan
IBC	=	Intermediate Bulk Container
IEE	=	Initial Environmental Examination
IFC EHSG	=	International Finance Corporation Environmental Health and Safety Guidelines
IFC PS	=	International Finance Corporation Performance Standards
IFC	=	International Finance Corporation
ILO	=	International Labor Organization
ISO	=	International Standard Organization
IUCN	=	International Union for Conservation of Nature
KP	=	Kyoto Protocol
MCIWEM	=	Member of the Chartered Institute of Water and Environmental Management
MIC	=	Myanmar Investment Commission
MITT	=	Myanmar International Terminal Thilawa
MODIS	=	Moderate Resolution Imaging Spectroradiometer
MOECAF	=	Ministry of Environmental Conservation and Forestry
MOGE	=	Myanmar Oil and Gas Enterprise
MSDS	=	Material Safety Data Sheet
NHC	=	National Health Committee
NHP	=	National Health Plan
OHD	=	Occupational Health Division
OHSE	=	Occupational Health, Safety and Environment
PAP	=	Project Affected People
PCCD	=	Pollution Control and Cleansing Department
PDCAML	=	Prevention from Danger of Chemicals and Associated Materials Law
PM	=	Project Manager
PS	=	Performance Standards
QA/QC	=	Quality Assurance and Quality Control
QAP	=	Quality Assurance Plan
SHE	=	Safety, Health and Environment
SPS	=	Safeguard Policy Statement
STP	=	Sewage Treatment Plant
TBS	=	Traffic Baseline Survey
TED	=	Thanlyin Estates Development
TMP	=	Traffic Management Plan
TSS	=	Total Suspended Solids
U.S. EPA	=	United States Environmental Protection Agency
UNDP	=	United Nations Development Program
UNESCO	=	United Nations Educational, Scientific and Cultural Organization
UNFCCC	=	United Nation Framework Convention on Climate Change
UNOSAT	=	United Nations Operational Satellite Applications Programme
USEPA	=	United States Environmental Protection Agency
WHO	=	World Health Organization
WPAL	=	Wildlife and Protected Areas Law
YCDC	=	Yangon City Development Committee
YSH	=	Yoma Strategic Holdings

စီမံကိန်းအနှစ်ချုပ်

စီမံကိန်း မိတ်ဆက်	
စီမံကိန်းနောက်ခံ	SLP ပတ်ဝန်းကျင်ရေးရာ ကုမ္ပဏီလီမိတက်သည် တောင်ပိုင်းမြန်မာမော်လမြိုင် ဟိုတယ် လီမိတက် (စီမံကိန်း ဆောင်ရွက်သူ) ဆောင်ရွက်နေသော မွန်ပြည်နယ်၊ မော်လမြိုင်မြို့၊ ပန်းဘဲတန်းရပ်ကွက်၊ ကမ်းနားလမ်းပေါ်ရှိ (စီမံကိန်းနေရာ) အခန်း ၇၂ ခန်းပါဝင်သော သုဂတိ ဟိုတယ် (ဤစီမံကိန်း) နှင့်ပတ်သက်၍ တည်ဆောက်ရေးနှင့် လုပ်ငန်းလည် ပတ်ခြင်းအဆင့်၌ လိုအပ်သော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီစဉ် အစီရင်ခံစာရေးဆွဲရန် ခန့်အပ်ခြင်းခံခဲ့ရပါသည်။
စီမံကိန်း ယေဘူယျအမြင်	အဆိုပါစီမံကိန်းတွင် အပန်းဖြေ အနှိပ်ခန်း၊ အားကစား၊ လေ့ကျင့်ခန်း၊ စားသောက်ဆိုင်၊ အခမ်းအနားများကျင်းပရန်အခန်းများ၊ တိုက်ခန်းတစ်ခုနှင့် ဧည့်တည်းခိုရန် အခန်း ၇၂ ခန်းတို့ဖြင့် ပါဝင်ဖွဲ့စည်းထားသည့် အဆင့် ၃ ရှိသည့် ခြောက်ထပ်ဟိုတယ်တစ်ခုဖြစ် ပါသည်။ အဆိုပါစီမံကိန်းအား စုစုပေါင်း မြေနေရာ ၁၇၈၃.၆၃ စတုရန်းမီတာတွင် စုစုပေါင်း ကြမ်းပြင်ဧရိယာ (GFA) ၃၉၈၅ စတုရန်းမီတာနှင့် ဖွဲ့စည်းထားကြောင်း မှတ်သားရပါသည်။
စည်းမျဉ်းမူဘောင်နှင့်လေ့လာရေး စံနှုန်းများ	ဤပတ်ဝန်းကျန်စီမံခန့်ခွဲမှုအစီအစဉ်အားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) အပိုဒ် ၆၃ (ဇ) ပါ သတ်မှတ် ပြဋ္ဌာန်း ချက်များနှင့် အညီ ရေး သား ပြုစုထားသည့်အပြင် နိုင်ငံတကာဘဏ္ဍာရေး ကော်ပိုရေးရှင်း (IFC) ၏ ဟိုတယ်နှင့်ခရီးသွား လုပ်ငန်းတိုးတက်ရေးအတွက် ချမှတ်ထားသော (ဧပရယ် ၂၀၁၇) ပတ်ဝန်းကျင် ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေးဆိုင်ရာ လမ်းညွှန်ချက်များနှင့် အညီ ပြင်ဆင်ခဲ့ ပါသည်။
လေ့လာရေး ဦးတည်ချက်များ	အဆိုပါ EMP လေ့လာမှုလုပ်ငန်းစဉ်၏ အဓိက ရည်ရွယ်ချက်များ မှာ အောက်ပါ အတိုင်းဖြစ်ပါသည်။ ယခုလက်ရှိတည်ရှိနေသော သက်ရှိသဘာဝ၊ ဓါတုနှင့် ဇီဝဝန်းကျင်စနစ်များ၊ စီမံ ကိန်းဧရိယာ၏ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားခြုံငုံသုံးသပ်ခြင်း အချက်အ လက်များ ပံ့ဖော်ရန်၊ ဖြစ်နိုင်ခြေရှိထိခိုက်လွယ်သော ပတ်ဝန်းကျင်၊ လူမှုစီးပွားနှင့် ယဉ်ကျေးမှု သက် ရောက်ခံများအား သတ်မှတ်ရန် ပတ်ဝန်းကျင် လူမှုစီးပွားနှင့် ယဉ်ကျေးမှု သက်ရောက်ခံများနှင့် ပတ်သက်ပြီး ဖော်ပြပါ အကြောင်းအရင်းများနှင့် သိသာထင်ရှားစွာ ဆက်နွယ်မှု ရှိကြောင်း သတ်မှတ်ရန် စီမံကိန်း လုပ်ငန်းစဉ်များအား ဆန်းစစ်ရန်၊ စီမံကိန်းလုပ်ဆောင်မှုများ၏အကျိုးဆက်ကြောင့် ပတ်ဝန်းကျင်နှင့်သက်ရောက်ခံများအား ဖြစ်နိုင်ခြေရှိသိသာထင်ရှားသောဆိုးကျိုးသက် ရောက်မှုများအား သတ်မှတ်ရန်၊

	ဖြစ်နိုင်ခြေရှိသော၊ ရှောင်ရှားနိုင်သော၊ လျော့ချနိုင်သော၊လျော့ပါးစေနိုင်သော သတ်မှတ်ထားသည့်သိသာထင်ရှားသောဆိုးကျိုးများစီမံကိန်းနှင့်သင့်လျော် ခိုင်မာ သော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်များ ပုံဖော်ရန်၊ စီမံကိန်းအား သက်ဆိုင်ရာ ဥပဒေပြုလိုအပ်ချက်များနှင့် အလေ့အကျင့်ကောင်း လမ်းညွှန်ချက်များနှင့် ကိုက်ညီဖွံ့ဖြိုးပြီးကြောင်း သေချာစေရန်တို့ ဖြစ်သည်။
အတိုင်ပင်ခံ အရည်အချင်း	SLP ပတ်ဝန်းကျင်ရေးရာသည် MOECAF မှမြန်မာနိုင်ငံတွင် IEE/EIA/EMP အစီရင်ခံစာများ ပြုစုရန်အတည်ပြုချက်ရ ထားသောကြားခံအဖွဲ့အနေဖြင့် ၁ ရက်နေ့ ဂျူလိုင် ၂၀၁၇ တွင် လိုင်စင်အမှတ် ၀၀၀၈ ဖြင့်စာရင်းသွင်းထားခြင်း ခံထားရပါသည်။
စီမံကိန်းအကြောင်းအရာ	
စီမံကိန်းနေရာနှင့် အကြောင်းအရာ	စီမံကိန်း တည်နေရာသည် ရန်ကုန်တိုင်းမှ အရှေ့တောင်ဘက် ၃၀၀ ကီလို မီတာ အကွာအဝေးရှိ သံလွင်မြစ်ဝပေါ်၌ တည်ရှိသော မွန်ပြည်နယ် ၊ မော်လမြိုင်မြို့ ပန်းဘဲတန်းရပ်ကွက်၊ သိပ္ပံလမ်းနှင့် ကမ်းနားလမ်းဒေါင့် အမှတ် ၅၈ တွင်တည်ရှိပါသည်။ စီမံကိန်းတည်နေရာ သည် မော်လမြိုင်မြို့၏ မြို့ထဲ ဇရိယာ အတွင်းတည်ရှိပြီး စီမံကိန်းဇရိ ယာအတွင်း အဓိက မြေယာအသုံး ပြုမှုမှာ လူနေအိမ်ခြေများနှင့် စီးပွားရေးအဆောက်အဦး တို့ဖြစ်ကြပါသည်။ စီမံကိန်း၏ စုစုပေါင်းမြေနေရာမှာ ၁၇၈၃.၆၃ စတုရန်းမီတာဖြစ်ပြီး စီမံ ကိန်း၏ ပထဝီအနေအထားအရ စီမံကိန်းအလည်တည်နေရာသည် ၁၆˚ ၂၈′ ၁၄.၆၀″ နှင့် ၉၇˚ ၃၇′ ၁၇.၁၄″ အရှေ့ဖြစ်ပါသည်။
ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်	စီမံကိန်းနေရာတွင် ဆောက်လုပ်ရေးလုပ်ငန်းများအား ရက် ၃၀၀ အတွင်း ပြီးဆုံးခြင်း နှင့် လွှဲပြောင်းမှုကို ၂၀၁၈ ခုနှစ်ဇူလိုင်လတွင် လွှဲပြောင်းရန်စီ စဉ်ထားပါသည်။
ဆောက်လုပ်ရေးအဆင့် လှုပ်ရှားမှုများ	အကျဉ်းချုပ်အားဖြင့် စီမံကိန်းဆောက်လုပ်ရေးအဆင့်သည် အောက်ပါတို့ ပါဝင်ပါသည်။ စီမံကိန်း မြေနေရာရှင်းလင်းခြင်း၊စီမံကိန်း မြေနေရာအား ယာယီရုံးခန်းများနှင့် သန့်စင်ခန်း ဆောက်လုပ်ခြင်း၊ ပတ်ဝန်းကျင်အား ခြံစည်းရိုးစိုက်ထူခြင်း၊ ယာယီရေနုတ်မြောင်း တူးဖော်ခြင်းနှင့် အတူမြို့တွင်းရေပေးဝေမှုနှင့် လျှပ်စစ်ဓါတ်အားလိုင်း ချိတ်ဆက်ခြင်း၊ အသင့်ပြုလုပ်ပြီးသား ကွန်ကရစ်များ အသုံးပြု၍ အဆောက်အဦး အုတ်မြစ်ချခြင်းနှင့် တိုင်စိုက်ခြင်း၊ ယခင် အဆောက်အဦးပိုင်ရှင်၏ အဆောက်အဦး အောက်ခြေနှင့် အပေါ်ထပ်အအဆောက်အဦးအား လက်ရှိ ၆ ထပ်ကွန်ကရစ်ပုံစံသို့ ပြုပြင်မွမ်းမံခြင်း၊ ဥပမာ ဗိသုကာ ဒီဇိုင်းနှင့် မသင့်လျော်သော အရှေ့မျက်နှာစာအား ပြောင်းလဲခြင်း (ခုတ်ထစ်ခြင်း၊ ဖြိုဖျက်ခြင်း၊ ပြန်လည်ပြုပြင်တည်ဆောက်ခြင်း)ပြင်ပအုတ်နံရံ ခြံဝင်းခတ်ခြင်း လုပ်ငန်းများ၊အတွင်းပိုင်း အခန်းနံရံ ဆောက်လုပ်ခြင်းနှင့် MEP (စက်ပစ္စည်း၊ လျှပ်စစ်ပစ္စည်းနှင့် ရေပိုက်တပ်ဆင်) လုပ်ငန်းများ လုပ်ဆောင်ခြင်း၊အတွင်းပိုင်း ဒီဇိုင်းများ အံဝင်ဂွင်ကျမှု လုပ်ငန်းများ-ဗီနိုင်းကြမ်းခင်း၊ ကော် ဇော

	ကြမ်းခင်း၊ တစ်သားတည်းညီသော ကြွေပြားခင်းခြင်း၊ ရောင်စုံ ရုပ်ပုံကြွေပြားခင်း ခြင်း ၊ ဂေါဒိန ကျောက်ပြား နံရံကပ်ခြင်း၊ သဘာဝ ကျောက်တုံးများအရောင်တင်ခြင်း၊ ဗီဒိုများနှင့် စားပွဲများ ပလက်စတစ်လောင်းခြင်း၊ မီးအလင်းရောင်ချိန်ညှိတပ်ဆင် ခြင်းများ၊ အပြင်ပိုင်းမျက်နှာ စာ ဆေးခြယ်ခြင်း၊ကြမ်းခင်းခြင်း၊ ဗီနိုင်းကပ်ခြင်း၊ ကော်ဇော သို့မဟုတ် အုပ်ကြွပ်ကပ်ခြင်း တံခါးပေါက်နှင့် ပြတင်းပေါက်များ- ပြတင်းပေါက်အတွက် အလူမီနီယံ ဘောင်များ နှင့်ဖန်များ တပ်ဆင်ခြင်း၊ အဆောက်အဦး နောက်ပေါက် များအတွက်သစ်သား တံခါးများ တပ်ဆင်ခြင်း၊ လှေကားများအတွက် မီးပူခံတံခါးများ တပ်ဆင်ခြင်း နှင့် ဧည့်အခန်းများအတွက် ပလက်စ တစ်လောင်းတံခါးများ တပ်ဆင်ခြင်း၊ရေတင်ခန်းနှင့် မြေအောက်သိုလှောင်ကန် တည်ဆောက် ခြင်း၊အဝတ်လျှော်အဆောက်အဦး ဆောက်လုပ်ရေးနှင့်အပြင်ပိုင်း နှင့် ရှုခင်းလုပ်ငန်းများ - ကွန်ကရစ်ခင်းခြင်း၊ အုပ်ကြွပ်များ ချိတ်ခြင်း၊ မြက်ခင်းများ၊ ခြံများနှင့်သစ်ပင်များ၊
လုပ်ငန်းလည်ပတ်မှုအဆင့် လှုပ်ရှားမှုများ	အဆိုပါစီမံကိန်း၏ ဆောက်လုပ်ခြင်းနှင့် လုပ်ငန်းလည်ပတ်ခြင်းတွင် စုစုပေါင်းမြေနေရာ ၁၇၈၃.၆၃ စတုရန်းမီတာပေါ်ရှိစုစုပေါင်း ကြမ်းခမ်းဧရိယာ (GFA) ၃၉၈၅ စတုရန်းမီတာတွင် စုစုပေါင်း အခန်း ၇၂ ခန်းနှင့် ခြောက်လွှာ (မြေညီထပ်၊ ထပ်ခိုး၊ တစ်လွှာ၊ နှစ်လွှာ၊ သုံးလွှာ၊ လေးလွှာ၊ စီမံအုပ်ချုပ်ခြင်း အလွှာ) တည်ဆောက်ထားပါသည်။ မြေညီထပ်စုစုပေါင်းကြမ်းခင်း ဧရိယာ ၆၈၅ စတုရန်းမီတာတွင် ဟိုတယ်တစ်ခု၏ အထောက် အပံ့အသုံးဆောင်ပစ္စည်းများနှင့် အနားယူရန်အဆောက်အဦးများပါဝင်ပါသည်။ ထပ်ခိုး အလွှာနှင့် ပထမအထပ်တွင် ဟိုတယ်၏အနောက်ဘက် အဆောက်အဦးအပါအဝင် စုစုပေါင်း ဧရိယာ ၅၉ နှင့် ၆၄၈ စတုရန်းမီတာတွင် ဟိုတယ်တစ်ခု၏ အထောက်အပံ့ အသုံးဆောင် ပစ္စည်းများနှင့် အနားယူရန်အဆောက်အဦးများ ပါဝင်ပါသည်။ ဟိုတယ်ထပ်ခိုးအထပ်စုစုပေါင်း ၅၉ စတုရန်းမီတာတွင် မန်နေဂျာ အခန်းတစ်ခန်း၊ စီမံခန့်ခွဲ ခြင်းနှင့် ဘဏ္ဍာရေးတစ်ခန်း၊ သန့်ရှင်းရေးဝန်ထမ်းများ နားနေခန်းတစ်ခန်း၊ ပစ္စည်းသိမ်း ဆည်းရန်တစ်ခန်း (အမျိုးသားနှင့် အမျိုးသမီး) တို့ပါဝင်ပါသည်။ ပထမအထပ် စုစုပေါင်း ၆၄၈ စတုရန်းမီတာတွင် ဟိုတယ်၏ ဝန်ဆောင်မှုများအနေဖြင့် ဟင်းလင်းပြင်နေရာစားစရာ သိုလှောင်ခန်းတစ်ခန်း၊ ဘုတ်အဖွဲ့အစည်းဝေးခန်းတစ်ခန်း၊ အိမ်သာများ (အမျိုးသားနှင့် အမျိုးသမီး)၊ မီးဖိုချောင်တစ်ခန်း၊ အားကစား တစ်ခန်း၊ ဓါတ်လှေခါးနှစ်ခု၊ စား စရာပို့ဆောင်သော ဓါတ်လှေခါးတစ်ခု နှင့်သိုလှောင်ခန်းသုံးခန်းတို့ပါဝင်ပါသည်။ ဒုတိယအထပ်တွင် ဧည့်သည် တည်းခိုခန်း ၁၇ ခန်းနှင့် အိပ်ရာ၊ ရေချိုးခန်း၊ မီးဖိုချောင်၊ ထမင်းစားခန်း နှင့် ဧည့်ခန်းပါဝင်သော တိုက်ခန်းငယ်တစ်ခုတို့ပါဝင်ပါသည်။ ထိုအထပ်တွင် ဟိုတယ်၏ ဝန်ဆောင်မှုများအနေဖြင့် သန့်ရှင်းရေး ဝန်ထမ်းများ နားနေခန်း တစ်ခန်း၊ လျှပ်စစ်ထိန်းသိမ်းရေးအခန်းတစ်ခန်း၊ ဓါတ်လှေခါးနေရာနှင့် ဓါတ်လှေခါးနှစ်ခုတို့ ပါဝင်ပါသည်။ ဒုတိယအထပ် စုစုပေါင်းမှာ ၆၄၈ စတုရန်းမီတာဖြစ်ပါသည်။

	တတိယအထပ်နှင့် စတုတ္ထအထပ်တွင် စုစုပေါင်းဧည့်နားနေခန်း ၁၉ ခန်းပါဝင်ပါသည်။ ထိုအထပ်တွင် ဟိုတယ်၏ဝန်ဆောင်မှုများအနေဖြင့် သန့်ရှင်းရေး ဝန်ထမ်းများနားနေခန်း တစ်ခန်း၊ လျှပ်စစ် ထိန်းသိမ်းရေးအခန်းတစ်ခန်း၊ ခါတ်လှောခါးနေရာနှင့် ခါတ်လှောခါးနှစ်ခု ပါဝင်ပါသည်။ တတိယ အထပ်နှင့် စတုတ္ထအထပ်တစ်ထပ်ချင်းဆီ၏ ဧရိယာမှာ ၆၄၈ စတုရန်းမီတာဖြစ်ပါသည်။ စီမံခန့်ခွဲရေး အထပ် (ငါးလွှာ) တွင်စုစုပေါင်း ဧည့်နားနေခန်း ၁၇ ခန်းပါဝင်ပါသည်။ ထိုအထပ်တွင် ဟိုတယ်၏ ဝန်ဆောင်မှုများအနေဖြင့် ဥက္ကဋ္ဌ နားနေခန်းတစ်ခန်း၊ သန့်ရှင်းရေးဝန်ထမ်းများနားနေခန်း တစ်ခန်း၊ လျှပ်စစ် ထိန်းသိမ်းရေး အခန်းတစ်ခန်း ခါတ်လှောခါးနေရာနှင့် ခါတ်လှောခါးနှစ်ခု ပါဝင်ပါသည်။ စီမံခန့်ခွဲရေး အထပ် (ငါးလွှာ) စုစုပေါင်း ဧရိယာမှာ ၆၄၈ စတုရန်းမီတာဖြစ်ပါသည်။ ထပ်ဆုံးအထပ်တွင် ဖော်ပြပါ အသုံးဆောင်ပစ္စည်းများ ပါဝင်ပါသည်။ စုစုပေါင်း ဧရိယာ ၆၄၈ စတုရန်းမီတာတွင် စက်ပစ္စည်း၊ လျှပ်စစ်ပစ္စည်းနှင့် ရေပိုက်တပ်ဆင်ခြင်းများအတွက် အခန်းတစ်ခန်းနှင့် မီးသတ်ရေ သိုလှောင်စည် (၁၈၀၀ ဂါလန်) ပါဝင်ပါသည်။ အများဆုံးအဆောက်အဦးအမြင့်မှာ ၂၆.၇၆ မီတာရှိပြီး (ခေါင်မိုးထပ် ကားတင်ရာ နေရာထိ) ကား ၁၅ စီးရပ်နားနိုင်သော ကားပါကင်တစ်ခုရှိပါသည်။ ပင်မလျှပ်စစ်ခါတ်အားပေး စက်ရုံမှ ခါတ်အားလိုင်းကွန်ယက်နှင့်အတူ ၁၀၀ ရာခိုင်နှုန်းအသင့်အနေအထား လျှပ်စစ်ပေးနိုင် သောဒီဇယ်မီးစက်လည်း ထားရှိပါသည်။ ရေလိုအပ်ချက်များအတွက် စီမံကိန်းမြေနေရာ အတွင်းရှိ ပေ ၁၂၀ နက်သော မြေအောက် အဝိစိတွင်းနှစ်တွင်းမှ ထောက်ပံ့ပေးပြီး ရေဆိုးများ မစွန့်ထုတ်မှီ ရေဆိုးများအား စစ်ထုတ် ခြင်း၊ အနည်ထိုင်စေခြင်း၊ လေလှည့်ပတ်စေခြင်း (အခြေခံ ရေဆိုးပြုပြင်ခြင်း စနစ်) များဖြင့် ပြုပြင်ပြီးမှ စွန့်ထုတ်ပါသည်။
အကျိုးသက်ရောက်မှု ဆန်းစစ်ခြင်း	
အကျိုးသက်ရောက်မှု အရင်းအမြစ်များ	ပတ်ဝန်းကျင်၊ လူမှုစီးပွာ ယဉ်ကျေးမှု သက်ရောက်ခံများနှင့် ပက်သက်သော ဖြစ်နိုင်ခြေရှိ သော သက်ရောက်မှုများ ပါဝင်သော စီမံကိန်းတည်ဆောက်နေစဉ်နှင့် လုပ်ငန်းလည်ပတ်မှု အဆင့်နှင့် ဆက်နွယ်သော အခြေခံ လုပ်ဆောင်ချက်များအား အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

လုပ်ဆောင်မှုများ/ဖြစ်နိုင်ခြေရှိ သက်ရောက် မှု အရင်းအမြစ်	ဆောက်လုပ်ခြင်း	လုပ်ငန်းလည်ပတ်ခြင်း
တည်ဆောက်ရေးလုပ်ငန်းစဉ်များ	✓	
လုပ်ငန်းခွင် စီမံခန့်ခွဲမှုလုပ်ငန်းစဉ်များ	✓	
လျှပ်စစ်အသုံးပြုမှု	✓	✓
ရေအသုံးပြုမှု	✓	✓
အန္တရာယ်ဖြစ်စေသော ပစ္စည်းများ (သိုလှောင်ခြင်းနှင့် အသုံးပြုခြင်း)	✓	✓
အန္တရာယ် ဖြစ်စေသော စွန့်ပစ်ပစ္စည်းများထုတ်လွှတ်မှု	✓	✓
အန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများ ထုတ်လွှတ်မှု	✓	✓
မိလ္လာရေဆိုးများ ထုတ်လွှတ်မှု	✓	✓
ပရိုပိန်း (သိုလှောင်ခြင်းနှင့် အသုံးပြုခြင်း)	✓	✓

ဖြစ်နိုင်ခြေရှိသော အကျိုးသက်ရောက်မှုများ

သက်ရောက်မှု သတ်မှတ်ခြင်းလေ့လာမှုအား စီမံကိန်းတည်ဆောက်ခြင်းနှင့် လုပ်ငန်းလည်ပတ်ခြင်း အဆင့်တွင် သိသာထင်ရှားသော ဆိုးကျိုးသက်ရောက်မှုနှင့် ပတ်သက်ပြီး အသေးစိတ်များကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဆောက်လုပ်ဆဲအဆင့်	
ပတ်ဝန်းကျင်ဆိုင်ရာ	
လုပ်ဆောင်မှုများ/ သက်ရောက်မှု ဖြစ်ပွားနိုင်သောအရင်းအမြစ်	**ဖြစ်နိုင်ခြေရှိ သက်ရောက်မှုများ**
ဆောက်လုပ်ရေး လုပ်ငန်းစဉ်များ	လေထုအရည်အသွေးယိုယွင်းခြင်း
	အနှောင့်အယှက် ဖြစ်စေသော ဆူညံမှုများ
ရေထောက်ပံ့မှု	မြေကျွံကျခြင်း
	မြေအောက်ရေ အရည်အသွေး
	ရေအရင်းအမြစ်
မိုးရေစွန့်ထုတ်မှု	မြေပေါ်ရေ အရည်အသွေး
	ရေအရင်းအမြစ်
	ရေချိုဂေဟဗေဒ
ဆောက်လုပ်ရေး လုပ်ငန်းစဉ်များ	လေထုအရည်အသွေး
	အနှောင့်အယှက်ဖြစ်စေသော ဆူညံမှုများ
ရေထောက်ပံ့မှု	ရေထုအရည်အသွေး ယိုယွင်းခြင်း

		ရေရရှိမှု အာမခံချက်ရှိခြင်း
	မိုးရေစွန့်ထုတ်မှုများ	ရေထုအရည်အသွေးယိုယွင်းခြင်း
		ရေရရှိမှု အာမခံချက်
	လုပ်ငန်းလည်ပတ်မှု အဆင့်	
	ပတ်ဝန်းကျင်ဆိုင်ရာ	
	လုပ်ဆောင်မှုများ/ သက်ရောက်မှု ဖြစ်ပွားနိုင်သောအရင်းအမြစ်	**ဖြစ်နိုင်ခြေရှိ သက်ရောက်မှုများ**
	ရေထောက်ပံ့မှု	မြေကျွံကျမှု
		မြေအောက်ရေ အရည်အသွေး
		ရေအရင်းအမြစ်
	လူထုကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံမှု	
	လုပ်ဆောင်မှုများ/ သက်ရောက်မှု ဖြစ်ပွားနိုင်သောအရင်းအမြစ်	**ဖြစ်နိုင်ခြေရှိ သက်ရောက်မှုများ**
	ရေထောက်ပံ့မှု	ရေထုအရည်အသွေး ယိုယွင်းခြင်း
		ရေရရှိမှု အာမခံချက်
ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်းနှင့် လေ့လာစောင့်ကြည့်ခြင်း အစီအစဉ် (EMMP)		
EMMP ခြုံငုံသုံးသပ်ချက်	ယင်းအဆိုပြုဟိုတယ်စီမံကိန်းသည် ဒေသခံပြည်သူ ၇၆ ဦးအား အလုပ်အကိုင်အခွင့်အလမ်းရရှိနိုင်ရန်စီစဉ်ထားပြီး ၎င်းတို့၏ လုပ်ငန်းကျွမ်းကျင်စေရန်နှင့် တန်ဖိုးရှိသော ဟိုတယ်နှင့်ခရီးသွားလုပ်ငန်းများအတွက် လူသားအရင်းအမြစ်များဖြစ်လာစေရန် စွမ်းရည်မြှင့်တင်ရေးအစီအစဉ်များ လည်းစီစဉ်ထားပါသည်။ လုပ်ငန်းစဉ်အဆင့်တိုင်းတွင် အနည်းငယ်သောထိခိုက်မှုများအား တွေ့ရပြီးသိသာထင်ရှားမှုမရှိသော သက်ရောက်မှုများနှင့် ဆက်လက်တည်မြဲရန်မသင့်သော သက်ရောက်မှုများအား သတ်မှတ်ဖော်ပြထားပါသည်။ သိသာထင်ရှားမှုမရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှု (၂၉) ခုအားတွေ့ရှိခဲ့ရပါသည်။ ဆောက်လုပ်ရေးကာလတွင် သိသာထင်ရှားမှုအနည်းငယ်ရှိသော သက်ရောက်မှုများအနေဖြင့် ရေဆိုးနှင့်စွန့်ပစ်အမှိုက်သရိုက်များကို သံလွင်မြစ်ထဲသို့မစွန့်ပစ်ရန်နှင့် စွန့်ပစ်ပစ္စည်းများစုထားခြင်း၊ အမျိုးအစားခွဲခြားခြင်းနှင့် စွန့်ပစ်ခြင်းစသည်တို့ပါဝင်သော စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲရေးအစီအစဉ်အား အသုံးပြုရန်ဖော်ပြထားပါသည်။ လုပ်ငန်းလည်ပတ်နေစဉ်ကာလတွင် အဝီစိတွင်းမှ ရေကို တစ်နှိုင်တစ်ပိုင် သုံးစွဲမည်ဖြစ်သောကြောင့် ရေအရင်းအမြစ်လျော့နိုင်လာမှုအပေါ် အကျိုးသက်ရောက်မှု နည်းစေမည်ဖြစ်ပါသည်။ ရေသုံးစွဲမှုပမာဏ လျော့ချရန်အတွက် အသုံးပြုမည့်နည်းလမ်းများမှာ ရေမီတာတပ်ဆင်ခြင်းနှင့် ရေသုံးစွဲမှုထိန်းချုပ်သော ကိရိယာများတပ်ဆင်အသုံးပြုခြင်း တို့ဖြစ်ပါသည်။ မိလ္လာအညစ်အကြေးများနှင့် အမှိုက်များ စွန့်ပစ်ခြင်းကို လျော့ချရမည်ဖြစ်သောကြောင့် မိလ္လာအညစ်အကြေးများပြန်လည်ခွဲခြားသန့်စင်သောစက်များ တပ်ဆင်ခြင်းနှင့် သင့်လျော်သော အမှိုက်အမျိုးအစားခွဲခြားသတ်မှတ်၍ စွန့်ပစ်သောနည်းများ အသုံးပြုရသဖြင့် ပတ်ဝန်းကျင်အပေါ် အကျိုးသက်ရောက်မှုကို	

	လျော့နည်းစေပါသည်။ လုပ်ငန်းလည်ပတ်နေစဉ်ကာလအတွင်း အညစ်အကြေးချွတ်ဆေး၊ ကလိုရင်းအရည်/ဆေးပြားများ၊ သန့်ရှင်းရေး၊ လျှော်ဖွပ်ရေး၊ ရေကူးကန်နှင့် စွန့်ထုတ်မှုများ ဖြစ်ပေါ်စေနိုင်ပါသည်။ ထိုကဲ့သို့ အညစ်အကြေးများ စိမ့်ထွက်ခြင်းနှင့် စီးဝင်ခြင်းမျိုး မဖြစ်ပေါ်စေရန် သိုလှောင်ကန်များ အသုံးပြုခြင်းနှင့် ပတ်ဝန်းကျင်အပေါ် ထိခိုက်မှုနည်းသောပစ္စည်းများ ရွေးချယ်အသုံးပြုခြင်းအားဖြင့် ဖြေရှင်းမည်ဖြစ်ပါသည်။ ထို့အပြင် ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်းနှင့် ဧည့်သည်များလာရောက်ခြင်းတို့ကြောင့် ဆူညံမှုနှင့် လေထုညစ်ညမ်းမှုများ စသည့်သိသာထင်ရှားမျှနည်းသည့် အကျိုးသက်ရောက်မှုများကို ဆူညံသံနှင့်လေထုပုံမှန်တိုင်းတာခြင်း၊ သင့်လျော်သောကာကွယ်ရေးကိရိယာများ အသုံးပြုခြင်းနှင့် စက်များပုံမှန်စစ်ဆေးခြင်းများ ဂရုစိုက်လုပ်ဆောင်မည်ဖြစ်ပါသည်။ ကျန်းမာရေးနှင့်ဘေးကင်းလုံခြုံရေးအကျိုးသက်ရောက်မှုအနေဖြင့် ဆောက်လုပ်ခြင်း၊ လုပ်ငန်းလည်ပတ်ခြင်းနှင့် ပြန်လည်ဖျက်သိမ်းခြင်း ကာလများအတွင်း သယ်ယူပို့ဆောင်ရေးတွင် အသုံးပြုသော ကားမတော်တဆဖြစ်မှုများဖြစ်ခြင်း၊ စက်ကိရိယာများအသုံးပြုခြင်း၊ ဓါတ်လိုက်ခြင်း၊ မီးဘေးနှင့် အမြင့်မှ ပြုတ်ကျခြင်း၊ လုပ်ငန်းခွင်မတော်တဆမှု၊ ပစ္စည်းများပြုတ်ကျခြင်း၊ ပစ္စည်းသယ်ခြင်း စသည့်ဘေးကင်းမှုဆိုင်ရာ အန္တရာယ်များကိုတွေ့ရှိနိုင်ပါသည်။ မီးဘေးအန္တရာယ်နှင့် စက်ပစ္စည်းများကြောင့် ဖြစ်လာမည့်အန္တရာယ်များကို လုံခြုံရေးစက်များပါဝင်သည့် ခေတ်မှီနည်းပညာများ အသုံးပြုကာ လျှော့ချရန် စီစဉ်ထားပြီးဖြစ်ပါသည်။ ထိုအန္တရာယ်များ လျော့နည်းစေရန် ဘေးကင်းရေးပညာပေး သင်တန်းများ၊ ရှေးဦးသူနာပြုစုနည်းများ၊ အခမဲ့ဆေးဝါးများနှင့် အရေးပေါ်အခြေအနေတွင် အနီးဆုံးဆေးရုံသို့ အမြန်ဆုံးပို့ဆောင်နိုင်ရန် စီစဉ်ထားခြင်း၊ မိမိကိုယ်ကို ကာကွယ်နိုင်မည့် လက်အိတ်၊ ဦးထုတ်များ၊ မျက်မှန်များ၊ နားကာများ ဝတ်ဆင်ခြင်းများ လုပ်ဆောင်နေပါသည်။ ဖြစ်နိုင်ချေရှိသော ကျန်းမာရေး၊ ဘေးကင်းလုံခြုံရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများကို စီစဉ်၊ ဆောင်ရွက်၊ စစ်ဆေး၊ အရေးယူဟူသော ဗျူဟာဖြင့် ဆောင်ရွက်ရန်အတွက် ကျန်းမာရေး၊ လုံခြုံရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ တာဝန်ခံတစ်ယောက် ထားရှိမည်ဖြစ်သည်။ လျာထားစီမံကိန်းသည်ပတ်ဝန်းကျင်အပေါ် ခန္ဓာ၊ ဇီဝနှင့် လူမှုစီးပွားရေးဆိုင်ရာ အကျိုးသက်ရောက်မှုနည်းစေရန် ရည်ရွယ်ထားပါသည်။ အကျိုးသက်ရောက်မှုအားလုံးသည် စီမံကိန်းဧရိယာအတွင်းသာဖြစ်ပေါ်နိုင်ပြီး ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ခြင်းနှင့် ဖျက်သိမ်းခြင်းဟူသော အဆင့်သုံးဆင့်လုံးတွင် လုံလောက်သော လျော့ချရေးနည်းလမ်းများဖြင့် ပုံမှန်စောင့်ကြည့် စစ်ဆေးခြင်းအားဖြင့် လွယ်ကူစွာလျော့ချနိုင်မည်ဖြစ်သည်။ ဖြစ်နိုင်ချေရှိသော ဆိုးကျိုးများကို ပြည့်စုံသော လျော့ချရေး၊ စီမံခန့်ခွဲ ရေးနှင့် စောင့်ကြည့်စစ်ဆေးခြင်း၊ နည်းလမ်းများဖြင့် ဖြေရှင်းရန် EMP ရေးဆွဲထားသည်။

နိဂုံးချုပ်	
နိဂုံးချုပ်	SLP ပတ်ဝန်းကျင်ရေးရာသည် သုဂတိ ဟိုတယ်စီမံကိန်းနှင့် ပတ်သက်ပြီး စီမံကိန်းအကောင်အထည်ဖော်မှုအတွင်း ဥပဒေပြုလိုက်နာမှုချင့် ကောင်းသော အလေ့အကျင့်၏ စံချိန်စံညွှန်းများနှင့်အညီလုပ်ဆောင်နိုင်ရန် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးနှင့် သစ်တောရေးရာ ဝန်ကြီးဌာန၏ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းများနှင့် အညီပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်အား ရေးဆွဲပေးခဲ့ပါသည်။ အကြံပြုထားသည့် လျော့ပါးသက်သာရေး ဆောင်ရွက်ချက်များအား သင့်လျော်စွာ အကောင်အထည်ဖော်ပြီးနောက် စီမံကိန်းလုပ်ငန်းများကြောင့် ပတ်ဝန်းကျင် လူမှုသက်ရောက်ခံများအပေါ် ဖြစ်ပွားရသည့် အဓိက အရေးပါသော သက်ရောက်မှုများ မရှိနိုင်ကြောင်းနှင့် အကျိုးသက်ရောက်မှုအားလုံးအား အကြောင်းရင်းခိုင်လုံစွာလက်တွေ့ကျကျ နိမ့်ကျမှု ရှိစေရန် သင့်မြတ်လျော်ကန်စွာ လျော့ပါးစေကြောင်း EMP မှ ကောက်ချက်ချပါသည်။

Executive Summary

Project Introduction	
Project Background	SLP Environmental Co., Ltd (SLP) was appointed by Southern Myanmar Mawlamyine Hotel Limited (the 'Project Proponent) to prepare the Environmental Management Plan (EMP) for construction and operation phases for the 72 room **Suggati Hotel development** (the 'Project') situated on Strand Road, Pabedan Ward, Mawlamyine, Mon State (the 'Project Site Area').
Project Overview	The Project is a 3 star city hotel which comprises of a six storey hotel with 72 Guest Rooms and one Apartment Suite, Restaurant, Function Rooms, Gym and Spa. The Project will have a Gross Floor Area (GFA) of 3,985 sq.m on a Total Plot Area of 1,783.63 sq.m.
Regulatory Framework and Study Benchmarks	This EMP report was prepared in general accordance with the requirements stipulated in Chapter VII of the ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE, Notification No. 616 / 2015 and cognisant of International Finance Corporation (IFC) EHSG for Tourism and Hospitality Developments (April 2007).
Study Objectives	The primary objectives of the EMP study were to: • Develop an environmental and socio-economic overview profile of the Project Site Area including the existing status of the physio-chemical and biological systems; • Identify potentially sensitive environmental and socio-economic cultural receptors; • Examine the activities of the Project in order to identify those aspects most likely to have significant interactions with environmental and social receptors; • Ensure that any potential significant adverse impacts on the natural environment and or socio-economic receptors are clearly identified; • Develop a suitably robust Environmental Management Plan (EMP) for the Project to ensure that any identified significant adverse impacts are, wherever practicable, avoided, minimized and or otherwise mitigated; and • Ensure that the Project is developed in conformance with the applicable legislative requirements and good practice guidelines.
Consultants Credentials	SLP Environmental is a MONREC accredited Third Party organization to prepare IEE/EIA/EMP reports in Myanmar with License No. 0008 dated 1st July 2017.
Project Description	
Project Site Location and Description	The Project Site is situated at No. 58, the corner of Strand Road and Theik Pan Street, Pabedan Ward, Mawlamyine, Mon State, located 300 km south east of Yangon at the mouth of Thanlwin River (Salween). The Project Site is located in the downtown area of Mawlamyine and the primary land-uses in the vicinity of the Project comprise of residential and commercial properties. The total Land plot area is approximately 1,783.63 sq. m and the approximate geographic coordinates for the centre of the Project Site are 16°28'14.60 °N 97°37'17.14° E.
Development Programme	The project will be constructed over 300 days with completion and handover scheduled for July 2018.

Construction Phase Activities	In summary, the construction phase of the project will comprise of the following activities: • Site clearance; • Erection of site office compound with offices and toilets, perimeter fencing; • Construction of temporary drainage and connections to local power grid and water supply; • Building foundation and piling for foundations using readymade concrete; • Modification to the existing 6 storey reinforced concrete structure from substructure and superstructure works of the previous owner e.g. front façade beams not suitable the architectural design has been changed (hacked/demolished/re-cast); • External brick wall enclosure works; • Internal partition walls construction and MEP (mechanical, electrical and plumbing) works; • Interior design fit-out works – vinyl flooring, carpet flooring, homogeneous tiles, mosaic tiles, gypsum board walling, natural stone finishes, laminated wardrobes and tables, lighting fixtures; • External façades painting works; • Flooring – vinyl, carpet or tiles; • Doors and windows - aluminium frame and glass for windows, wooden doors for back of house, fire-rated doors for staircases, laminated doors for guest rooms; • Pump room & underground tank construction; • Laundry building construction; and • Hardscape and landscape works - concrete paving, interlocking tiles, grass, shrub and trees.
Operation Phase Activities	The operational project comprises of a city hotel with 6 stories (ground floor, mezzanine, 1st floor, 2nd floor, 3rd floor, 4th floor, and executive floor) with a total of 72 rooms and a Gross Floor Area (GFA) of 3,985 sq.m on a total plot area of 1,783.63 sq. m. The ground floor will comprise of hotel facilities and amenities with a total footprint of 685 sq.m. Mezzanine floor and 1st floor of the building will comprise of facilities and amenities including hotel back of house totalling some 59 sq. m and 648 sq.m. Mezzanine floor will comprise of one Manager Room, one HR/Finance Room, one Housekeeping Room (uniforms) and one Locker Room (male and female) totalling some 59 sq. m. The 1st floor of the building will comprise of Amenities which include one Open Function Space, one Pantry, one Boardroom, Toilets (female and male), one Back of House, one Gym, Spa, two lifts, one dumb- waiter and three storage rooms measuring approximately 648 sq. m. in total. The 2nd floor will contain seventeen guest rooms and one Apartment Suite (bed/bath/kitchen/dining/living). The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The 2nd floor will measure approximately 648 sq.m. in total. The 3rd and 4th levels (typical floor) will each contain nineteen Guest Rooms. The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The 3rd and 4th floors will each measure approximately 648 sq. m. in total. The Executive Floor (5th floor) will contain seventeen Guest Rooms. The level will comprise of amenities including one Executive Lounge, one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The Executive floor will measure 648 sq.m in total. The upper Floor will include the following utilities: one MEP Room and one Fire Water Storage Tank (1000 gallons) also measuring 648 sq. m. in total. The maximum building height will be 26.76 m (up to the Lift Car Roof Top) and the development will have parking for 15 vehicles. Electricity will be provided by the National Grid with a 100% backup capacity also available onsite from a diesel generator. Water will be supplied from the two groundwater tube wells (drilled depth 120 feet) located within the Project Site and wastewater will be treated with filtration, sedimentation and aeration (basic treatment system) before release.

Impact Assessment

Impact Sources

The primary activities associated with the **construction** and **operations** phase of the Project which also have the *potential* to have significant interactions with environmental and socio-economic cultural receptors are summarized below:

Activity/Source of Potential Impact	Construction	Operation
Construction activities	✓	
Commissioning activities	✓	
Electricity usage	✓	✓
Water usage	✓	✓
Hazardous materials (storage and use)	✓	✓
Hazardous wastes generation	✓	✓
Non-hazardous wastes generation	✓	✓
Sanitary wastewater generation	✓	✓
Propane (storage and use)		✓

Likely Impacts

An impacts scoping study has identified potentially significant adverse impacts associated with the **construction and operations phase** of the Project as detailed below.

Construction Phase	
Environmental	
Activity/Source of Impact	**Potential Impacts**
Construction activities	Air quality deterioration
	Nuisance noise
Water supply	Subsidence
	Groundwater quality
	Water resources
Stormwater discharges	Surface water quality
	Water resources
	Freshwater ecology
Community Health & Safety	
Activity/Source of Impact	**Potential Impacts**
Construction activities	Air quality
	Nuisance noise
Water supply	Water quality deterioration
	Water security
Stormwater discharges	Water quality deterioration
	Water security
Operation Phase	
Environmental	
Activity/Source of Impact	**Potential Impacts**
Water supply	Subsidence
	Groundwater quality
	Water resources
Community Health & Safety	
Activity/Source of Impact	**Potential Impacts**
Water supply	Water quality deterioration
	Water security

Environmental Management and Monitoring Plan	
Overview of EMMP	The proposed hotel project has planned to create job opportunity for 76 local people and other people from the region who can improve their professional skills and make themselves valuable human resources in hotel and tourism industry, through its capacity building process. In all phases 2 of the project, a few low impacts are observed where as no significant impacts and unsustainable situations are identified. Only (29) non-significant environmental impacts are found out. During construction phases, there is a low significant impact for discharging sewage and litter so using alternative proper waste management system such as waste collection, segregation and disposal. During operation phase, there is environmental impact with low significance which is water resource depletion due to domestic water consumption from the tube well. Mitigation measures are installing water meter and water saving equipment for control of water use. There is also low significant environmental impact due to discharging of sewage and litter to the nearby Thanlwin River which must be mitigated, installing sewage treatment plant and developing proper waste segregation and disposal system. During the operation phase, there is a potential discharge to environment such as detergent, liquid chlorine/tablets, cleaning agents due to the use of chemical products for cleaning, laundry, swimming pool and Spa. This must be addressed by using secondary containment to avoid accidental leakage and spill and a wise choice of environmental friendly products (e.g. phosphate free detergent). In addition, there is a low significance impact which is noise and atmospheric emission due to transportation of delivered supplies and visitors to hotel which must be taken care of by conducting regular noise and air monitoring survey, use of proper PPEs. Regarding health and safety impacts, there will be numbers of risks such as use of equipment and machines, probable electric shock hazard, fires and safety hazards such as falls from height, slips, trips and falls, falling objectives, manual handling, repetitive strain injuries etc… during the construction, operation and decommissioning phases. There are preventive measures already planned to reduce the risk of fire and also the machines and equipment to be provided are new with modernized technology including machine guards. Therefore the probability of accidents and electrical shocks are low. There are a number of actions to be done to mitigate the risks such as providing safety awareness training, first aid, free medicine, transport to the nearest hospitals in case of emergency, and personal protective equipment such as safety gloves, helmets, goggles, earmuffs etc.
Conclusion	
Conclusions	SLP Environmental has prepared the Environmental Management Plan for the Suggati Hotel Project in accordance with the requirements of the MONREC Environmental Impact Assessment Procedure to ensure legislative compliance and standards of good practice are upheld during the execution of the Project. Provided that the recommended mitigation measures are properly implemented the EMP concludes that there will be no significant adverse impacts to environment or social receptors as a consequence of project activities and that all impacts will have been appropriately mitigated to be as low as reasonably practical.

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

SLP Environmental Co., Ltd (hereafter "SLP') has been appointed by Southern Myanmar Mawlamyine Hotel Limited (hereafter the 'Project Proponent) to prepare the Environmental Management Plan (EMP) for the 72 room Suggati Hotel development (the 'Project') situated on Strand Road, Pabedan Ward, Mawlamyine, Mon State (the 'Project Site Area') as shown in **Plate 1** below.

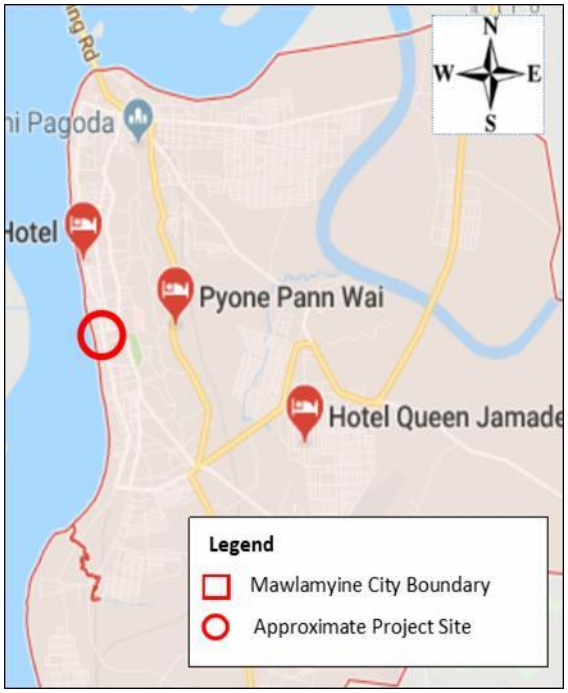


Plate 1: Location of the Project Site

The Project Proponent proposes to construct a 3 star city hotel which will comprise of a six storey Hotel with 72 Guest Rooms with one Apartment Suite, Restaurant, Function Rooms, Gym and Spa.

The Project will reportedly have a Gross Floor Area (GFA) of 3,985 sq.m on a Total Plot Area of 1,783.63 sq.m. Construction works commenced in June 2017 and are scheduled to take 300 days in total with completion and handover scheduled for July 2018.

The Project's supporting infrastructure will comprise of fifteen on-ground car-parking lots, a 500 kVA full back-up electricity generating set, two groundwater tube wells for water supply, a raw water treatment system and a sanitary wastewater treatment system. The Project is situated within an area characterized by residential and commercial landuses on the bank of the Thanlwin River.

This EMP report has been prepared in general accordance with the requirements stipulated in Chapter VII of the ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE, Ministry of Environmental Conservation and Forestry, Notification No. 616 / 2015 (29 December 2015) and cognisant of guidance presented in the International Finance Corporation (IFC) Environmental, Health, and Safety Guidelines for Tourism and Hospitality Development (April 2007).

This report presents the finding of the EMP study conducted with reference to the construction and operation of the Project and has been prepared based on **i)** information provided by the Project Proponent, **ii)** the findings of a Project Site Audit, and **iii)** authoritative secondary data obtained from government agencies and other referenced sources.

SLP Environmental Co., Ltd has prepared this Environmental Management Plan report on behalf of Southern Myanmar Mawlamyine Hotel Limited. SLP Environmental Co., Ltd is an accredited EIA Consulting Organisation under the MONREC Transitional Consultant Registration scheme with the Certificate No. 00008. A copy of SLP's certification is provided in **Appendix A**.

1.2 PROJECT OVERVIEW

Southern Myanmar Mawlamyine Hotel Limited proposes to construct a 3 star city hotel comprising of 6 stories (ground floor, mezzanine, 1st floor, 2nd floor, 3rd floor, 4th floor, and executive floor) with a total of 72 guest rooms and one apartment suite. The Gross Floor Area (GFA) is 3,985 sq. m. on a total plot area of 1,783.63 sq. m. The hotel will have superior and deluxe rooms ranging from 26 to 29 sq.m. in size.

The ground floor and the 1st floor will include amenities and such as a kitchen, restaurant, lobby (coffee bar and lounge area), a retail space, laundry, two toilets (male and female), one MEP (mechanical, electrical and plumbing) room, linen storage, one lift lobby, two lifts and one dumb-waiter, open function space, pantry, boardroom, toilets (female and male), back of house, gym, spa and three storage rooms.

Mezzanine floor will comprise of one Manager Room, one HR/Finance Room, one Housekeeping Room (uniforms) and one Locker Room (male and female) totaling some 59 sq. m.

The 2nd - 5th floors of the building will contain 72 guest rooms including 34 superior rooms with river view measuring 27 sq. m. each, 23 superior rooms with city view measuring 26 sq. m. each, 8 deluxe rooms with river view measuring 29 sq. m. each and 7 deluxe rooms with city view measuring 29 sq. m. each, and one apartment suite (with bed/bath/kitchen/dining/living). Amenities on each floor include a housekeeping room, one electrical room, one lift lobby and two lifts and each floor measures approximately 648 sq. m.

The upper roof floor will include utilities such as a MEP Room and a Fire Water Storage Tank (1,000 gallons) also measuring 648 sq. m. in total.

The reported maximum building height will be 26.76 m and the development will have parking for 15 vehicles. Electricity will be provided by the National Grid with a 100% backup capacity also available onsite from a diesel generator. Water will be supplied from two groundwater tube wells located within the Project Site and wastewater will be subject to treatment (filtration, sedimentation and aeration) before discharge to the Thanlwin River. An artist's impression of the finished development is presented in **Plate 2.**

Plate 2: Artist's Impression of the Suggati Hotel Development

1.3 EMP APPROACH AND OBJECTIVES

The Project Proponent confirms that the adopted approach for the EMP study process corresponds with the requirements laid out in the relevant legislation presented in Section 6.0 and Good International Industry Practice (GIIP). The primary objectives of the overall EMP study process are to:

- Develop an environmental and socio-economic overview profile of the Project Site Area including the existing status of the physio-chemical and biological systems and identification of potentially sensitive environmental and socio-economic cultural receptors;
- To examine the activities of the Project in order to identify those aspects most likely to have significant interactions with environmental and or socio-economic cultural receptors;
- To ensure that any potential significant adverse impacts on the natural environment and or socio-economic receptors arising as a consequence of Project activities are clearly identified;
- To develop a suitably robust Environmental Management Plan (EMP) for the Project to ensure that any identified significant adverse impacts are, where possible, avoided minimized and or otherwise mitigated; and
- To ensure that the Project is developed in conformance with the applicable legislative requirements and good practice guidelines.

1.4 PROJECT PROPONENT DETAILS

The Project is being developed by Southern Myanmar Mawlamyine Hotel Limited (hereafter 'SMMHL') whose Registered Office is at The Campus, 1 Office Park, Rain Tree Drive, Pun Hlaing Estate, Hlaing Thayar Township, Yangon 11401, Myanmar. Southern Myanmar Mawlamyine Hotel Limited is a subsidiary of SM Asset Holdings Pte. Ltd (hereafter 'SMAH'). SMAH is a Singapore based Hospitality Real Estate Developer, focusing its investments in Southern Myanmar, notably in Mon State & Tanintharyi Region.

SMMHL has contracted Serge Pun and Associates (SPA) as the Project Manager for the construction phase of the Project. SPA is a subsidiary of Yoma Strategic Holdings (YSH).

The primary representatives of the Project Proponent with responsibility for the delivery of the Project are detailed in the following table.

Detailed Information of Proponent

Proponent Name	U Ye Myat Thu
Citizenship	Myanmar
NRC Number	12/LaThaNa(N) 020667
Address in Myanmar	No.695, Mahar Bandula Road, Latha Township, Yangon.

Detailed Information of Proposed Organization

Name of Principle Organization	SM Mawlamyaing Hotel Limited
Type of Business	Hotel Services
Principle Company's Address	12/LaThaNa(N) 020667
Address in Myanmr	The Campus, 1 Office Park, Rain Tree Drive, Pun Hlaing Estate Hlaing Thayar Township, Yangon, Myanmar 11401
Authorized Capital	USD 251,000
Manufacturing	-
Production System	-
Investment Location	No.303 B, 261-e + 261-i, Pabaltan Ward, Corner of Strand Road and Theikpan Street, Mawlamyine, Myanmar 1101
Type of Land	Ancestral Land

List of Executives of SM Mawlamyaing Hotel Limited

1. U Ye Myat Thu (Director)
2. Mr. Chi Yam Cyrus Pun (Director)
3. Daw Aye Myat Maw (Director)

Project Proponents Representatives

Name	Project Role	Contact Details
Mrs. Nwe Nwe Tun	Project Director	+95 9 9713 69408 / nwenwetun@yomastrategic.com
Mr. Htun Linn Naing	Project Manager	+95 9 776 475447 / htunlinnnaing@yomastrategic.com

Table 1: Project Proponents Representatives

Employment

It is estimated that approximately between 200 and 300 persons (skilled and unskilled) will be employed during construction of the project. During the operation phase, 76 local people will have opportunity for the employment.

Manpower Requirement during operation phase

Local Personnel required		
Department	**Type of Personnel**	**No of Persons**
Administrative office, HR, Finance, Hotel Manager	Managerial Level	4
Office Staff, Housekeeping, Food & Beverages, Kitchen, Sale & Marketing, Engineering, Security, Skilled Workers, Semi-skilled Workers and unskilled worker	Other ranks	72
	Total	**76**

Professional Credentials of the SLP Impact Assessors

SLP Assigned a multi-national Project Team with the necessary expertise and experience to deliver a high quality EMP report. The proposed Project Management and Delivery Team included international and local experts as well as several Chartered professionals as detailed in follows.

Specialists contributing to the EMP Study

Name	**Qualifications**	**Roles/Specialism**
Mr. Stephen Pearmain	BSc, MSc, CEnv, MIEnvSC	Project Director, Environmental and Social Safeguards Specialist
Mrs. Elizabeth Health MCIWEM,	BSc, MSc, CEnv, CSci	Project Manager, Environmental Management Specialist
Mr. Htun Linn Naing	BSc, MSc. MEEAT	Field Operations Manager, Environmental Baseline Studies
Mr. Kyaw Naing Min	BSC, MGS, MEI	Health and Safety Officer (Geology & Hydrogeology)
Mrs. Khin Ohnmar Htwe	BA. MA	Social Impact Assessment Specialist

1.5 INFORMATION PROVIDED BY THE CLIENT

Information provided by Southern Myanmar Mawlamyine Hotel Limited is summarised below:

- Occupation Health and Safety Management System;
- Mawlamyine Hotel Master Schedule, 31 January 2018;
- Utilization Plan, 5 March 2015;
- Layout Plan, 19 September 2017;
- Project Survey Plan, 25 August 2017;
- Hotel Suggati Mawlamyine Brochure;
- Mawlamyine Hotel Project Location Map;
- Sanitary System Layout, 29 November 2017;
- Site Plan, 19 February 2018;
- Suggati Hotel Artist Impression;
- Floor Plan, 9 February 2018 and
- Front, Left, Rear elevation and 3D View Maps, 20 September 2017.

1.6 REPORT STRUCTURE

This report consists of the following sections:

- Section 1; Introduction;
- Section 2; Project Site Description;
- Section 3; Project Description;
- Section 4; Overview of Operational Phase Activities;
- Section 5; Physical and Biological Environment;
- Section 6; Policy, Legal and Institutional Framework;
- Section 7; Impact Assessment Methodology;
- Section 8; Impact Identification Study;
- Section 9; Conclusions and
- Section 10; References and Sources of Information.

1.7 LIMITATIONS, EXCLUSIONS AND RELIANCE

This report has been prepared by SLP Environmental Co., Ltd, with all reasonable skill, care and diligence within the terms of the instructed proposal and taking account of the resources devoted to us by agreement with the client. This report is based upon the application of scientific principles and professional judgement to certain facts with resultant subjective interpretations. Professional judgements expressed herein are based on the currently available facts within the limits of the existing and field collected data, scope of work, budget and schedule.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies

on this report at its own risk.

It is understood that the services performed, and opinions expressed by SLP Environmental in the report are based upon the limits of the investigation as described above. It is understood that SLP Environmental has relied upon the accuracy of third party documents, oral information, and other material and information provided by the client and others, and SLP Environmental assumes no responsibility for the accuracy or completeness of such data.

SLP Environmental makes no warranties, expressed or implied, including without limitation, warranties as to merchantability or fitness for a particular purpose. The information provided in this report shall not be construed as legal advice.

2. PROJECT SITE LOCATION AND DESCRIPTION

2.1 LOCATION

The Project Site is situated at No. 58, the corner of Strand Road and Theik Pan Street, Pabedan Ward, Mawlamyine, Mon State, located 300 km south east of Yangon at the mouth of Thanlwin River (Salween). Mawlamyine is the largest City of Mon State and the fourth Capital City of Myanmar. The Project Site is located in the downtown area of Mawlamyine and the primary land-uses in the vicinity of the Project comprise of residential and commercial properties.

The nearest Mawlamyine highway bus and railway stations are located approximately 1.5 km to the northeast of the Project Site and Mawlamyine Airport is situated approximately 5 km to the south east of the Project Site.

Based on information provided by the Project Proponent, the total land plot on which the Project is being developed is 1,783.63 sq. m in area and the Gross Floor Area (GFA) of the development is approximately 3,985 sq.m. The approximate geographic coordinates for the centre of the Project Site are 16°28'14.60 °N 97°37'17.14° E.

The location of the Project Site is presented in **Plate 3** below and **Figure 1** in **Appendix B**.

Source: Google Earth (27 February 2018).

Plate 3: The Location of the Project Site

2.2 PROJECT SITE DESCRIPTION

The topography of the Project Site and its environs is generally level and Google Earth Imagery indicates that the Project Site sits at an elevation of ~4 – 6 m above mean sea level (AMSL).

The Project is currently under construction (site audit visit undertaken in February 2018) with the superstructure of the building completed and the external and internal fitting out works ongoing. The main entrance to the Project Site is located along Strand Road in the south western corner of the Project Site. A guardhouse, two storey Construction Site Offices and staff toilets are temporarily located in the southern sector of the Project Site.

The site is bounded by galvanized iron sheet hoardings along the northern, western and southern boundaries and a low brick wall along the eastern boundary of the Project Site and the partially constructed hotel is currently covered with knitted polyethylene mesh to protect adjacent residents from debris and dust.

The construction materials are stored in miscellaneous locations on the ground floor and 1st floor of the site and are also temporarily stored for loading and unloading along the western sector of the Project Site, both within the site boundary and external to the Project Site along the perimeter of Strand Road. To the north of the Project Site a large open excavation is present associated with the construction of the raw water treatment tanks and associated infrastructure and along the eastern boundary of the site are two large septic tanks and the currently undeveloped land plot for the laundry building.

The electricity to the Construction Site is provided by a combination of grid supply and onsite diesel generators and water is reportedly supplied by the two groundwater tube wells (drilled depth 120 feet) located within the Project Site. A water storage tank is located above the groundwater well within the northwestern sector of the Project Site.

Sanitary wastewater is collected in two septic tanks and stormwater runoff from the site runs along a drainage channel located along the eastern and southern boundaries of the Project Site which discharges into an open drain along the southern boundary of the Project Site which thereafter discharges directly into the Thanlwin River via an underground drain beneath Theik Pan Street adjacent to the Project Site.

Project Site construction waste are segregated and disposed in waste bins. Then, they are sent to dumpsites approved by Mawlamyaing Township Municipality.

A current Construction Project Site Layout Plan is presented in **Figure 2** in **Appendix B** and a Photo Log of the Construction Project Site at the time of the Site Reconnaissance (21st February 2018) is presented in **Appendix C**.

2.3 PROJECT SITE AREA

The Project Site is located in the center of the City and the general land-uses in the vicinity of the Project Site area is predominantly comprised of low and medium density residential and commercial land-uses.

The land-uses in the immediate environs of the Project Site are detailed below:

North: The Project Site is bounded by Zabula Alley beyond with high density residential properties and commercial area. YARMANYA River Side (0.2 km), Kyar Jetty (0.27 km), Nawlamyine Night Market (0.38 km), Kyaik Thoke Pagoda (0.92 km), Mon Cultural Museum (1.15 km) and the first Baptist Church (1.06 km) and Mawrawaddy Park (1.43 km) are located beyond.

East: The Project Site is bounded by high density residential properties immediately adjacent to the Project Site with Zabula Alley beyond. Mawlamyine Emergency Rescue (0.08 km), Taw Win Hospital (0.4 km), Myanmar CP Livestock Co., Ltd (0.37 km) and U Zi Na Pagoda (0.94 km) beyond.

South: The Project Site is bounded by Theik Pan Street beyond which is a derelict rice mill building and medium density residential properties. Bago Pariyatti Monastery (0.4 km), Ocean Supermarket (0.6 km), Thanlwin Garden (0.7 km), Thanlwin Fish Market (0.63 km) and Shwe Byaine Phyu Pagoda (0.84 km).

West: The Project Site is bounded by Strand Road beyond which is the Thanlwin River. Bilugyn Township is located 990 m beyond the Project Site boundary on the western side of Thanlwin River.

A Surrounding Landuses Plan is presented in **Figure 3** in **Appendix B.**

2.4 HISTORICAL LANDUSES

The 1:250,000 Burma Topographic Survey Map of Rangoon, Series U542, Sheet No. NE 47-13, Edition 1-AMS dated 1998, indicates that the Project Site is situated in an area historically characterised by rice cultivation and low density residential landuses. An extract from the Topographic Survey Map is presented in **Figure 4** in **Appendix B**.

2.5 SATELLITE IMAGERY REVIEW

A review was undertaken of the available Google Earth satellite imagery for the Project Site area and the findings are presented in **Table 2**. The Google Satellite Imagery for the Project Site area is presented in **Figure 5** in **Appendix B**.

Table 2: Satellite Imagery Review Findings

Year	Image ID	Project Site Observations	Adjacent Property and Surrounding Area Observations.
2001	Imagery Date: 14 Nov 2001	The Project Site was used for residential houses and no infrastructure is yet present.	The adjacent property and the surrounding area are characterized by low density residential land-uses. No infrastructure is present on the immediately neighboring land and no alleys are present at the north and east side of the project area. Only some trees and small houses surround the project area, and the Strand Road is in raw stage. The south of the Project Site is storehouse area for timber, rice and machine.
2005	Imagery Date: 20 April 2005	The houses are no longer present, and the site is empty.	The houses surrounding the Project Site remain unchanged but Zabula alleys at the north and east side appear and most of the trees on the site had been logged. The Strand road to the west of the Project Site is expanded and upgraded to a tar road. No significant changes are made to the property adjacent to the South and the East.
2012	Imagery Date: 16 Dec 2012	The Project Site remains unchanged.	The most land area at the southern side of the project land covered by storehouses is turned to empty space but the rice mills at the area still run. The road on the west side expanded. The Thanlwin river on the western side of the Project Site has a river wall. No significant changes to properties adjacent North and the East.
2014	Imagery Date: 25 Nov 2014	The Project Site has been cleared and is in the process of development.	No significant changes noted on the property adjacent North, East, South, West which still remain unchanged.
2015	Imagery Date: 3 Feb 2015	The Project Site remains in the process of development.	No significant changes noted on the property adjacent North, East, South, West which still remain unchanged.

3.0 PROJECT DESCRIPTION

3.1 OVERVIEW

Southern Myanmar Mawlamyine Hotel Limited proposes to construct a 3 star city hotel comprising of 6 stories (ground floor, mezzanine, 1st floor, 2nd floor, 3rd floor, 4th floor, and executive floor) with a total of 72 guest rooms and one apartment suite. The Gross Floor Area (GFA) is 3,985 sq.m on a Total Plot Area of 1,783.63 sq. m.

The ground floor will include one kitchen, one restaurant, one lobby (coffee bar and lounge area), one retail space, one laundry, two toilets (male and female), one MEP (mechanical, electrical and plumbing) room, linen storage, one lift lobby, two lifts and one dumb-waiter with a total footprint of approximately 685 sq.m.

Mezzanine floor will comprise of one Manager Room, one HR/Finance Room, one Housekeeping Room (uniforms) and one Locker Room (male and female) totaling some 59 sq. m.

The 1st floor of the building will comprise of amenities which include one Open Function Space, one Pantry, one Boardroom, Toilets (female and male), one Back of House, one Gym, Spa, two lifts and one dumb-waiter, three storage rooms measuring approximately 648 sq. m. in total.

The 2nd floor will contain seventeen guest rooms and one Apartment Suite (bed/bath/kitchen/dining/living). The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The 2nd floor will measure approximately 648 sq.m. in total.

The 3rd and 4th levels (typical floor) will each contain nineteen Guest Rooms. The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts measuring. The 3rd and 4th floors will each measure approximately 648 sq. m. in total.

The Executive Floor (5th floor) will contain seventeen Guest Rooms. The level will comprise of amenities including one Executive Lounge, one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The Executive floor will measure 648 sq.m in total.

The upper Floor will include the following utilities: one MEP Room and one Fire Water Storage Tank (1000 gallons) also measuring 648 sq. m. in total.

The maximum building height will reportedly be 26.76 m and the development will have parking for 15 vehicles. Electricity will be provided by the National Grid with a 100% backup capacity also available onsite from a diesel generator. Water will be supplied from the two groundwater tube wells (drilled depth 120 feet) located within the Project Site and wastewaters will be treated in a below ground system comprising of filtration, sedimentation and aeration, prior to their discharge into the Thanlyin River.

3.2 DEVELOPMENT PROGRAMME

The project will be constructed over 300 days as detailed in **Table 3** with completion and handover anticipated in July 2018.

Table 3: Project Development Timeline

Activity	Duration (days)	Period
Design	97	3rd April 2017 – 15th Aug 2017
Authority	248	12th Jun 2017 – 18th May 2018
Procurement	234	16th May 2017 – 5th April 2018
Construction	300	13th Jun 2017 – 31st Jul 2018
Office Set up Works	34	13th Jun 2017 – 28th Jul 2017
External Work (enclosure)	254	17th Jul 2017 – 30th Jun 2018
Preliminary	21	17th Jul 2017 – 4th August 2017
Building Works	221	1st Aug 2017 – 31st May 2018
Hardscape and landscape	133	2nd Jan 2018 – 30th Jun 2018
Internal Works	220	3rd Oct 2017 – 31st Jul 2018
Preliminary Work	28.2	1st Dec 2017 – 30th Dec 2017
Architectural Works	148	12th Dec 2017 – 30th June 2018
MEP Works	179	29th Nov 2017 – 31st July 2018
Lift Works	153	3rd Oct 2017 – 30th April 2018
Laundry Building	102	15th Jan 2018 – 31st May 2018
Authority Approval	33	15th Jan 2018 – 28th Feb 2018
Procurement	20	1st Feb 2018 – 28th Feb 2018
Structural Works	46	26th Jan 2018 – 31st March 2018
Brick and Plastering	31	22 Mar 2018 – 30th April 2018
Finishing Work	29	16th April 2018 – 22nd May 2018
Handing Over to Operational Team	44	1st Jun 2018 – 31st Jul 2018
Preparation to Operate	65	2nd Jul 2018 – 30th Sep 2018
Total Duration of the Construction Timetable:	300 Days	June 2017 –July 2018

3.3 CONSTRUCTION PHASE ACTIVITIES

The substructure and superstructure works were constructed by the previous owner, but the Project

Proponent needed to implement some modifications to the existing structure to accommodate their proposed development. In summary, the construction phase of the project will comprise of the following aspects:

- Site clearance;
- Erection of site office compound with offices and toilets, perimeter fencing;
- Construction of temporary drainage and connections to local power grid and water supply;
- Building foundation and piling for foundations using readymade concrete;
- Modification to the existing 6 storey reinforced concrete structure from substructure and superstructure works of the previous owner e.g. front facade beams not suitable the architectural design has been changed (hacked/demolished/re-cast);
- External brick wall enclosure works;
- Internal partition walls construction and MEP (mechanical, electrical and plumbing) works;
- Interior design fit-out works – vinyl flooring, carpet flooring, homogeneous tiles, mosaic tiles, gypsum board walling, natural stone finishes, laminated wardrobes and tables, lighting fixtures;
- External facades painting works;
- Flooring – vinyl, carpet or tiles;
- Doors and windows - aluminium frame and glass for windows, wooden doors for back of house, fire-rated doors for staircases, laminated doors for guest rooms;
- Pump room & underground tank construction;
- Laundry building construction; and
- Hardscape and landscape works - concrete paving, interlocking tiles, grass, shrub and trees.

A summary of the main construction phase activities that have the potential to interact with environmental and or social receptors is presented in the following sections.

3.4 CONSTRUCTION CONTRACTOR

The construction of the Project has been let to four main contractors as detailed in Table.

Table 4: Construction Phase Contractors

Company Name	Service	EHS Representative Name
U Hub Maw Family Co. Ltd	Civil/ Structure	Win Htay
Efficient Engineering Group Co. Ltd	Civil/ Structure/ Metal Works	Tin Tun Naing
Global Hi-Tech Co. Ltd	MEP Works	Han Zaw
M & W Design and Engineering Co. Ltd	Interior Design Fit-out Works	Zin Ko

3.5 CONSTRUCTION PLANT AND EQUIPMENT

A variety of Plant and other equipment will be used to facilitate the construction of the Project as shown in **Table 5**.

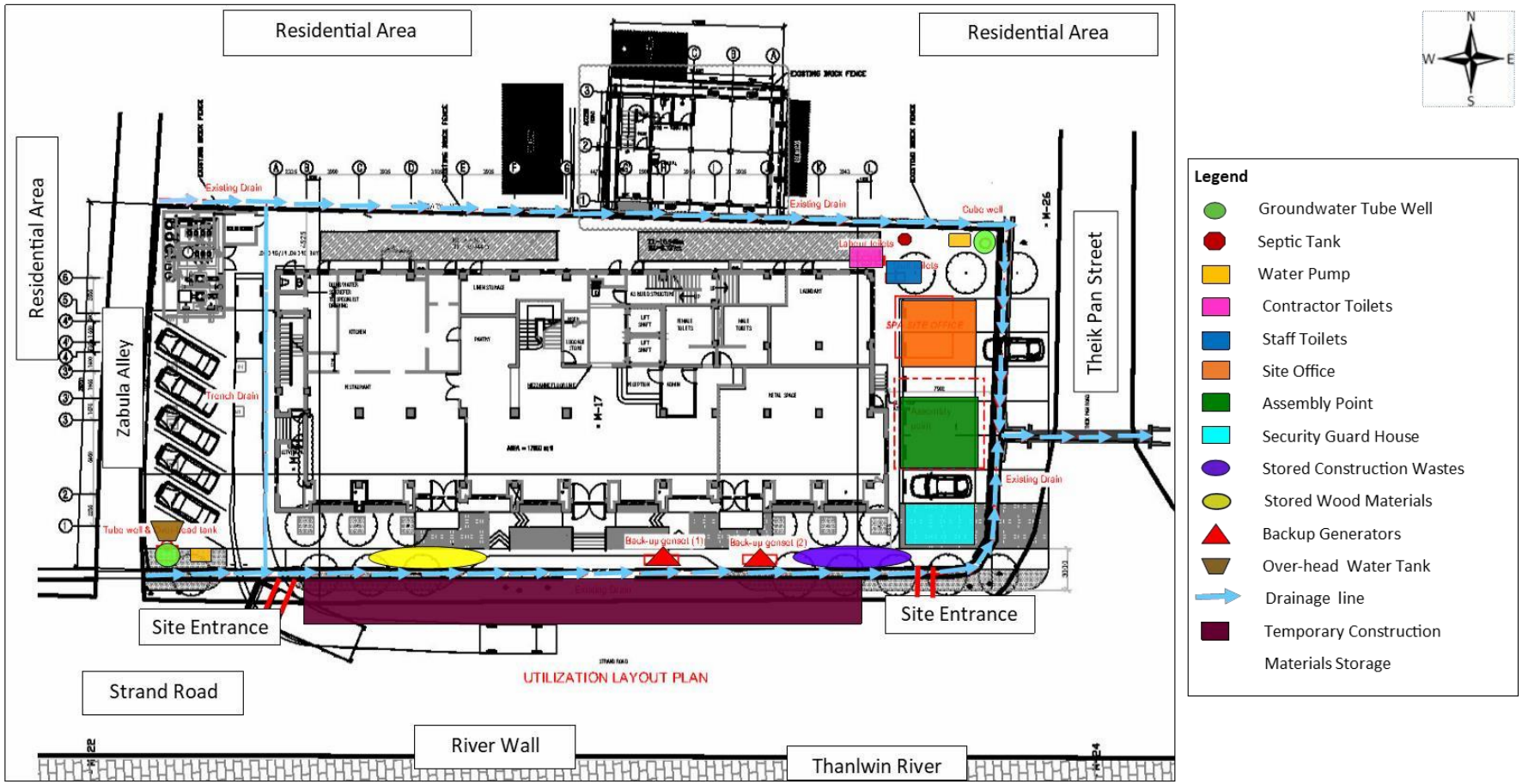
Table 5: Construction Plant and Equipment

Activity	Number and Type	Energy Source (electric, gas, fuel etc.)
Earth Moving Equipment		
Dumper/Dump truck (loader	4	Fuel
Excavator	2	Fuel
Road Making Equipment		
Compactor	5	Fuel
Piling Equipment		
Hammer pile machine	1	Fuel
Concreting Equipment		
Concrete Agitator	4	Fuel
Station Pump	1	Fuel
Boom Pump	1	Fuel
Lifting and Handling Equipment		

Lorry Crane	2	Fuel
Mobile Crane	1	Fuel
Motorized winch	3	Electric
Welding Equipment		
Welding Machine	10	Electric
Welding Machine	3	Gas
Shop Fabrication and Testing Equipment		
Threading Machine	2	Electric
Other Miscellaneous (specify below)		
Concrete Vibrator	5	Fuel
Theodolite	1	Electric
Total station	1	Electric

3.6 CONSTRUCTION SITE LAYOUT

The construction site layout is shown in **Plate 4.** The plan shows the locations of the key project aspects that have the potential to interact with environmental and social receptors.



Source: *SPA Project Management, Mawlamyine Hotel, 2018.* ***Scale:*** *Not to Scale*

Plate 4: Construction Phase Site Layout Plan with Key Environmental Aspects

3.7 NATURAL BUILDING MATERIALS CONSUMPTION

The construction of the Project will require the use of natural materials/resources such as sand, soil and timber. An inventory of these natural building materials, their sources and projected consumption quantities are provided in **Table 6.**

Table 6: Inventory of Natural Building Materials, Sources & Projected Quantities

Material	Projected Consumption	Source/s	Material Required for
Sand	60,000 cubic feet	Dredged River Sand, Offsite quarry	Site Upfill Material RC & Masonry Works
Gravel/Stone	10,000 cubic feet	Dredged River Stone	Ready Mixed Concrete
Timber	20 tons	Commercial Supplier	Formwork Component
Sand	1,500 cubic feet	Commercial Supplier	Site Upfill Material

3.8 WATER CONSUMPTION

The construction of the Project will require the use of water and it is estimated that the Project will consume approximately 8 m^3/day. A breakdown of the projected water consumption rates and sources is presented in **Table 7**. The location of the tube wells is shown in **Plate 4**.

Table 7: Water Consumption during Construction, Sources & Projected Quantities

Uses	Projected quantities m^3/day	Source/s (groundwater, surface, municipal)	Total Number of onsite GW wells
Construction Purposes	6	Groundwater (120 ft tube well)	1
Latrines/Washrooms	2	Groundwater (120 ft tube well)	1
Total	**8**		

3.9 ELECTRICITY CONSUMPTION

The construction of the Project will require power and the projected peak demand electricity requirement and sources of electricity are presented in **Table 8**. The location of the electricity generating sets are provided in **Plate 4.**

Table 8: Projected Power Consumption Requirements during Construction

Projected Requirement KW/Day (peak demand)	Source/s (grid/generator)	Number of generators and rated output	Fuel Type
80	National Grid and gen-set	2 X 30 kVA gensets	Diesel
	National Grid and gen-set	2 X 30 kVA gensets	Diesel

3.10 STORMWATER AND WASTEWATER DISCHARGES

There are two main wastewater streams generated as a consequence of construction phase project activities and these comprise of latrine wastewaters and stormwater runoff.

A temporary drainage network has been constructed to manage stormwater runoff which conveys stormwater to one discharge point which outfalls into the Thanlwin River to the immediate southwest of the Project Site (see **Plate 4**). A breakdown of wastewater discharges and disposal routes is presented in **Table 9**.

Table 9: Stormwater and Wastewater Discharges during Construction Activities

Sources	Disposal Route (septic tank, river)	Estimated Daily Discharge Volume	Total Number of Septic Tanks onsite
Stormwater	River	-	N/A
Toilets	Septic Tank	0.3 m3 per day per tank	2

In fact, there are tow main wastewater streams generated as a consequence of construction phase project activities and these comprise of latrine wastewaters and stormwater runoff. A temporary drainage network has been constructed to manage stormwater runoff which conveys stormwater to one discharge point which outfalls into the Thanlwin River to the immediate southwest of the Project Site that is described in Plate 4. A breakdown of wastewater discharges and disposal routes is presented in the following table.

During construction, temporary toilets will be provided for use on the site. The completed development will have one below ground water tank as detailed in the following table and the location of the tank is shown on Plate 8.

Construction Type (concrete, steel, fiber glass etc.)	Above/Below Ground	Capacity (m3)	Contents
Reinforced Concrete	Below ground	120	Fire Water Tank and Raw Water Tank

The type of waste generated during the operation are personal left over, food residues (organic wastes), glasses, tins, bottles, packing materials, papers, stationeries, damaged/ expired devices or appliances and others. After waste collection, wastes are segregated and disposed in waste bins. Then, they are sent to dumpsites approved by Mawlamyine Township Municipality.

3.11 AIR EMISSIONS

Two diesel fueled electricity generatingla sets are used by the contractors intermittently (about 12 hours per week during electricity power cuts) and these are main static point sources of air emissions on the Project Site. There are also numerous fugitive sources of air emissions such as those from site vehicles, plant and machinery as well as windblown dusts.

The location of the main static sources of air emissions are shown on **Plate 4**.

3.12 HAZARDOUS SUBSTANCES

Relatively small quantities of hazardous substances will be utilised and stored on site during the construction phase of the Project. An inventory of the hazardous substances that will be used during the construction works and the projected consumption rates is presented in **Table 10.**

Table 10: Hazardous Substances used during Construction and Projected Consumption

Substance	Projected usage per month	Storage Arrangements (Bulk tank, IBC, drums, bottle, can etc.)	Dedicated storage area with secondary containment (Y/N?)
Gasoline	50 kg	Cylinder	N (designated storage with partition)
Diesel	20 gal	Drum	N (designated storage with partition)
Hydraulic Oils	3 gal	Bottle	N (bought onsite and directly filled inside the machine)
Paints	60,000 litres	Drum	N (designated storage with partition)

3.13 NON HAZARDOUS SOLID WASTES

The primary non-hazardous solid waste streams at the Project Site comprise of general refuse and construction wastes which are disposed of off-site. The breakdown of non-hazardous solid wastes generated during construction works is shown in **Table 11.** The location of the temporary onsite waste storage area is shown in **Plate 4.**

Table 11: Non-hazardous Solid Wastes generated during Construction

Waste Type	Disposal Method (Offsite, Landfill Onsite, Recycled etc.)	Name of Waste Haulier, Disposal Site and or Recycling Company
Plastic	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Paper/Cardboard/Packaging	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Bricks	Recycled	NA
Concrete	Recycled	NA
Wood	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Insulation Materials	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Electrical	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Ceramic	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Gypsum Board	Offsite (20 km away)	MCDC Disposal Yard (MLM)

3.14 HAZARDOUS SOLID AND LIQUID WASTES

The Project is expected to generate small quantities of hazardous wastes during its construction as detailed in **Table 12.** The location of the temporary onsite waste storage area is shown in **Plate 4.**

Table 12: Hazardous Solid & Liquid Wastes Generated during Construction

Waste Type	Disposal Method (Offsite, Landfill Onsite, Recycled etc.)	Name of Waste Haulier, Disposal Site and or Recycling Company
Waste oils	Recycled (added to formwork plywood during concreting)	NA
Used hazardous substances containers (e.g. fuel and chemical drums, cans)	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Batteries	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Aerosol cans	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Fluorescent light tubes	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Expired or waste chemicals	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Electronic wastes	Offsite (20 km away)	MCDC Disposal Yard (MLM)

3.15 VEHICLE MOVEMENTS

The projected average daily number of vehicle movements associated with the construction phase of the Project Site are presented **Table 13.**

Table 13: Projected Daily Vehicle Movements during Construction Phase

Activity	Average Number Vehicles Daily
Materials/Goods/Equipment Inbound	5
Materials/Wastes Outbound	1

3.16 Operational Hours

The operational hours of the construction site during the construction phase of the Project is presented in **Table 14** below. In emergency cases (one day a month, as reported by the project manager) the construction team work overtime.

Table 14: Operational Hours during Construction

Day	Operational Hours	Any Local Authority Restrictions on Operational Hours (Y/N)
Monday	8.30am to 5pm	N
Tuesday	8.30am to 5pm	N
Wednesday	8.30am to 5pm	N
Thursday	8.30am to 5pm	N
Friday	8.30am to 5pm	N
Saturday	8.30am to 5pm	N
Sunday	Site closed	

4.0 Overview of Operational Phase Activities

Southern Myanmar Mawlamyine Hotel Limited proposes to construct a 3 star city hotel comprising of 6 stories (ground floor, mezzanine, 1st floor, 2nd floor, 3rd floor, 4th floor, and executive floor) with a total of 72 guest rooms and one apartment suite. The Gross Floor Area (GFA) is 3,985 sq.m on a Total Plot Area of 1,783.63 sq. m.

The ground floor will include one kitchen, one restaurant, one lobby (coffee bar and lounge area), one retail space, one laundry, two toilets (male and female), one MEP (mechanical, electrical and plumbing) room, linen storage, one lift lobby, two lifts and one dumb-waiter with a total footprint of approximately 685 sq.m.

Mezzanine floor will comprise of one Manager Room, one HR/Finance Room, one Housekeeping Room (uniforms) and one Locker Room (male and female) totalling some 59 sq. m.

The 1st floor of the building will comprise of Amenities which include one Open Function Space, one Pantry, one Boardroom, Toilets (female and male), one Back of House, one Gym, Spa, two lifts, one dumb-waiter and three storage rooms measuring approximately 648 sq. m. in total.

The 2nd floor will contain seventeen guest rooms and one Apartment Suite (bed/bath/kitchen/dining/living). The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The 2nd floor will measure approximately 648 sq.m. in total.

The 3rd and 4th levels (typical floor) will each contain nineteen Guest Rooms. The level will comprise of amenities including one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts measuring. The 3rd and 4th floors will each measure approximately 648 sq. m. in total.

The Executive Floor (5th floor) will contain seventeen Guest Rooms. The level will comprise of amenities including one Executive Lounge, one Housekeeping Room, one electrical room, one Lift Lobby and two Lifts. The Executive floor will measure 648 sq.m in total.

The upper Floor will include the following utilities: one MEP Room and one Fire Water Storage Tank (1000 gallons) also measuring 648 sq. m. in total.

The maximum building height will be 26.76 m (up to the Lift Car Roof Top) and the development will have parking for 15 vehicles. Electricity will be provided by the National Grid with a 100% backup capacity also available onsite from a diesel generator. Water will be supplied from the two groundwater tube wells (drilled depth 120 feet) located within the Project Site and wastewater will be treated with filtration, sedimentation and aeration (basic treatment system) before release.

An artist's impression of the finished development is presented in **Plate 5** below.

Plate 5: Artist's Impression of Suggati Hotel

4.1 Area And Heights of Completed Buildings

Table 15 details the gross floor area and height of each storey within the hotel building.

Table 15: Area and Height of Completed Building

Storeys	GFA (m^2)	Height (m AMSL)
Ground floor	685	4.3
Mezzanine	59	1.9
1st floor	648	3.6
2nd floor	648	2.4
3rd floor	648	2.4
4th floor	648	2.4
6th floor (Executive floor)	648	2.4
GFA Entire Development	3,985	N/A

A plan showing front and rear elevations of the development is presented overleaf in **Plate 6 and 7**.

4.2 GROUND AREAS UNDER HARD AND SOFT COVER

The approximate percentage of the completed Project that will be under hard cover compared to that which will be under soft cover (landscaping) is presented in **Table 16**.

Table 16: Approximate Percentage of Development under Hard Cover vs Soft Cover

Total Property Area (m^2)	Total Area under Hard Cover (m^2)	Total Area under Softcover (m^2)
1,783.63	1,640.05	143.58

4.3 MATERIALS AND FINISHINGS

The materials and finishings in the hotel building are presented below in **Table 17.**

Table 17: Materials and Finishings

Sub-structure and Super-structure	Materials and Finishings
Driven Piles and Reinforced Concrete	External wall is made of brick and internal walls are brick walls and dry walls Guestrooms, ballrooms and corridors will have vinyl flooring, carpet flooring, homogeneous tiles, mosaic tiles, gypsum board walling, natural stone finishes, laminated wardrobes and tables, lighting fixtures with lesser energy consumption. Hardscaping will have concrete & interlocking paving. For landscaping, concrete paving, interlocking tiles, grass, shrub and big trees will be used.

Plate 6: Front Elevation of Suggati Hotel

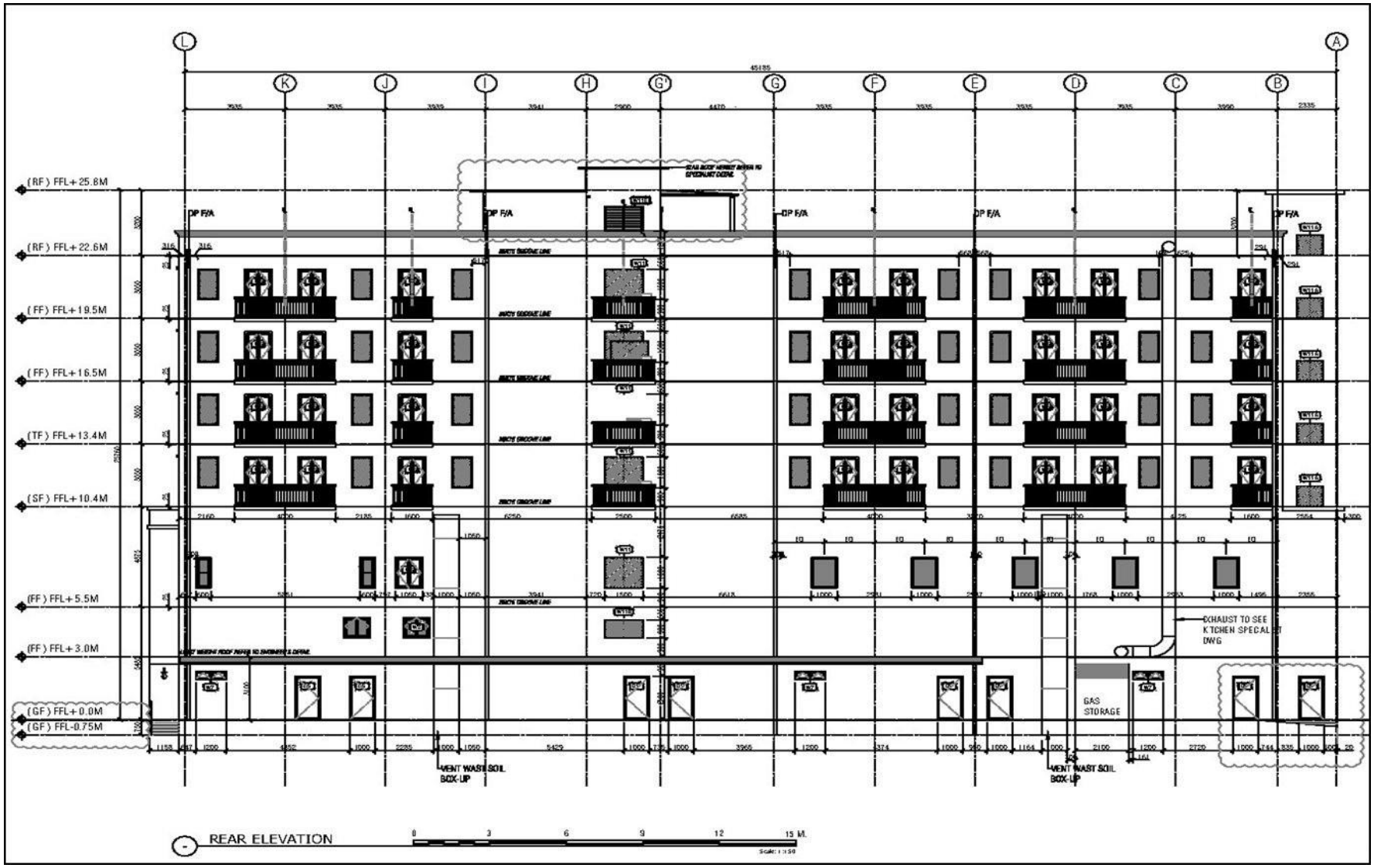


Plate 7: Rear Elevation of Suggati Hotel

4.4 WATER CONSUMPTION

The completed Project will be supplied with groundwater from two tube wells (120 ft deep) and the raw groundwater will be pre-treated onsite in Pump Room prior to being put into circulation for use within the Development.

The projected water consumption rates for the completed Project are presented in **Table 18**.

Table 18: Projected Water Consumption Rates & Sources when Development

Operational

Uses	Projected Consumption (m^3/day)	Source/s (surface water, groundwater, municipal supply)
Potable Use (kitchen)	20	Groundwater
Sanitary Use (washing, laundry, grey water)	30	Groundwater
Irrigation Use	7	Groundwater
TOTAL	**57**	

4.5 ELECTRICITY CONSUMPTION

The projected daily electricity consumption rate and power sources for the Project when fully operational are presented below in **Table 19.**

Table 19: Projected Daily Electricity Usage & Source/s when Development Operational

Projected Daily Usage (kWh)	Source/s (grid, generators, combination)	Number of generators, rated outputs and fuel type
443 KWh/day	Grid Supply from Government Station	500 kVA Diesel backup generator

4.6 STORMWATER AND WASTEWATER DISCHARGES

The projected stormwater and wastewater discharges from the operational Project are presented below in **Table 20**. The location of the stormwater discharge points is shown on **Plate 9.**

Table 20: Operational Phase – Stormwater and Wastewater Discharges

Source	Projected Volumes (m^3/day)	Describe treatment if any (Sedimentation, mechanical filtration etc.)	Final Discharge Point
Storm Water	10	Not Treated	Thanlwin River
Sanitary (Toilet) Wastewater	30	Basic treatment (filtration, sedimentation and aeration)	Thanlwin River
Grey water from washbasins etc.	20	Basic treatment (filtration, sedimentation and aeration)	Thanlwin River

4.7 Treatment Plant

Treatment Plant capacity is 63 meter cube per day.

4.8 Waste

Suggati Hotel use temporary storage rubbish bin for kitchen waste before disposal to Mawlamyine municipal. The following figure shows how we keep kitchen waste before disposal.

4.9 Gas

Suggati Hotel mostly used non-ozone depletion gas for Fridge and Freezer.

4.10 BULK STORAGE TANKS (LIQUID)

The completed development will have one below ground water tank as detailed in **Table 21**. The location of the tank is shown on **Plate 8.**

Table 21: Bulk Storage Tank in Finished Development

Construction Type (concrete, steel, fibre glass etc.)	Above/Below Ground	Capacity (m^3)	Contents
Reinforced Concrete	Below ground	120	Fire Water Tank and Raw Water Tank

4.11 GAS STORAGE

The completed development will have gas storage tanks/cylinders associated with the restaurant and staff canteen as detailed in **Table 22**. The location of the gas storage compound is shown on **Plate 8**.

Table 22: Gas Storage Arrangements

Container Type (Bulk or Cylinder)	Above/Below Ground	#	Capacity (m^3)	Contents
Propane Gas	Gas Canisters	8	1.57 total	LPG

4.12 AIR EMISSIONS

The hotel will use electricity from the national grid. There will be one intermittent static point source of air emissions on the Project Site when operational. This will be from the 500 KVA backup generator, but this air emission will be intermittent in nature (i.e. in case of electricity power cuts) and as such this is not regarded as a significant source of air emissions.

There will also be numerous fugitive sources of air emissions such as those from vehicles and various site maintenance equipment.

The location of the static source of air emissions is shown on **Plate 8.**

4.13 HAZARDOUS SUBSTANCES

The Project when operational will use relativey small volumes of hazardous substances. The types of hazardous substance, projected usage and storage details are presented in **Table 23.** The locations of the hazardous materials storage area is shown in **Plate 8.**

Table 23: Projected Hazardous Materials Consumption Rates when Development Operational

Types of Hazardous Material	Projected usage per month	Storage Arrangement (Bulk tank, IBC, drums, bottle, can etc.)	Fitted with secondary containment (Y/N?)
Propane Gas	50 kg	Bottle	N
Diesel	3 m3	Built-in Tank @ Gen-set	N

4.14 NON HAZARDOUS SOLID WASTES

The operational project will generate several non-hazardous solid waste streams as detailed below in **Table 24.** The location of the onsite non-hazardous waste storage area is shown in **Plate 8.**

Table 24: Operational Phase – Non-hazardous Solid Waste Streams and Disposal

Waste Type	Disposal Method (Offsite, Landfill Onsite, Recycled etc.)	Name of Waste Haulier, Disposal Site and or Recycling Company
Food Waste	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Paper/Cardboard	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Plastic	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Cans	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Glass	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Gardening Wastes	Offsite (20 km away)	MCDC Disposal Yard (MLM)

4.15 HAZARDOUS SOLID AND LIQUID WASTES

The Project when operational will generate small volumes of hazardous wastes as detailed in **Table 25.**

The location of the hazardous waste temporary storage area is shown in **Plate 8.**

Table 25: Projected Hazardous Waste Streams & Disposal Methods

Waste Type	Disposal Method (Offsite, Landfill Onsite, Recycled etc.)	Name of Waste Haulier, Disposal Site and or Recycling Company
Waste oils	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Used chemical containers	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Batteries	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Aerosol cans	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Fluorescent Light tubes	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Electronic wastes	Offsite (20 km away)	MCDC Disposal Yard (MLM)

4.16 VEHICLE MOVEMENTS

The projected vehicle movements associated with the operational phase of the Project are presented **Table 26**.

Table 26: Projected Operational Phase Vehicle Movements

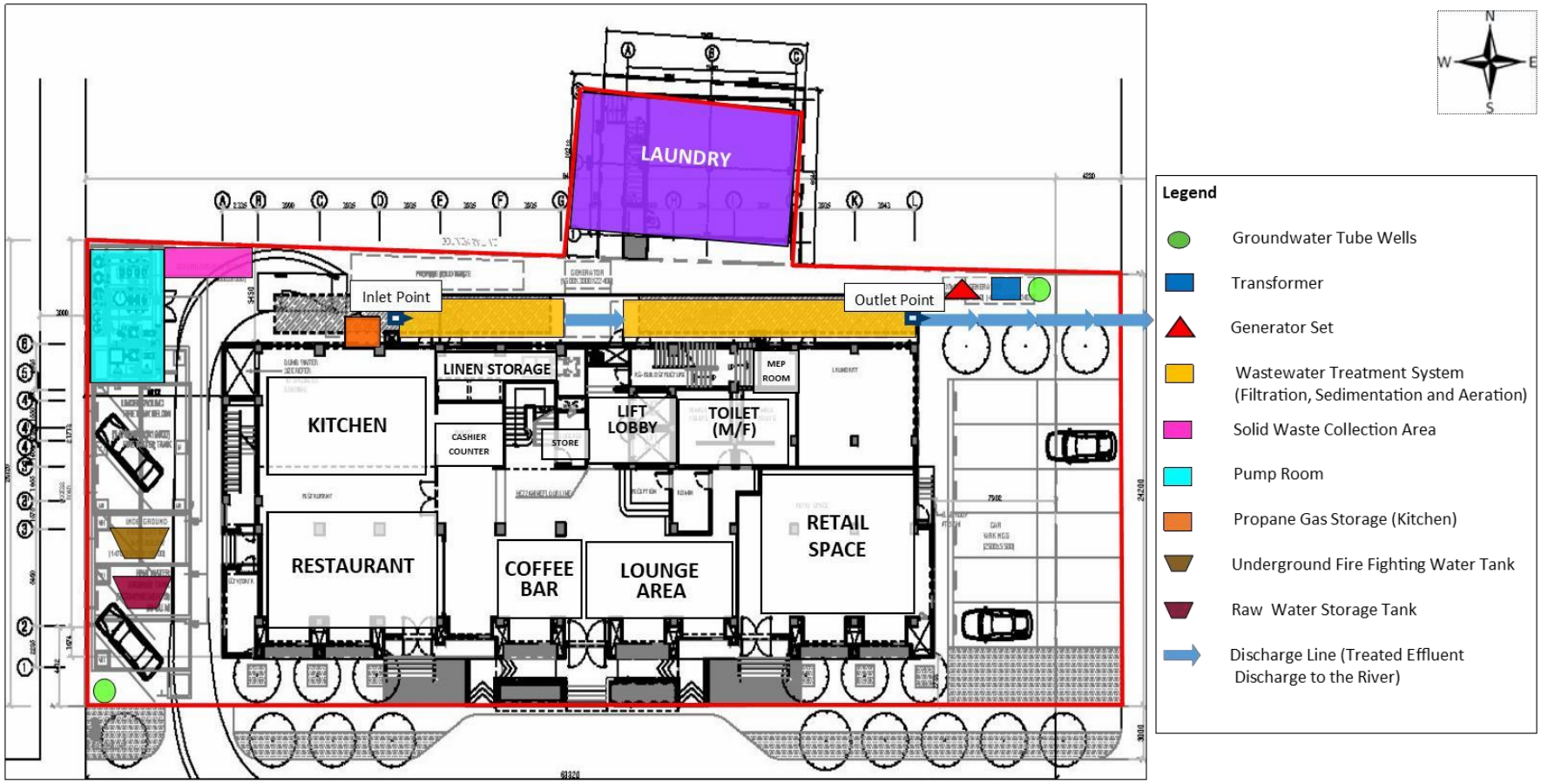
Activity	Projected Average Number Daily Vehicle	
Waste oils		
Used chemical containers		
Batteries		
Aerosol cans		
Fluorescent Light tubes	Offsite (20 km away)	MCDC Disposal Yard (MLM)
Electronic wastes	Offsite (20 km away)	MCDC Disposal Yard (MLM)

4.17 OPERATIONAL HOURS

The operational hours of the Project when completed are 24 hours a day for 365 days a year.

4.18 DEVELOPMENT LAYOUT AND KEY ENVIRONMENTAL ASPECTS

Plates 8 and Figure 6 in **Appendix B** show the layout of the completed Project and the location of the key features of the development scheme which have the potential to interact with environmental receptors.



Source: *SPA Project Management, Mawlamyine Hotel (MMH), 2018.*

Scale: *Not to Scale*

Plate 8: Operational Phase Development Layout Phase (Basement Level) with Key Site Features

4.16 CONSTRUCTION AND OPERATIONS PHASE PRIMARY ACTIVITIES

The primary activities associated with the **construction** and **operations** phase of the Project which also have the *potential* to have significant interactions with environmental and socio-economic cultural receptors are summarized in **Table 27**.

Table 27: Significant Construction and Operational Phase Activities

Activity/Source of Potential Impact	Construction	Operation
Construction activities	✓	
Commissioning activities	✓	
Electricity usage	✓	✓
Water usage	✓	✓
Hazardous materials (storage and use)	✓	✓
Hazardous wastes generation	✓	✓
Non-hazardous wastes generation	✓	✓
Sanitary wastewater generation	✓	✓
Propane (storage and use)		✓

5.0 PHYSICAL AND BIOLOGICAL ENVIRONMENT

5.1 LOCATION

The Project Site Area is situated in Mawlamyine located in the southern part of Myanmar on the banks of the Thanlwin River. Mawlamyine is the capital city of Mon State with a population of approximately 254,000 people. It is bounded to the north by Paung and Hpa-an Township and to the south by Mudon Township, to the east by Kyaikmayaw Township and to the west by Thanlwin River and Chaungzon Township.

5.2 CLIMATE AND PRECIPITATION

Mawlamyine has a tropical monsoon climate which comprises of a wet period, a summer and a dry period during the winter. Owing to its location close to the Gulf of Martaban and the Andaman Sea, the average humidity figures for the area are lower than in the interior of Myanmar. The temperature typically varies from 19°C to 33°C and it is rarely below 16 °C or above 36 °C.

The hot season generally occurs from February to May, with an average daily high temperature above 32°C. The hottest day of the year is in April with an average temperature of 33°C. The cool season lasts from June to September, with an average daily high temperature below 29°C. The coldest day of the year is in January, with an average low of 19°C and a high of 30°C.

As one of the Delta regions in Myanmar, Mawlamyine is located within the wettest part of Myanmar, receiving on average more than 189 inches of rain every year. The wet season runs from May to October, and rainfall peaks in August, with the chance of rain at 83%. The overflowing of rivers and streams happens frequently due to heavy rainfall and roads are often flooded.

5.3 NATURAL HAZARDS

Myanmar is exposed to multiple natural hazards in different seasons including cyclones, floods, fires and earthquakes. According to the Seismic Zone Map of Myanmar (**Figure 7** in **Appendix B**), Mawlamyine falls in the low zone with less than 0.11 PGA (Peak Ground Acceleration). This means that the risk related to earthquake is considered as moderate. The client reported that in the design of the project the Project's Engineer considered the site as earthquake zone 2B.

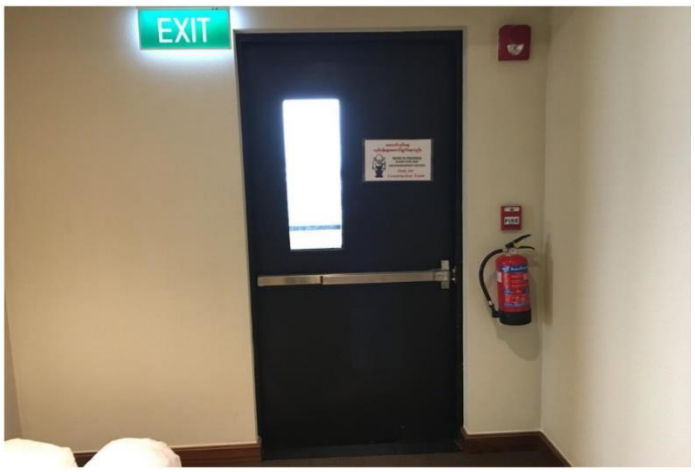
Myanmar's Rakhine Region, Ayeyarwady Region, Yangon Region, Mon State and Tanintharyi Region are considered as vulnerable areas to cyclones which occur from April to December (with severe cyclones occurring during the pre-monsoon period of April-May and post-monsoon period of October- December). Out of the annual ten tropical storms in the Bay of Bengal, almost five become severe cyclones of which 90 percent crossed the Rakhine coast, 7 percent the Ayeyarwady delta coast and the remaining 3 percent crossed the Tanintharyi and Mon coasts.

Mawlamyine has natural protection from tsunami or high rising sea water triggered by tropical cyclones being sheltered by Bilugyun Township located to the west of Mawlamyine town, therefore, it is less prone to cyclones or storm surges.

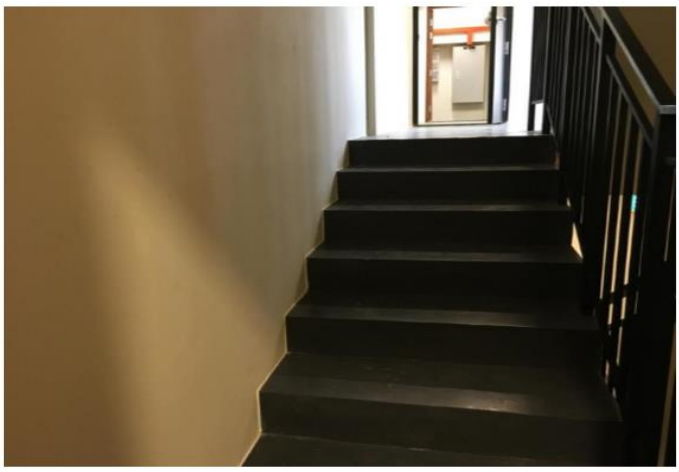
Thanlwin River tends to be the main cause of serious flood damages in the Mawlamyine area. According to the records of Department of Meteorology and Hydrology, the river water levels in the Thanlwin River exceeded the critical level seven years out of ten (period 2003-2012) and water levels above the critical level lasted for 5 to 46 days. However, flooding is reportedly not a major issue in the

Mawlamyine urban area due to the hilly topography of the City and the seawall along the Thanlwin River. The Project Proponent reportedly consulted the surrounding communities who reported that the river level can rise up to 0.2 m (or 200 mm) beyond the Strand Road.

Moreover, Suggati Hotel is developed according to fire safety rules and requirements and stated as follows.



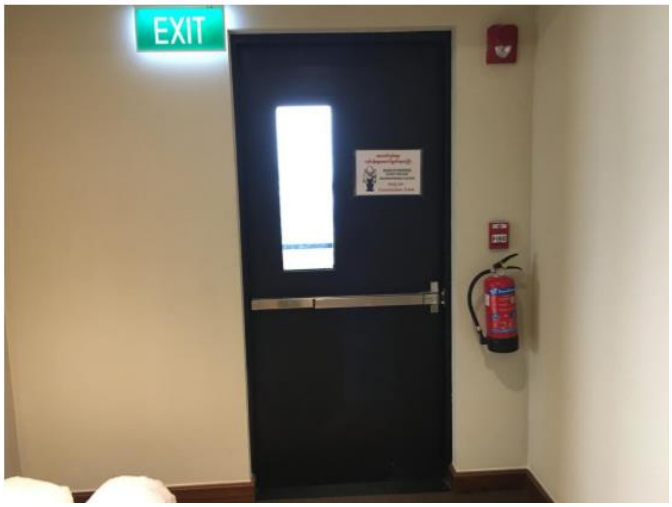
Emergency Exist



Emergency Stairs

Fire Hose Reel, Fire Alarm & Sounder

Fire Hose Reel & Extinguisher



Fire Extinguisher & Emergency

Fire Alarm Control Panel

Fire Detector & Sprinkler

Escape Plan

Furthermore, Training and Development Team of Suggati gives training on firefighting, evacuation and first aid. Organize a volunteer firefighting team with hotel employees and get consultation by Mawlamyine Township fire station. Firefighting team gave training for hotel employees as following.

5.4 TOPOGRAPHY

The geographical coordinates of Mawlamyine are 16°22′16″ N latitude and 97°35′42″ E Longitude. The elevation above sea level of Mawlamyine is 52 m (170 ft). The project site is located in a lowland coastal setting and Google Earth Imagery indicates that then site sits at an elevation ranging from 4 m to 6 m above mean sea level (AMSL).

The site itself is relatively level and Google Earth imagery indicates that the highest elevation is in the eastern sector at ~7 m AMSL and the lowest in the south western sector at ~4 m AMSL.

5.5 LANDUSES IN THE PROJECT SITE AREA

Plate 9: Landuses in the Project Site Area

Plates 9 and Figure 8 in **Appendix B** show landuses in the Project Site Area which are primarily urban comprising of residential and commercial properties. Remnant patches of mangrove forest are present along the banks of the Thanlwin and Attaran rivers, but these areas represent the upstream distribution limit of mangrove species, as the salinity of the water reduces.

No mangrove vegetation was observed within or close to the Project Site Area.

Mawlamyine has had several sawmills and rice mills as teak and rice were transported down to the Thanlwin River. It was a busy shipbuilding center and remains as an important port. According to the google earth records and site interview, the sawmills and rice-mills were built at the southern and southwestern part of the project sites.

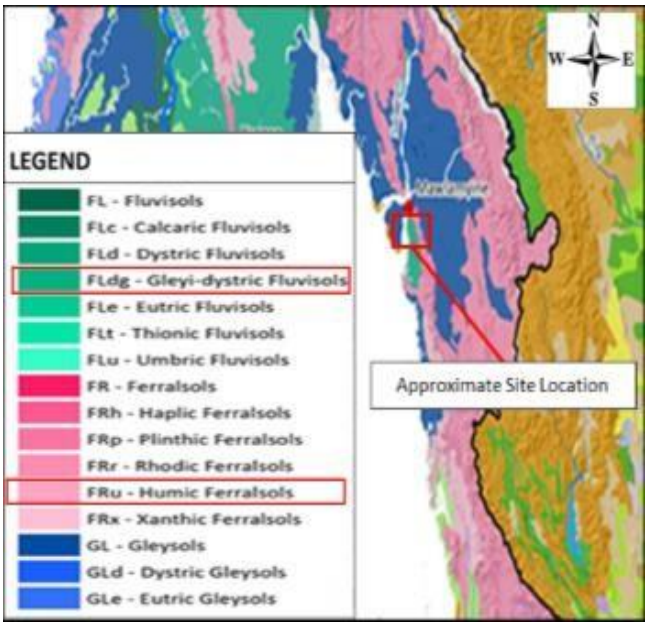
5.6 GEOLOGY

Mawlamyine is in the Thanlwin River Delta, where the mouth of the Thanlwin is sheltered by Bilugyun Island as it enters the Gulf of Martaban and the Andaman Sea. Yankin Ridge lies between the Riverplain in the west and Attaran River in the east.

According to physical features of Mawlamyine Township, the area can be divided into four regions, namely; the Mawlamyine river-plain, the riverine tracts of the Gyaing and the Attaran rivers, the central mountain range and the southern mountain portion. The Project Site Area is reportedly characterised by two main geological strata; Young Alluvium (Holocene Period) and Taungnyo formation Lebyin Group, Mergui Group and its equivalents (Carboniferous Period).

The Geology Map for the Project Site area is presented in **Figure 9** in **Appendix B**.

5.7 SOIL TYPES



There are three types of soil that support the settlements of Mawlamyine City. They are lateritic yellow brown forest soil, lateritic soil and meadow gleyey soil. Lateritic yellow brown forest soil occupies transitional area between lateritic soils and yellow brown forest soils. These soils are found on the Yankin and Taungwaing Hill. Land use capabilities are the same as those of yellow forest soils and are classified as garden lands of good fertility.

Plates 10 and **Figure 10** in **Appendix B** show the soil profile which is characterized by the presence of iron concretions in a loamy matrix showing different shades of yellow brown colour. The concretions are abundant, and their sizes vary.

Plate 10: SoilTypesoftheProjectSiteArea

Besides, lateritic soils are so much leached that only a small proportion of plant nutrients are left. Meadow gleyey soil is found along the coastal plains of the city and the Attaran River valley. Paddy is the typical plant grown on this soil type. The largest content of this soil is clayey alluvium and the Project Site Area is characterised by the alluvium soil type. Mawlamyine is mainly composed of bedrock covered by at least 6 meters of alluvial deposit soils.

The rocks of Taungnyo series consists of sandstones, slate and shales at times passing to quartzites. The soil of the city varies according to topography and parent material. Thus, laterite and laterites soils with granite and sandstones outcrops are found in Yankin Ridge and foothill areas. On the surrounding plains are old alluvium deposited by the Thanlwin River and its tributaries. On the coastline are mud and sand that cover the tidal areas. The three types of pedology of city that supports the settlements are lateritic yellow brown forest soil, lateritic soil and meadow gleyey soil.

5.8 GROUNDWATER

According to the report of Ministry of Border Affairs & JICA (2013), groundwater in the Project Site Area is primarily abstracted from three kinds of wells: (i) hand-dug wells (10 to 12 m depth), shallow-wells (25 to 50 m depth) and tube wells (more than 60 m depth) in Mon State. According to the final report on Myanmar Three Cities Water Supply Management Improvement Project (Ministry of Health, Labour and Welfare of Japan, 2003), the underground water levels in Mawlamyine tend to be low in the dry season and even depleted sometimes. Underground water abstracted from shallow wells close to the river is brackish and is reportedly rarely used for drinking purposes.

Due to the influence of the sea and the salinity of the water in the estuary, the high salinity of tube wells is located along the Thanlwin River bank. Turbidity and TSS values are high for underground resources, probably reflecting the inappropriate design of the tube wells or the fine sediment at the level of the pumping. The groundwater map extract of the Project Site Area is presented in **Figure 11** in **Appendix B.**

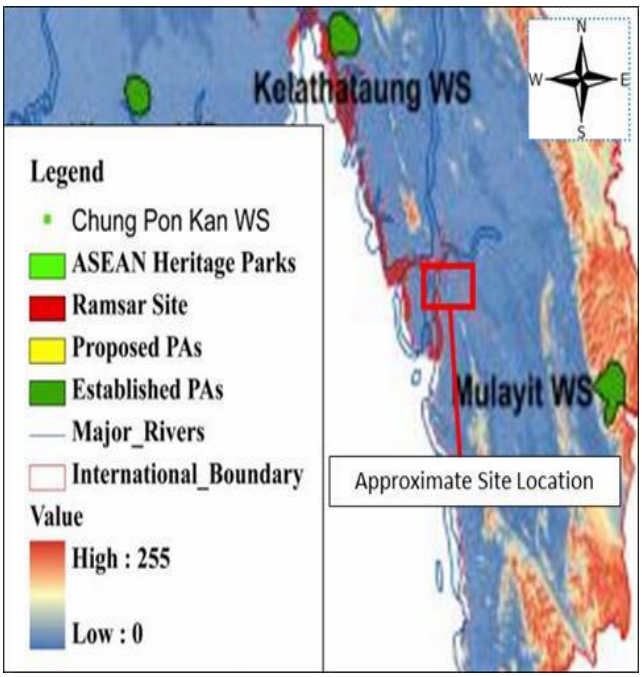
5.9 SURFACE WATERS

Mawlamyine is located along the estuary of the Thanlwin River which is about 2,815 km long which flows from the Tibetan Plateau into the Andaman Sea in Southeast Asia. It drains a narrow and mountainous watershed of 324,000 km² (125,000 sq. miles) that extends into the countries of China, Burma and Thailand. Its discharge rate is estimated as 157 billion m³/year, with a mean low flow of 2,300 m³/s and a flood discharge of 32,600 m³/s at the Delta.

The land occupied by Mawlamyine is a low tidal flat plain one of the eastern part of the Thanlwin River and most of the creeks in this area are tidal and brackish due to the estuarine nature of the area. However, interview information indicates that water quality in these surface watercourses is good and several villages reported that they use river water for their main water supply.

A figure showing the location of the site relative to local water courses and features is presented in Figure 12 and 13 in Appendix B.

5.10 PROTECTED AND ECOLOGICALLY SENSITIVE AREAS



The Project site is located in an urban area and is not located within a Protected Area or Key Biodiversity Area (KBA). The nearest Key Biodiversity Area (KBA) is a wetland area located approximately 7 km west of the Project Site which is shortly to be declared as a Ramsar Site. Ramsar designation is reserved for the most significant wetlands in the world and are protected under the Ramsar Convention, a 1971 intergovernmental environmental treaty.

The nearest *nationally* protected area to the Project Site is the Mulayit Wildlife Sanctuary which is located approximately 62 km southwest of the Project Site. It was declared a Nature Reserve in 1936 by the Ministry of Forestry.

Plate 11: Project Site Location relative to Protected/Ecologically Sensitive Areas

The Sanctuary is covered by Grassland, Evergreen Forest (Typical), Mixed Deciduous Forest (Moist Upper), Hill Forest (Evergreen) which reportedly contains Barking Deer, Tiger, Leopard, Javan Rhinoceros (extinct since 1948).

Moreover, the second nearest *nationally* protected area to the Project Site is the Kelathataung Wildlife Sanctuary which is located approximately 87 km north of the Project site. It was declared a Wildlife Sanctuary in 1942 by the Ministry of Forestry with the main purpose of the designation being conservation and natural resources maintenance. The location of the project Site relative to protected and ecologically sensitive areas is shown on **Plate 11** and **Figure 14** in **Appendix B.**

5.11 CULTURAL HERITAGE SITES

Whilst Mawlamyine has a rich history with respect to cultural and religious heritage, desk study indicates that there are no nationally important cultural, religious or archeological heritage sites located within a 1 km radius of the Project Site.

Significant heritage features are however located within a 2 km radius of the Project Site, including; Tang Pauk Monastery Pagoda (1.9 km), Mon Cultural Museum (1955) (1.2 km), St. Patrick's Church (1829, 1.8 km), Kyaik Thoke Pagoda (1 km), Aung Theik Di Pagoda (1.4 km), Lawka Thara Puu Pagoda (1.3 km), U Khanti Pagoda (1 km), U Zina Pagoda ((3rd century B.C., 1.2 km). **Plate 12** and **Figure 15** in **Appendix B** show sites of cultural, religious and or archeological heritage sites within the general vicinity of the Project Site.

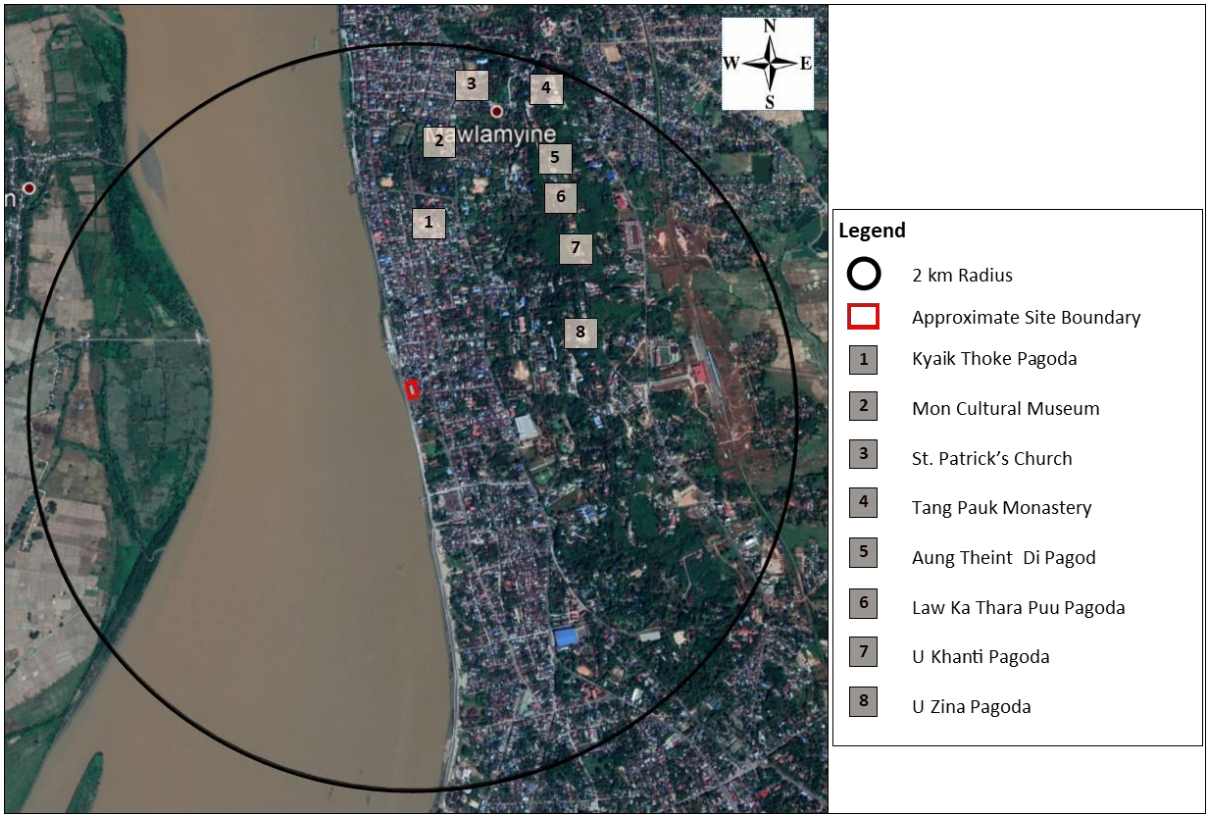


Plate 12: Project Site Relative to Cultural Heritage Sites

5.12 Economy and Livelihoods

Owing to the relative stability since the ceasefire, the local economy and markets are more established in Mon State, and a variety of industries have advanced in recent years. However, the overall political change in Myanmar still provides significant reason for optimism in Mon State, as most sectors remain underdeveloped and socio-economic indicators suggest there are considerable development needs in the state. Nonetheless, Mon State is in a comparatively better situation to absorb and benefit from the current rush of investment into the emerging South-East, although a sustainable, responsible and coordinated approach remains pivotal. Overall, the state capital Mawlamyine is well established as the trading and shipping hub for South-East Myanmar.

As elsewhere in South-East Myanmar, the people of Mon State have traditionally relied extensively on agriculture for their livelihoods, with large areas of arable flat land throughout the area. With a total of approximately three million acres of cultivatable land, most are used for rice paddles. Other major crops in Mon State include corn, groundnut, sunflower, cashew nuts, sugarcane, coconut, palm oil, cocoa and various type of fruit, some of which (eg. Mangosteen, pomelo) are known as the best countrywide.

Fishing along the state's western coast has historically supplemented incomes and diets, both for wholesale markets, as well as the processing of dried fish and algae for production of fish sauce, paste, spices and agar-agar. Mining is also an emerging industry in Mon State, with antimony, granite and gold mined in various places. There are also several state-owned enterprises in Mon State, including rubber and tire factors and a coal power station near Mawlamyine, as well as rubber plantations, although the industry is not as significant in Mon State as elsewhere in the region.

5.13 Services and Infrastructure

Another benefit to the recent stability has been the integration of the state and non-state service sectors in Mon State, which may serve as a useful model for other states still focused on early recovery and peace-building. Meanwhile, Mon State is marginally more developed than and Kayah state in terms of physical infrastructure. The highway from Yangon is a major transport route through the Southe-East, following the coast through Mon State south to Tanintharyi Region, however until the Thanlwin Bridge opened in 2005, continuing to Mawlamyine required taking a ferry at the confluence of the Thanlwin, Gyaing and Attayan Rivers. A commercially significant highway also continues through Ye Township to Three Pagoda Pass, an official border crossing and major trading route with Thailand. The mail rail link from Yangon and East Bago continues through Mawlamyine, with stations in Kyaikto, Mawlamyine, Thanbyuzayat and Ye Townships. Mon State is also the location of one airport in Mawlamyine, which is serviced by weekly fights to Yangon and daily flight to Mae Sot, Thailand.

In regard to power, the main power plant is located in Mawlamyine, however the planned upgrades of a facility in Thaton and of a natural gas turbine plant in Mawlamyine provide reason for optimism. A coal-fired power plant is also being constructed in Ye Township, which would generate 1280 megawatts of power for the local area, but this project has been hampered by ongoing protests by local residents from the nearby Inn Din Village. The gas pipelines discussed above, which originate in Dawei Township in Tanintharyi Region and was a source of considerable tension and displacement in the 1990s, are now connected to Mon State.

5.14 Population

Population is one of the important socio-economic conditions of a township. In 2006, the total population of Mawlamyine was 238,388 persons. Total population of Mawlamyine Township in 2014 was 289,388 with population density of 2,028.1 inh./km^2 significantly higher than the country's population density of 81.82 inh/km^2. The township hosts total household of 57,457. Being an administrative and trading hub of the region, the majority of populations resides the urban area. In 2014, altogether 253,743 (88%) people out of the total population lived in the urban area while the remaining 35,643 persons (12%) resided in the rural area. The higher proportion of urban population is due to the presence of commercial and other economic activities.

The population of Township has always been increasing year by year mostly by natural growth rate and migration. It is expected that the bridge over Thanlwin River connected between Mawlamyine and Chanungson Township is already finished and population in the Mawlamyine is forecasted to increase.

5.15 Ethnicity, Religion and Culture

The ethnicity of Mawlamyine is comprised of Mon, Bamar, and other ethnic groups. Bamar is the largest ethnic group. The religious are Buddhism, Christianity, Islam and Hindusim. Mawlamyine is key to communications in Tanintharyi and, being a busy seaport and transport center, it provides a multicultural dimension despite a Buddhist Mon majority. Buddhist cultural dominance is as old as Mawlamyine, but the British annexation in the 19th century introduced Christianity. St Patrick's School, Mawlamyine (now BEHS-5, Mawlamyine) was opened by the De La Salle Brothers in 1860. Moreover, expansion of trade and commerce in the early 20th century established in Mawlamyine by a Hindu culture of India (so-called Galakhar). Today, the Mon State Cultural Museum is opened in the city.

Mawlamyine is rich with places which draw many attentions of both tourist and domestic travelers as it is filled with many interesting hotspots to visit and enjoy. Thanlwin River and other rivers, Stupa capped hill, colonial era-buildings and other landscapes are the major tourist destinations. St. Gabriel and St. Matthew and St. Augustine Churches, clock tower, Mawlamyine prison are among the interesting colonial buildings. Yadanarbonmyint Monastery, Kyaikthanlan Pagoda, U Zina Pagoda, Guaung Se Island are the most interesting cultural and religious sites to visit.

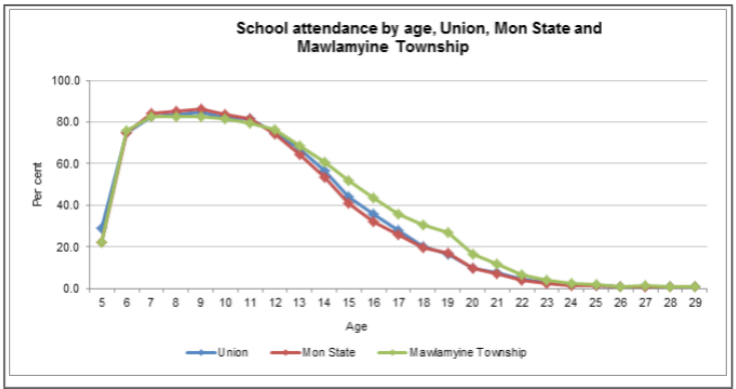
5.16 Health

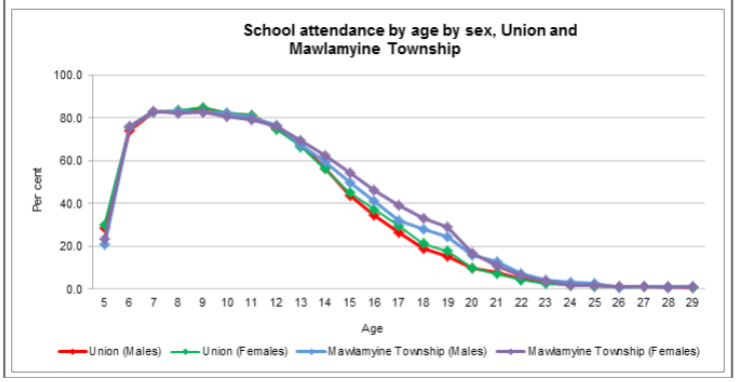
A significant number of health related issues could be trigged due to contaminant air pollutants by inadequate waste burning practices from municipal waste burning site and other activities. Potential Residents affected by Air Pollution Open burning of household waste, waste from business activities and other communal waste which contain plastic debris and other material could result in serious health problems to human health .Number health issues in local residents can be developed from toxic gases and particulate emission. Carbon oxide from incomplete combustion could cause dizziness, head ache, affect mental function, visual acuity and alertness. Dioxins and Furans are very toxic and it may cause cancer and affect immune and reproductive systems. Dioxin is emitted by burning organochlor based plastic compound such as PVC (Poly Vinyl Chloride). Particulate matter can lead to irritation of respiratory tract and aggravated asthma. It also contributes to chronic obstructive pulmonary diseases.

Burning polystyrene releases Carbon Monoxide and styrene monomers into the environment, which can be extremely hazardous to health. Residual ash from burning site can be washed away by storm water and then brought into nearby water bodies. Ash containing toxic compounds could impair the water quality of both surface and ground water. Contaminant water can contribute to health problems such as typhoid in local community who rely on stream and tube well as water source .Open dumping site could be the place spreading infection disease through vectors. Most vulnerable communities who could be suffered health problems by open burning and dumping water is predicted to be residents living about 1000 m distance from the site. However, this is just estimation and people living outside of this boundary could also be affected by these Throwing rubbish and discharging domestic, industrial and agricultural runoff and waste water into nearby river channels could contaminate water. Contaminated water can cause many water borne diseases such as typhoid, hepatitis A and cholera.

5.17 Education

Age	Total population			Currently attending		
	Total	Males	Females	Total	Males	Females
5	4,274	2,188	2,086	953	461	492
6	4,720	2,421	2,299	3,583	1,836	1,747
7	5,022	2,601	2,421	4,156	2,145	2,011
8	4,704	2,348	2,356	3,892	1,953	1,939
9	4,868	2,438	2,430	4,028	2,020	2,008
10	4,911	2,551	2,360	4,007	2,100	1,907
11	4,964	2,483	2,481	3,958	1,987	1,971
12	5,177	2,638	2,539	3,954	2,017	1,937
13	5,760	2,896	2,864	3,952	1,962	1,990
14	5,754	2,826	2,928	3,502	1,680	1,822
15	4,968	2,498	2,470	2,579	1,239	1,340
16	4,601	2,185	2,416	2,009	895	1,114
17	4,446	2,178	2,268	1,591	700	891
18	4,781	2,309	2,472	1,465	647	818
19	4,288	1,979	2,309	1,153	481	672
20	4,832	2,183	2,649	796	352	444
21	3,996	1,798	2,198	473	233	240
22	4,105	1,894	2,211	267	133	134
23	4,137	1,920	2,217	165	82	83
24	3,730	1,718	2,012	94	55	39
25	4,135	1,913	2,222	82	47	35
26	3,956	1,859	2,097	37	17	20
27	3,832	1,753	2,079	49	25	24
28	4,523	2,039	2,484	44	22	22
29	3,916	1,764	2,152	46	24	22





School Attendance in Mawlamyine Township drops starting from age 12 for both males and females.

Compared to the Union, the school attendance of males and females in Mawlamyine Township is obviously higher at ages from 13 to 22 years.

: Youth literacy rate (15 - 24), Mawlamyine Township

Sex	Total Population (15 - 24)	Literacy Rate (15 - 24)
Total	43,884	97.8
Males	20,662	97.9
Females	23,222	97.7

- The literacy rate of those aged 15 and over in Mawlamyine Township is 95.6 per cent. It is higher than the literacy rate of Mon State (86.6%) and the Union (89.5%). Female literacy rate is 94.2 per cent and for the males it is 97.4 per cent.
- The literacy rate for youth aged 15-24 is 97.8 per cent with 97.7 per cent for females and 97.9 per cent for males.

5.18 Water Quality

The water quality analyzed from the rivers located in the proposed project area can provide some indication of the water quality of the project area. The water sampling were collected and analyzed during March 2017 – April 2018. The selection of parameter of water testing is solely depend upon the purpose of using water such as pH, True Color, Turbidity, Electrical Conductivity, Iron, Manganese, Sulfate, Fluoride, Alkalinity, Total Hardness and Chloride. The following table shows parameter and test methods of water quality in proposed project area.

No.	Parameter	Unit	Methods
1.	pH	-	Electrometeric method
2.	Turbidity	NTU	Turbidity Meter
3.	Colour	TCU	Visual Comparison method
4.	Conductivity	microS/cm	Electrical Conductivity method
5.	Iron	mg/l	Ferro Ver method
6.	Manganese	mg/l	PAN method
7.	Sulphate(as SO4)	mg/l	SufalVar Turbidimetric method
8.	Fluoride	mg/l	SPADNS method
9.	Alkalinity	mg/L as CaCO3	Titration method
10.	Total Hardness	mg/l as CaCO3	EDTA Titrimetric method
11	Chloride	mg/l	Argentometric method
12	COD	mg/l	-
13	BOD	mg/l	-

Results and Discussion

For water quality, 4 samples of surface water (samples 1 to 4) including Attaran River and Thanlwin River samples (No.1 and 2), 2 lake samples (No.3 and 4) and 1 sample of leachate from the dumpsite (No.5) have been analysed. Results of analysis are provided in the following table.

No.	Parameter	Unit	01	02	03	04	05	WHO Guidelines
1.	pH	-	7.67	6.48	6.99	6.50	6.75	6.5-8.5
2.	Turbidity	NTU	480	74	62	63	89	5 NTU
3.	Colour	TCU	Nil	10	Nil	180	30	15 TCU
4.	Conductivity	microS/cm	490	74	62	63	89	-
5.	Iron	mg/l	0.33	1.22	0.42	4.86	3.54	0.3 mg/l
6.	Manganese	mg/l	Nil	Nil	Nil	0.2	Nil	0.05 mg/l
7.	Sulphate (as SO4)	mg/l	Nil	Nil	Nil	320	28	200 mg/l
8.	Fluoride	mg/l	0.8	1.1	0.9	0.3	0.5	1.5 mg/l
9.	Alkalinity	mg/L	4	8	4	1210	152	-
10.	Total Hardness	mg/l	2	4	4	840	114	500 mg/l
11	Chloride	mg/l	6	3	4	2300	3	200 mg/l
12	COD	mg/l	<32	<32	<32	896	<32	-
13	BOD	mg/l	7	9	5	390	8	-

With regard to these analyses the following interpretations have been made:

- For sample 4 (landfill leachate) most of the parameters are higher than the national standards for municipal landfill leachates and other parameters; there is however no sign of heavy metal contamination in the leachate as per the results.
- The tubewell near government houses (Sample 5) is not in regular use as the housing are not yet inhabited. It would be appropriate in the future to connect these areas to the proposed water supply project.
- pH is very low in sampling 2 (ph < 6)
- Turbidity is higher than WHO standards in all samplings.
- Iron is higher than WHO standards in all the samplings.
- Fluoride is quite high (0.3 to 1 mg/l) but still lower than WHO standards.

In general, there is no specific correlation between pollution in samples downstream and upstream of the dump site although the tubewell (sample 5) exhibits water quality exceeding WHO standards for both physical and microbiological parameters.

6.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

6.1 INTRODUCTION

A synopsis is presented below of the environmental and social regulatory framework that is considered relevant to the Project activity. The primary legislative instrument governing the Environmental Impact Assessment process in Myanmar is the ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE, Ministry of Natural Resources and Environmental Conservation, Notification No. 616 / 2015 dated 29 December 2015.

6.2 INSTITUTIONAL CONTEXT

6.2.1 Administrative Structure Overview

The governmental structure in Myanmar is separated to 3 sections; Government, Regional Administration and Local Administration as shown in **Plate 13**.

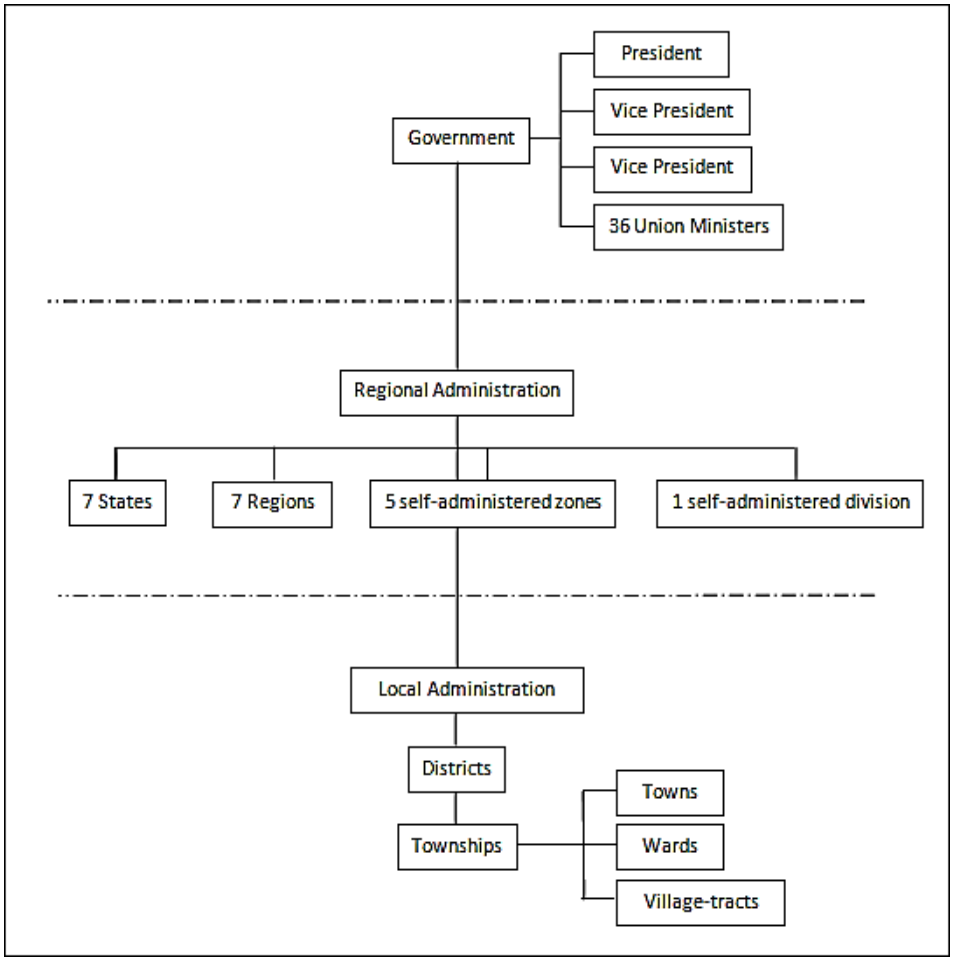


Plate 13: The Governmental Structure in Myanmar

Myanmar administrative divisions are divided into 21 sub-divisions which include 7 States, 7 Regions (aka Divisions), 1 Union Territory, 5 Self-administered Zones and 1 Self-administered Division. The regions are characterised by majority Bamar populations whereas whereas the States are characterised by majority ethnic minority populations. Regions and States are divided into Districts and each district is further sub-divided into Townships which encompass Towns, Wards and Village- Tracts (a group of adjacent villages).

The main government agencies responsible for controlling the potential environmental impacts of tourism and hospitality type developments in Myanmar comprise of:

- **Ministry of Natural Resources and Environmental Conservation** (MONREC) – the Environmental Conservation Department (ECD) within MONREC is the primary government agency responsible for environmental protection and managing the environmental and social impacts of projects. MONREC's responsibilities include reviewing and approving a project developers EIA Project Proposal, EIA Scoping Study, Environmental Impact Assessment (EIA) report and Environmental and Management and Monitoring Plan (EMMP) report.
- The **Myanmar Investment Commission** (MIC) is the responsible agency under the Myanmar Investment Law (MIL) No. 40/2016 for scrutinizing investors proposals, granting investor privileges and issuing Investment Permits. Under the MIL the MIC has a duty to consider the environmental and social impacts of projects when considering investors proposals.
- The **Department of Health (DOH)** within the Ministry of Health is responsible for occupational and environmental health protection in Myanmar. This department deals with the prevention of adverse health effects due to air and water pollution, toxic and hazardous wastes and chemical safety. The Occupational Health Division (OHD) within the DOH is responsible for health promotion in work places, environmental monitoring of work places, biological monitoring of exposed workers and health education on occupational hazards.
- **Mawlamyine City Development Committee (MCDC)** is the administrative body of Mawlamyine and responsible for waste management, water supply and sanitary systems, implementing land policies, administration of lands, developing and enforcing planning controls, protection of heritage buildings, regulation of construction sites, environmental regulations including business licenses and registries and maintenance of public property.
- **The Myanmar Insurance Law (1993)** – there are three main purpose of the Myanmar Insurance; to overcome financial difficulties by effecting mutual agreement of insurance against social and economic losses, to promote the habit of savings individually by effecting life assurance and to win the trust and confidence of the people in the insurance system by providing effective insurance safeguards which may become necessary in view of the social and economic developments.
- **Myanmar Public Health Law (1973)** – it is concerned with protection of people's health by controlling the quality and cleanliness of food, drugs, environmental sanitation, epidemic diseases and regulation of private clinics.
- **The Myanmar Investment Law (2016)** – the Myanmar Investment Commission has

recently undergone a major transformation because of changes arising from the Myanmar Investment Law 2016 (MIL) and the Myanmar Investment Rules 2017 (MIR). The main objective of the MIL is surely to assist in attracting more investment applications and making the process easier. However, it remains to be seen if the MIL and MIR will achiever this critical objective.

- **The Myanmar Investment Rules (2017)** – it came into effect on 30 March 2017. The MIR, together with the Myanmar Investment Law that was enacted in October 2016, provide greater clarity on the role of the Myanmar Investment Commission ("MIC") and also streamline and categorize the various processes and requisite approvals applicable to foreign investments in a more efficient manner.
- **Myanmar Fire Brigade Law (2015)** – the objectives of this law includes taking precautionary and preventive measures against destruction and lose of State-owned property, private property, cultural heritage and the lives and property of the public and educating, organizing and inciting extensively so as to achieve public cooperation when any catastrophe occurs.
- t**he Law on Prevention and Control of Infectious Diseases (1995)** – the main objective of this law is in order to prevent the outbreak of communicable diseases.
- **the Control of Smoking and Consumption of Tobacco Products Law (2004)** which covers the prohibition of sale of tobacco to minors and all forms of tobacco advertisement.
- **Labour Law (2011)** – the Pyidaungsu Hluttaw enacts this law, in accord with section 24 of the Constitution of the Republic of the Union of Myanmar, to protect the rights of the workers, to have good relations among the workers or between the employer and the worker, and to enable to form and carry out the labour organizations systematically and independently.
- **Labour Dispute Law (2012) –** the Pyidaungsu Hluttaw enacts this Law for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by setting the dispute of employer and worker justly.
- **Social Security Law (2012)**- the Law aims to support he development of the State's economy through the development of production by causing to enjoy more security in social life and health care by the workers who are major productive force of the State by the collective guaranty of the employer, worker and the State and many other good purpose for employees.
- **Employment Compensation Law** – the Law enacts for the employee who has a valid employment contract establishing the employer-employee relations, he or she will most certainly be able to exercise his or her right to seek compensation under the Employment Compensation Law when it comes into effect. An employer must be aware of their duties under the Employment Compensation Law when it comes into effect, and must comply with the same.
- **The Employment and Skills Development Law (2013)** – The Ministry shall manage the facilities and measures to help for selection of employment, obtaining employment for employment seeker suitable according to the age and strength; tenure in employment and skill development, and to help employers for obtaining workers suitable for the

employment.

- **The Factory Act (1951)** – the working hours, overtime, if working on days-off, calculation of overtime wages, worksite safety and measures and welfare are described clearly on the Factory Act.
- **Minimum Wages Act, 2013** – the Phyidaungsu Hluttaw establishes this Law to meet with the essential needs of the workers, and their families, who are working at the commercial, production and service, agricultural and livestock breeding businesses and with the purpose of increasing the capacity of the workers and for the development of competitiveness.
- **The payment of wages Law (2016)** – the employer shall pay wages to the workers employing in his business in local currency or foreign currencies stipulated by the Central Bank of Myanmar. Such payment may be paid in cash or cheque or deposit into the bank account of the worker with the agreement between the employer and the worker. The detail rules and regulations of this rules can be seen in the Pyidaungsu Hluttaw Law No.17,2016.
- **The Leave and Holidays Act, 1951** – the Act describes about hours of work, weekly rest and paid leave. It contains 18 articles regulates the taking of leave and holidays in Myanmar.
- **Natural Disaster Management Law , 2013** - the Law is established to reduce Natural disaster include any danger specified as a natural disaster by the National Natural Disaster Management Committee.
- **The Conservation of Water Resources and Rivers Law, 2006** - The aims of this Law are to conserve and protect the water resources and rivers system for beneficial utilization by the public, to smooth and safety waterways navigation along rivers and creeks, to contribute to the development of State economy through improving water resources and river system and to protect environmental impact.
- **Municipal Law** – the law included dozens of controversial provisions including the formation of YCDC-run business parties responsible for construction, the service industry, recreation and others.
- **The Ethnic Rights Protection Law, 2015** – the objectives of this Law are; to obtain equal citizen's rights for all ethnic groups and to fully obtain the rights prescribed in the Constitution by ethnic groups.
- **Myanmar Tourism Law, 2018** – the main objectives of this Law are; to support effective domestic and international tourism marketing activities in visioning Myanmar as one of the International Tourist Destinations.
- **Myanmar Insurance Law, 1993** – the main objectives of this law are; to overcome financial difficulties by effecting mutual agreement of insurance against social and economic losses and to win the trust and confidence of the people in the insurance syste..
- Myanmar Tourism Procedures
- Hotel and Guest House in order

6.3 OVERVIEW OF PERMITTING PROCESS AND AUTHORITIES INVOLVED

A brief synopsis of the primary legislation and regulation related to the Environmental Impact Assessment process in Myanmar is presented below.

6.3.1 Environmental Conservation Law, Law No. 9/2012, 30th March 2012

There was no recognized environmental law in Myanmar until The Environmental Conservation Law (ECL) was enacted in 2012. The Environmental Conservation Law contains 14 chapters that define the rights and responsibilities of the Ministry of Natural Resources and Environmental Conservation which includes; environmental quality standards, environmental conservation, management in urban areas, conservation of natural and cultural resources, process for businesses to apply for permission to engage in an enterprise that has the potential to damage the environment, prohibitions, offences and punishments.

Under **Article 7** (m) the ECL states that the Ministry has duties and powers with respect to implementing 'a system of environmental impact assessment and social impact assessment as to whether or not a project or activity to be undertaken by any Government department, organization or person may cause a significant impact on the environment'.

Article 18 states that relevant Government departments and Government organizations shall carry out the conservation, management, beneficial use, sustainable use etc., of natural resources. MONREC shall cooperate with the relevant Government departments and Government organizations for the preservation of cultural heritage areas, natural heritage areas, cultural monuments, and natural areas.

Articles 22 – 25 allow the Ministry to establish a prior permitting scheme for businesses that may cause significant environmental harm by prescribing categories of business that require a permit for the activity which may also come with prescribed and binding conditions.

6.3.2 Environmental Conservation Rules (2013)

The Environmental Conservation Rules (2013) was issued by The Ministry of Natural Resources and Environmental Conservation (MONREC), in exercise of power conferred under sub-section (a) of section 42 of the Environmental Conservation Law 2012. It details the functions and duties of the Environmental Conservation Department (ECD) under the Ministry of Natural Resources and Environmental Conservation (MONREC).

Article 26 (g) states that ECD shall determine and issue guidance relating to the environmental impact assessment process.

Article 26 (h) states that ECD shall formulate the environmental impact assessment system and submitting it to MONREC.

Article 31 (a) states that MONREC shall establish an environmental management fund with the income received from the State budget.

Article 38 (a) states that MONREC may declare and determine, by notification, the environmental quality standards contained in sub-section (d) of section 7 and section 10 of the Law for conservation and enhancement of environment for the whole country, or for any urban or rural area, river, stream, lake or any part thereof.

Article 39 (a) states that ECD shall coordinate with the relevant Government departments as may be necessary in the formulation of environmental quality standards.

Article 41 states that MONREC shall determine categories and classes of hazardous wastes, which may come out from producing or using chemicals or other hazardous materials in industries, agricultural businesses, mineral explorations, livestock breeding and fisheries, waste disposal and other works.

Article 44 states that ECD shall prepare the categories and classes of hazardous wastes which may come out from producing or using chemicals or other hazardous materials in industry, agricultural business, mineral exploration, livestock breeding and fishery, waste disposal and other works, and submit to MONREC.

Article 45 states that ECD shall inspect whether or not the businesses which are responsible to establish waste treatment facility or centre under rule 42 comply with the stipulations relating to waste treatment and carry out, and submit in accordance, with the guidance of the Ministry.

Article 46(a) states that ECD shall prepare terms and conditions for treatment of effluent in industrial areas, special economic zones and other necessary areas and buildings, and terms and conditions relating to emissions of machines, vehicle and other machinery and submit to the Ministry.

Article 52 states that MONREC shall determine the categories of business and or activities which shall be required to prepare environmental impact assessment

Article 53 states that MONREC may, so as to scrutinize whether or not it is necessary to conduct environmental impact assessment, determine the proposed plans, businesses or activities which do not include in stipulation under rule 52 as the categories which are required to conduct Initial Environmental Examination (IEE).

Article 54 states that project proponents who are required to prepare EIAs under Article 52

(a) shall carry out environmental impact assessment for his plan, business or activity,

(b) shall submit to the Ministry in advance the details of the organization or person who will be preparing the environmental impact assessment,

(c) shall submit the environmental impact assessment report to MONREC.

Article 56 states that the project developer shall arrange and carry out for conducting the EIA for any project, business or activity by a qualified third person or organization accepted by MONREC.

Article 57 states that MONREC shall, determine and decide, after making scrutiny, whether or not it is suitable level of international organization or person to carry out the EIA. The decision of the Ministry relating to such matter is final and conclusive

Article 58 states that MONREC shall form the Environmental Impact Assessment Report Review Body with the experts from the relevant Government departments and Government organizations.

Article 60 states that MONREC may assign duty to the ECD to scrutinize the report of EIA prepared and submitted by a third person or organization relating to EIA and report through the Environmental Impact Assessment Report Review Body

Article 61 states that MONREC may approve and reply on the EIA report or EMP with the approval of the Committee.

Article 62 states that MONREC shall determine and declare categories of business, workplace, mills or factories which are required to **obtain prior permission,** and which may affect the necessary environmental quality standards after obtaining the approval of the Committee and the agreement of the

Union Government.

6.3.3 The Environmental Impact Assessment Procedure Notification No. 616/2015

The Ministry of Environmental Conservation and Forestry (now renamed the Ministry of Natural Resources and Environmental Conservation) enacted the ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE, Notification No. 616/2015 on the 29th December 2015.

The Environmental Impact Assessment Procedure aims 'to establish a system of environmental impact assessment which shall require any proposed project or business or activity or undertaking in Myanmar by any ministry, government department, organization, corporation, board, development committee, local government or authority, company, cooperative, institution, enterprise, firm, partnership or individual having the potential to cause significant Adverse Impacts to undertake either an IEE or an EIA and to obtain an Environmental Compliance Certificate (ECC) in accordance with the Procedure'.

Article 19 states that no Project Proponent shall prepare or submit to the Ministry any assessment contemplated in this Procedure which has not been prepared by an organization or person duly registered with the Ministry in accordance with Article 13.

Article 21 states that the project proponent is required to submit a Project Proposal in the prescribed format to MONREC for Screening Purposes at the same time as the project is submitted to the Myanmar Investment Commission or other relevant agencies for project approval. The Ministry shall then determine whether the Project is an EIA Type Project or an IEE Type Project.

Articles 41 and 42 state that all EIA Type Projects shall undergo Scoping and the Project Proponent shall be responsible to ensure that the Scoping and the preparation of the TOR for the EIA Report are undertaken in a professional manner and in accordance with this Procedure and any applicable guidelines issued or adopted by the Ministry

Article 48 states that MONREC will within fifteen (15) days of receipt of the Scoping Report and TOR either; approve the Scoping Report and TOR with or without conditions or require the Project Proponent to revise the Scoping Report and TOR in accordance with the comments of the Ministry.

Articles 49 to 55 provide guidance of the required minimum scope of the EIA study itself and Article 56 the EIA reporting requirements.

Articles 64 states that upon completion of MONREC's review of the EIA Report (generally completed within 90 days of report submission), the Ministry shall either approve the EIA Report, subject to any conditions as may be prescribed, and issue an ECC; or inform the Project Proponent of its decision to reject the EIA Report and cite reasons for doing so.

Article 70 confirms that for any project that requires an IEE or an EIA, before any permit is granted or issued by any ministry, or any other competent authority in respect of any application to proceed with implementation of such Projects, an Environmental Compliance Certificate (ECC) shall first have been duly issued by the Ministry in accordance with this Procedure.

Article 74 states that when the Myanmar Investment Commission or the relevant authority (e.g. MOGE) has given approval to a Project for which an ECC has been issued, it shall communicate such approval to the Ministry. Only upon receipt of the written approval by the Myanmar Investment Commission or other relevant authority, shall the Project Proponent commence implementation of the Project, which should be in strict accordance with the conditions attached to the ECC and the EMP, within such time as may be prescribed by the Ministry.

Article 92 states that the Project Owner shall, during all phases of the Project (pre-construction, construction, operation, decommissioning, closure and post closure), engage in continuous, pro-active and comprehensive self-monitoring of the Project and activities related thereto, all adverse impacts, and compliance with applicable laws and standards, the conditions of the ECC, and the requirements of the EMP.

6.4 REGULATORY CONTEXT - AIR QUALITY PROTECTION

This subsection provides a description of main laws, regulations and guidelines applicable to air quality protection.

6.4.1 Legislation and Guidance

As specified in **Article 56** of the Environmental Impact Assessment Procedure Notification (EIA Procedure) all projects are obliged to use, comply with and refer to applicable national guidelines or standards or other international standards adopted by the Ministry. These Guidelines will be applied by the Ministry in satisfying this requirement until otherwise modified or succeeded by other guidelines or standards

The National Environmental Quality (Emission) Guidelines (EQG 2015) prepared by the Ministry of Natural Resources and Environmental Conservation (MONREC), In exercise of the power conferred on them under section 42 (b) of the 2012 Environmental Conservation Law (ECL), stipulates the Air Emission Quality Standards (AEQS) and Ambient Air Quality Standards (AAQS) for projects with significant sources of air emissions and the potential for significant impacts to ambient air quality. The project proponent should prevent or minimize impacts by ensuring that emissions do not result in concentrations that reach or exceed national ambient air quality guidelines and standards, or in their absence current World Health Organization (WHO) Air Quality Guidelines, for the most common pollutants as summarized in **Table 28**.

Table 28: Ambient Air Quality Guidelines (EQG, 2015, MONREC)

No	Parameter	Averaging Period	Guideline Value	Units
1.	Nitrogen dioxide	1-year 1-hour	40 200	µg/m^3
2	Ozone	8-hour daily maximum	100	µg/m^3
3.	Particulate matter PM_{10} [a]	1-year 24-hours	20 50	µg/m^3
4.	Particulate matter $PM_{2.5}$ [b]	1-year 24-hours	10 25	µg/m^3
5.	Sulphur dioxide	24-hour 10-minutes	20 500	µg/m^3

Remarks:	[a] PM10	=	Particulate matter 10 micrometers or less in diameter
	[b] PM2.5	=	Particulate matter 2.5 micrometers or less in diameter

6.4.2 Legal Requirements and Permits

Article 12 of the EQG, 2015 states that "As specified in the EIA Procedure, projects shall engage in continuous, proactive and comprehensive self-monitoring of the project and comply with applicable guidelines and standards. For purposes of these Guidelines, projects shall be responsible for the monitoring of their compliance with general and applicable industry-specific Guidelines as specified in the Projects EMMP and ECC.

Furthermore, Article 13 of the EQG, 2015 states that "Air emissions will be sampled and measured at points of compliance as specified in the Project EMP and ECC.

6.5 REGULATORY CONTEXT - WATER QUALITY PROTECTION AND MANAGEMENT

This subsection provides a description of main laws applicable to the water quality protection and management.

6.5.1 Legislation and Guidance

Article 14 of the **Environmental Conservation Law** (ECL 2012) states that 'Any person causing a point source of pollution shall treat, emit, discharge, or deposit any pollutants which cause environmental pollution, in accord with stipulated environmental quality standards'. Pollution is detailed as any direct or indirect alteration or effect on any part of the environment (including air) by discharging, emitting or depositing environmental hazardous substances, pollutants, or wastes. A Pollutant is detailed as any liquid, solid, or gas which alters the quality of the environment or is hazardous or potentially hazardous.'

Furthermore, **Article 15** of the **ECL** 2012 states that the owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods.

As specified in **Article 56** of the **Environmental Impact Assessment Procedure Notification** (EIA Procedure), all projects are obliged to use, comply with and refer to applicable national guidelines or standards or international standards adopted by the Ministry. These Guidelines will be applied by the Ministry in satisfying this requirement until otherwise modified or succeeded by other guidelines or standards

As specified in **Article 77** of the **EIA Procedure**, following project approval a project shall commence implementation strictly in accordance with the project's Environmental Management Plan (EMP) and any additional requirements set out in the project's Environmental Compliance Certificate (ECC), which will encompass conditions relating to air emissions where appropriate.

The **National Environmental Quality (Emission) Guidelines** (EQG 2015) prepared by the Ministry of

Natural Resources and Environmental Conservation (MONREC), in exercise of the power conferred on them under section 42 (b) of the 2012 Environmental Conservation Law (ECL) stipulates the Sanitary Wastewater Quality Standards for projects with significant sources of wastewater and potential for significant impacts to water quality.

Annex 1, Article 1.2 of the **EQG** 2015 states that industry-specific guidelines apply during the operations phase of projects and cover direct or indirect discharge of wastewater to the environment. They are also applicable to industrial discharges to sanitary (domestic) sewers that discharge to the environment without any treatment. Wastewater generated from project operations includes process wastewater, wastewater from utility operations, runoff from process and storage areas, and miscellaneous activities including wastewater from laboratories, and equipment maintenance shops. Projects with the potential to generate process wastewater, sanitary wastewater and or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety or the environment. Industry-specific guidelines summarized hereinafter shall be applied by all projects, where applicable, to ensure that effluent emissions conform to good industry practice.

In addition to the general guideline values applicable during project operations, the guideline values presented in **Table 30** below apply during the construction phase of projects, covering storm water and sanitary wastewater discharges from all Project Sites.

Annex 1, Sub-article 2.6.4 of the EQG 2015 states that tourism and hospitality development guideline (see Table 30) applies to tourism and hospitality facilities, including hotels, resorts and other accommodation and catering facilities. Wastewater discharges should be managed through conventional treatment to achieve the indicated guideline values for discharge of sanitary water.

Table 29: Site Runoff and Wastewater Discharges; **Construction Phase** (EQG 2015, MONREC)

No	Parameter	Unit	Guideline Value	Results
1.	Biochemical oxygen demand	mg/l	30	<20
2.	Chemical Oxygen demand	mg/l	125	<14.3
3.	Oil and grease	mg/l	10	<6.29
4.	pH Value	S.U.[a]	6-9	6.9
5.	Total Coliform Bacteria	MPN[b] /100 ml	400	<251.3
6.	Total Nitrogen	mg/l	10	<5.0
7.	Total Phosphorus	mg/l	2	<0.008
8.	Total Suspended Solids	mg/l	50	<17.9

Remarks:
[a] S.U. = Standard Unit
[b] MPN = Most Probable Number

Table 30: Hotel Wastewater Discharges; **Operational Phase** (EQG 2015, MONREC)

No	Parameter	Unit	Guideline Value	Results
1.	Biochemical oxygen demand	mg/l	30	<25
2.	Chemical Oxygen demand	mg/l	125	<16.3
3.	Oil and grease	mg/l	10	<7.5
4.	pH Value	S.U.[a]	6-9	7.3
5.	Total Coliform Bacteria	MPN[b] /100 ml	400	<265.3
6.	Total Nitrogen	mg/l	10	<7.0
7.	Total Phosphorus	mg/l	2	<0.0.10
8.	Total Suspended Solids	mg/l	50	<21

Remarks: [a] S.U. = Standard Unit
[b] MPN = Most Probable Number

6.5.2 Legal Requirements and Permits

Article 21 of the ECL 2012 states that the Ministry may, with the approval of the Union Government, stipulate the categories of business, work-site or factory, work-shop which may cause impact on the environmental quality that are required to obtain prior permission (permit/licence etc.).

Article 12 of the EQG 2015 states that "as specified in the EIA Procedure, projects shall engage in continuous, proactive and comprehensive self-monitoring of the project and comply with applicable guidelines and standards. For purposes of these Guidelines, projects shall be responsible for the monitoring of their compliance with general and applicable industry-specific Guidelines as specified in the project EMP and ECC".

Article 13 of the EQG 2015 states that "Liquid/effluent discharges will be sampled and measured atpoints of compliance as specified in the project EMP and ECC".

Annex 2.6.4 of the EQG 2015 states that "wastewater discharges should be managed throughconventional treatment to achieve the indicated guideline values for discharge of sanitary water".

6.6 REGULATORY CONTEXT - NOISE AND VIBRATIONS

This sub-section provides a description of main laws related to noise and vibration.

6.6.1 Legislation

Article 15 of the ECL 2012 states that the owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. Whilst not implicitly mentioned it is considered that this article could be applied to noise pollution and abatement as well as

vibration nuisance and abatement.

Article 10 (e) of the ECL 2012 states that the Ministry may, with the approval of the Union Government and the Committee, stipulate environmental quality standards including noise and vibration standards.

As specified in **Article 56** of the EIA Procedure, all projects are obliged to use, comply with and refer to applicable national guidelines or standards or international standards adopted by the Ministry.

These Guidelines will be applied by the Ministry in satisfying this requirement until otherwise modified or succeeded by other guidelines or standards

As specified in **Article 77** of the EIA Procedure, following project approval a project shall commence implementation strictly in accordance with the project's Environmental Management Plan (EMP) and any additional requirements set out in the project's Environmental Compliance Certificate (ECC), which will encompass conditions relating to air emissions where appropriate.

The **National Environmental Quality (Emission) Guidelines** (EQG 2015) prepared by the Ministry of Natural Resources and Environmental Conservation (MONREC), in exercise of the power conferred on them under section 42 (b) of the 2012 Environmental Conservation Law (ECL) stipulates **Noise Level Quality Standards** applicable to all projects where predicted (or measured) noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive point of reception as presented in **Table 31**.

Table 31: Average Noise Monitoring Quality Standard (EQG 2015, MONREC)

Receptor	One Hour LAeq [a]		Unit
	Daytime 07:00–22:00 (10:00 – 22:00 for Public holidays)	Night-time 22:00–07:00 (22:00 – 10:00 for Public holidays)	
Residential, Institutional, Educational	55	45	dBA

Remarks: a LAeq = Equivalent continuous sound level in decibels

6.6.3 Legal Requirements and Permits

Article 12 of The EQG 2015 states that "as specified in the EIA Procedure, projects shall engage in continuous, proactive and comprehensive self-monitoring of the project and comply with applicable guidelines and standards. For purposes of these Guidelines, projects shall be responsible for the monitoring of their compliance with general and applicable industry-specific Guidelines as specified in the project EMP and ECC".

Article 13 of The EQG 2015 states that "Noise will be sampled and measured at points of compliance as specified in the project EMP and ECC".

Annex 1, Article 1.4 of the EQG 2015 states that "Noise impacts should not exceed the levels shown in Table 31 or result in a maximum increase in background levels of three decibels at the nearest

receptor location off-site".

There are currently no Myanmar vibration standards. Vibration generated as a consequence of project activities is most likely to be regulated under the vibration control commitments agreed with MONREC as presented in the approved Environmental Management Plan submitted for the project.

6.7 Regulatory Context - Waste Management

This sub-section provides a description of the main laws applicable to the waste management.

6.7.1 Legislation and Guidance

Article 14 of the ECL 2012 states that 'Any person causing a point source of pollution shall treat, emit, discharge, or deposit any pollutants which cause environmental pollution, in accord with stipulated environmental quality standards'. Pollution is detailed as any direct or indirect alteration or effect on any part of the environment (including air) by discharging, emitting or depositing environmental hazardous substances, pollutants, or wastes. A Pollutant is detailed as any liquid, solid, or gas which alters the quality of the environment or is hazardous or potentially hazardous.'

Furthermore, **Article 15** of the ECL 2012 states that the owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose of the wastes in accordance with environmentally sound methods (no further guidance on what constitutes environmentally sound methods is provided).

Other miscellaneous Myanmar laws which include provisions related to waste management include: The **Public Health Law** of 1972 contained a general provision in Section 3 which empowers the Ministry of Health "to carry out measures" relating to environmental health, such as garbage disposal". However, the detailed subsidiary regulations required to implement this provision were never developed.

6.7.2 Legal Requirements and Permits

Article 21 of the ECL 2012 states that the Ministry may, with the approval of the Union Government, stipulate the categories of business, work-site or factory, work-shop which may cause impact on the environmental quality that are required to obtain prior permission (permit/license etc.).

There is currently no permitting system for the disposal of solid wastes and the solid waste standards cited in **Article 10 (h)** of the ECL 2012 have not yet been released. If the project proponent intends to dispose of project activity related wastes, then service fees will apply. Solid and semi-solid wastes generated as a consequence of project activities are most likely to be regulated under the waste management commitments agreed with MONREC as presented in the approved Environmental Management Plan submitted for the project.

6.8 Regulatory Context - Flora, Fauna and Ecosystem Protection

This paragraph reports a description of main laws applicable to the flora, fauna and ecosystem protection.

6.8.1 Legislation

The objectives of the **Wildlife & Protected Areas Law 1994** (WPAL 1994) include the protection of endangered species of wildlife and their natural habitats. The law is mostly focused on terrestrial wildlife and habitats but there are a few provisions relating to the marine environment.

Article 12 of the WPAL 1994 states that the Director General may 'carry out necessary measures to prevent external environmental dangers and disturbances within the natural areas'.

Section 14(c) of the WPAL 1994 states that the Forestry Department shall carry out the following functions and duties according to the category of natural area in conformity with the guidance laid down by the Committee or the Minister;

'Preservation of naturally bred creatures, their habitats of coral reefs, planktons, moss and algae and wildlife breeding and inhabiting along the coast, in deltaic areas and their habitats within the Marine National Park, in order that they may exist in their natural state'.

Sections 35 and 36 of the WPAL 1994 prohibits under penalty of fine or prison; causing water pollution or disposing of pollutants or mineral pollutants in a natural area, destroying ecosystem or any natural state in a natural area.

6.8.2 Legal Requirements Permits and Relevant Guidance

There are no specific authorisations or permits required with respect to the preservation of flora and fauna for the construction and operation of tourism and hospitality projects and the potential risks to terrestrial and aquatic habitats and ecosystems that may occur as a consequence of project activities will be controlled under the environmental protection measures agreed with MONREC in the Environmental Management Plan submitted for the project.

6.9 REGULATORY CONTEXT –WATER SECURITY

This paragraph reports a description of main laws applicable to the water security.

6.9.1 Legislation and Guidance

Article 11 (a) of the Conservation of Water Resource and River Law (No.8/2006) states that 'the disposal of engine oil, chemicals, poisonous materials and other materials into **waterways** which may cause environmental damage is prohibited'.

Article 12 of the Conservation of Water Resource and River Law (No.8/2006) states that 'No person shall carry out growing of garden, digging, filling, silt trapping, closing pond, dyke building or erecting spur in the river-creek boundary, bank boundary and waterfront boundary without the permission of the relevant government department and organization'.

Article 21(b) of the Conservation of Water Resource and River Law (No.8/2006) states that 'No one shall drill well or pond or dig earth without the permission of the Directorate'.

6.9.2 Legal Requirements and Permits

Article 30 of the Conservation of Water Resource and River Law (No.8/2006) states that 'Any government department and organization or any person desirous of constructing drainage, utilizing river water intake, constructing bridges spanning rivers, connecting underground pipe, connecting underground electric power cable, connecting underground telecom cable or digging in rivers and creeks, bank boundary and waterfront boundary, under the requirement of work, shall in order not to adversely affect the water resources and rivers and creeks, carry out only after obtaining the approval of the Ministry of Transport'.

If the project proponent proposes to abstract significant quantities of surface and or groundwater, then they should also inform the Water Resources Utilization Department under the Ministry of Agriculture and Irrigation.

Article 3 of the Underground Water Act 1930, Burma Act IV 1930 state that 'No person shall sink a tube for the purpose of obtaining underground water except under and in accordance with the terms of a license granted by the water officer'.

Recent consultations with the Water Resources Utilization Department under the Ministry of Agriculture and Irrigation indicate that a new law related to groundwater and surface water abstractions is in process of being drafted but no date was given as to when it is expected to be enacted. The department recommends that the project proponent proposing to abstract groundwater or river water consult with the relevant Township regarding all proposed groundwater and river water abstractions.

7. IMPACT ASSESSMENT METHODOLOGY

7.1 INTRODUCTION

This chapter presents the methodology utilised to assess the potential adverse impacts of the Project and the findings of the impact assessment (IA). The adopted approach conforms with Myanmar regulatory requirements and good international industry practice (GIIP).

7.2 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The overarching impact assessment methodology comprises of a systematic process to identify impacts (**Impacts ID**), evaluate them for significance in the context of the Project Site setting (**Impact Assessment**), and where significant impacts are identified to formulate appropriate measures to avoid, minimise, mitigate and or compensate for any adverse impacts (**Impact Management**).

An overview of the EIA process proposed for this study is shown in **Plate 14** and the key elements are described in the following sections.

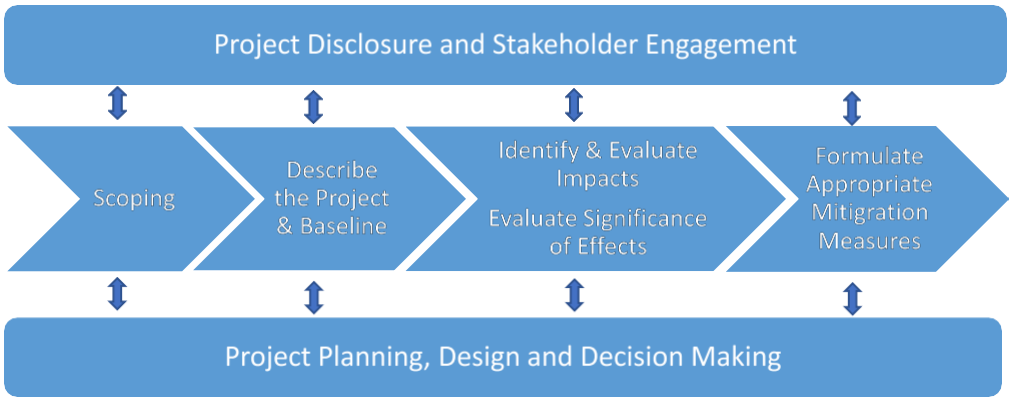


Plate 14: Simplified Overview of Environmental Impact Assessment Process

7.3 EIA SCOPE AND STUDY BOUNDARIES

The scope of the impact assessment study included the **construction and operational phases** of the Project and covers both the planned activities and selected unplanned events that may occur during Projects construction and operation. Unplanned events encompass non-routine eventualities such as a fuel storage tank containment failure leading to a spill.

As there is no plan for the Project to be decommissioned in the foreseeable future, and as per standard industry practice, any decommissioning activities will be the subject of a standalone Decommissioning Management Plan (DMP) report, that will more accurately reflect the actual conditions in the Project Site Area at the time of decommissioning. Decommissioning activities are excluded from the impact assessment scope.

7.4 Environmental and Social Receptors

This EIA study will be focused on the primary environmental and socio-economic cultural receptors and resources situated within the vicinity of the Project Site that have the potential to be directly or indirectly impacted as a consequence of Project activities or a non-routine event such as a spill or leak. It is currently anticipated that the receptors will include but not limited to:

- **Physical Resources** (e.g. soil quality, sediment quality, water quality, air quality);
- **Biological Systems and Organisms** (e.g. terrestrial/marine/aquatic habitats, flora and fauna, protected and ecologically sensitive areas); and
- **Socio-economic and Cultural Receptors** (e.g. project affected people and communities, other stakeholders, cultural heritage sites).

7.5 Prediction of Impacts

The prediction of impacts is essentially an objective exercise to assess the potential effects on the identified environmental and or socio-economic cultural receptors as a consequence of the Project and its associated activities. The study will include potential impacts associated with planned activities and unplanned events. A simplified depiction of the impact assessment process for planned activities is presented in **Plate 15.**

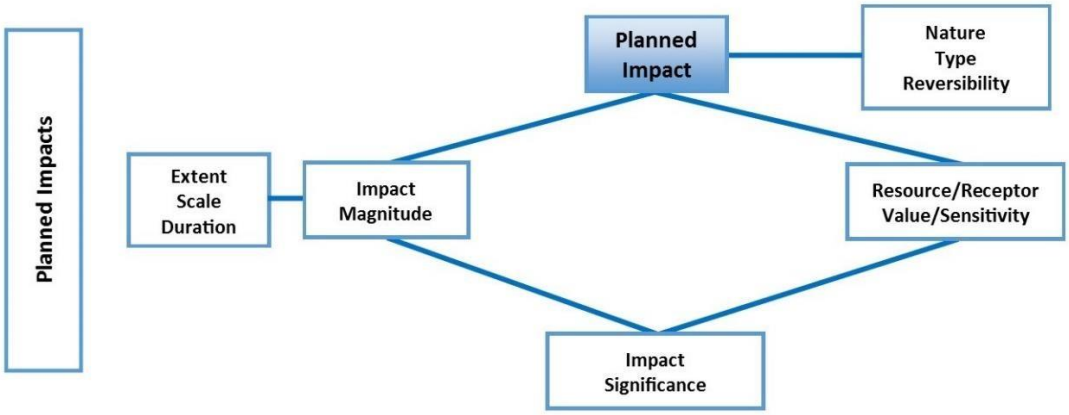


Plate 15: Simplified Depiction of the Impact Assessment Process for Planned Activities

The types of impacts considered are categorised according to their various characteristics (e.g. are they detrimental or beneficial, direct or indirect, etc.). The various types of impacts that may arise, and the terminology that will be used in the study are shown in **Tables 32 and 33**.

Table 32: Environmental Impact Assessment Terminology

Term	Definition
Degree of Reversibility	
Reversible	Impacts on resources/receptors that cease to be evident, either immediately or over an acceptable time frame, after termination of a Project activity (e.g. turbidity level will decrease to normal levels after completion of a particular underwater activity).

Term	Definition
Irreversible	Impacts on resources/receptors that are evident following cessation of a Project activity and which remain for an extended period of time. These impacts cannot be reversed by the implementation of mitigation measures (e.g. loss of habitat due to dredging).
Impact Nature	
Negative Impact	An impact that is considered to represent an adverse change from the prevailing environmental and or socio-economic cultural baseline.
Positive Impact	An impact that is considered to represent an improvement on the prevailing environmental and or socio-economic cultural baseline.
Neutral Impact	An impact that is considered to represent neither an improvement nor deterioration on the prevailing environmental and or socio-economic cultural baseline.
Impact Duration	
Temporary	Impacts are predicted to be of short duration and intermittent/occasional in nature.
Short-term	Impacts that are predicted to last only for a limited period (e.g. during construction) but will cease on completion of the activity or as a result of mitigation measures and or natural recovery.
Long-term	Impacts that will continue over an extended period (e.g. operational noise) but cease when the Project stops operating. These will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period.
Permanent	Impacts that occur during the development of the Project and cause a permanent change to the prevailing environmental and or socio-economic conditions (e.g. permanent loss of sensitive ecological habitat) that endures substantially beyond the Project lifetime.
Impact Extent	
Local	Impacts are relatively localised (e.g. restricted to a relatively localised area around the Project footprint).
Regional	Impacts that extend beyond the localised Project footprint which have the potential to have impacts at a regional or national scale.
International (Transboundary Impacts)	Impacts that extend beyond territorial borders which have the potential to have impacts at an international scale.
Impact Scale	

	The size of the impact (e.g. the size of an area damaged or otherwise impacted, fraction of a resource that is lost).
Impact Frequency	
	A measure of the constancy or periodicity of the impact.

Table 33: Definition of Impact Type

Impact Type	Definition
Direct	Impacts that result from a direct interaction between a planned Project activity and the receiving environment (e.g. clearance of sensitive habitat to facilitate the Project)
Indirect	Impacts that follow on from the primary interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g. loss of part of a habitat affects the viability of a species population over a wider area).
Induced	Impacts that arise of a consequence of Project induced activities which are outside the direct control the Project Proponent (e.g. construction of a Project access road which has the knock-on effect of increasing the economic exploitation of natural resources).
Cumulative	Concurrent operations within a geographic area that have the effect of compounding impacts on the same environmental and or socio-economic cultural receptors. (e.g. multiple dams on the same stretch of river).
Residual	Impacts that remain after the incorporation of mitigation measures into the design and implementation of a Project.

It is important to note that the environmental impacts identification and evaluation assessment takes into account any mitigation or control measures that are already part of the Project design (e.g. air emission controls, wastewater treatment systems, secondary containment etc.).

7.6 LIKELIHOOD OF OCCURRENCE

In evaluating the potential significance of impacts **associated with unplanned events** such as leaks or spills, the assessment will consider the likelihood (probability) of such an event occurring using the qualitative scale of probability categories as described in **Table 34**.

Table 34: Definitions for Likelihood Categories

Likelihood	Definition
Extremely unlikely	The event is very unlikely to occur under normal operating conditions but may occur in exceptional circumstances, i.e. rare occurrence.
Unlikely	The event is unlikely but may occur at some time during normal operating conditions.
Low Likelihood	The event is likely to occur occasionally during normal operating conditions,
Medium Likelihood	The event is likely to occur during normal operating conditions over the lifetime of the project, i.e. regular occurrence.
High Likelihood/Inevitable	The event will occur during normal operating conditions (is inevitable), i.e. routine occurrence.

Likelihood is appraised on the basis of experience and/or evidence that such an outcome has previously occurred during the construction and operation of a similar project. Impacts resulting from planned activities are classified as having a high likelihood of occurrence.

7.7 Assessment of Impact Magnitude

Predicted impacts are defined and assessed in terms of a number of variables. This would comprise of an assessment into the extent, duration, scale and frequency of an impact. These variables collectively determine an impact's magnitude. Awarding values is for the most part an objective exercise that requires professional expert judgement and prior experience on the part of the EIA expert team.

Various methods are routinely employed in determining the value of the variables that make up the magnitude of an impact but for the purposes of this impact assessment the methods that were employed to assist in the determination of magnitude included:

- The use of mapping and satellite imagery to plot resources/receptors in relation to the location of the Project Site;
- Desk study and consultation information to characterise the prevailing environmental and socio- economic conditions in the general Project Site Area;
- The findings of the detailed site audit;
- Project information provided by the client; and
- The prior experience of the professional assessment team.

As the criteria that determine the magnitude of an impact differ per resource/receptor, various definitions are used for the physical, biological and social/socioeconomic environments. The criteria that was utilised for determining the impact magnitudes for these different receptor classes is presented in **Table 35**, **Table 36** and **Table 37**.

Table 35: Impact Magnitude – Physical Environment

Impact Magnitude	Definition
Negligible	Immeasurable/undetectable or within the range of normal natural variations.
Low	A temporary or short-term impact on a physical resource/receptor that is localised and detectable above natural variations but not regarded as imparting an order of magnitude change. The environment will revert back to pre-impact status once the impact ceases.
Medium	A temporary or short-term impact on a physical resource/receptor that may extend beyond the local scale and may bring about an order of magnitude change in the quality or functionality of a resource/receptor. It does not, however, threaten the long-term integrity of the resource/receptor or any receptor/process dependent on it. A medium magnitude impact multiplied over a larger area would be regarded as a high magnitude impact.
High	An impact on a physical resource/receptor that results in an order of magnitude change on the local or larger scale that is irreversible and above any applicable limits. The change may alter the long-term character of the resource/receptor or another receptor/process dependent on it. An impact that persists after the activity ceases is a high magnitude impact.

Table 36: Impact Magnitude – Biological Environment

Impact Magnitude	Definition
Negligible	Immeasurable/undetectable or within the range of normal natural variations.
Low	An impact on a species that affects a specific group of localised individuals within a population over a short time period (one generation or less) but does not affect other trophic levels or the population itself.
Medium	An impact on a species that affects a portion of a population and may bring about a change in abundance and/or a reduction in the distribution over one or more generations but does not threaten the long-term integrity of that population or any population dependent on it. The size and cumulative character of the consequence is also important. A medium magnitude impact multiplied over a wide area would be regarded as a high magnitude impact.
High	An impact on a species that affects an entire population or species in sufficient magnitude to cause a decline in abundance and/or change in distribution beyond which natural recruitment (reproduction, immigration from unaffected areas) would not return that population or species, or any population or species dependent upon it, to its former level within several generations, or when there is no possibility of recovery.

Table 37: Impact Magnitude – Social/Socio-economic Environment

Impact Magnitude	Definition
Negligible	Any change from the baseline remains within the range commonly experienced within the project affected household or community.
Low	Impact on specific groups/communities within society or on socio- economic assets (cultural, tourism, livelihoods etc.) within a short period of time but this does not lead to widespread and long-lasting damage to people or resources.
Medium	Impact on specific groups/communities within society or on socio- economic assets that may bring about change in status for an extended duration but does not threaten the overall stability of groups, communities or socio-economic assets. A Medium Magnitude Impact over a wide area would be regarded as a High Magnitude Impact.
High	Impact on specific groups, communities or one or more socio-economic assets of sufficient magnitude to bring about a long-term or permanent (intergenerational) change in status.

7.8 NATURE, SENSITIVITY AND VALUE OF THE RECEPTOR/RESOURCE

In determining the potential significance of the impacts, it is critical that the impacts evaluation process considers the nature, importance and likely sensitivity/vulnerability to change of the environmental and socio-economic cultural receptors or resources that could potentially be impacted as a consequence of Project activities.

Various criteria will be used to determine the value and sensitivity of the impacted resource or receptor including; resistance to change, abundance, adaptability, rarity, diversity, value to other resources/receptors, naturalness, fragility and whether a resource/receptor is present with the Projects AOI. The assignment of a value to a resource/receptor allows for the assessment of resource's/receptor's likely sensitivity to change (impact).

The criteria for evaluating sensitivity are presented in **Table 38**, **Table 39** and **Table 40**.

Table 38: Evaluation Criteria for the Sensitivity of the **Physical Environment**

Impact Magnitude	Definition
Low	A resource/receptor that is not important to the wider ecosystem functions/services, or one that is important but resistant to change (in the context of Project activities) and will naturally and rapidly revert back to pre-impact status once activities cease.
Medium	A resource/receptor that is important for wider ecosystem functions/services. It may not be resistant to change, but can be actively restored to pre-impact status, or will revert naturally over time.
High	A resource/receptor that is critical to ecosystem functions/services, not resistant to change and cannot be restored to pre-impact status.

Table 39: Evaluation Criteria for the Sensitivity of the **Biological Environment**

Impact Magnitude	Definition
Low	A species (or habitat) that is not protected or listed. It is common or abundant; is not critical to other ecosystem functions (e.g. as prey to other species or as predator to potential pest species); and does not provide key ecosystem services (e.g. coastal stabilisation).
Medium	A species (or habitat) that is not protected or listed under national law, but may be valued in the Project Area, and is important to ecosystem functions/services and is under threat or the population is in decline.
High	A species (or habitat) that is specifically protected under Myanmar law and/or international conventions (e.g. CITES), is listed as rare, endangered, vulnerable or near threatened by the IUCN and is critical to ecosystem functions/services.

Table 40: Evaluation Criteria for the Sensitivity of the Social/Socio-economic Environment

Impact Magnitude	Definition
Low	The socio-economic assets affected are not considered to be significant in terms of their resource, economic, cultural or social value.
Medium	The socio-economic assets affected are not significant in the overall context of the Project Area but are of local significance to the asset base, livelihoods etc.
High	The socio-economic assets affected are specifically protected by national law or international conventions and are of significance to the asset base, livelihoods and cultural identity of project affected peoples and communities.

7.9 EVALUATION OF IMPACTS

In evaluating the significance (i.e. importance) of impacts, the following factors were taken into consideration:

- **Impact Magnitude**: The magnitude of an impact is a function of a range of considerations including; reversibility, duration, extent, scale, frequency, legal and guideline compliance; and
- **Nature and Sensitivity of the Receiving Receptor/Resource**: The characteristics of the receptor/resource with respect to its vulnerability/sensitivity to an impact/change and for ecological resources their conservation value.

Once the magnitude of the impact and sensitivity/vulnerability of the resource/receptor has been characterized, the significance can be assigned for each impact. The significance of each predicted impact will be determined by comparing the impact **magnitude** against the **sensitivity of the receptor** as shown in the impact significance matrix presented in **Table 41.**

For unplanned events (e.g. accidental releases etc.) impact severity was considered against the **likelihood of the impact occurring** as presented in **Table 42.**

Table 41: Determining the Impact Significance of Planned Activities

		Sensitivity/Vulnerability/Importance of Resource/Receptor		
		Low	**Medium**	**High**
Impact Magnitude	**Negligible**	Negligible	Negligible	Negligible
	Low	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

Table 42: Determining the Impact Significance of Unplanned Events

		Impact Likelihood				
		Extremely Unlikely	**Unlikely**	**Low Likelihood**	**Medium Likelihood**	**High Likelihood/ Inevitable**
Impact Severity	**Negligible**	Negligible	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Negligible	Negligible	Minor	Moderate
	Medium	Negligible	Minor	Minor	Moderate	Major
	High	Minor	Minor	Moderate	Major	Major

7.10 DEFINITION OF IMPACTS

The definition of impacts that will be used in the study is presented in **Table 43**.

Table 43: Definition of Impacts used in the Impacts Identification and Evaluation Study

Significance	Definition
No Discernible Impact	An interaction between the Project and a particular receptor/resource is not reasonably expected.
Negligible Impact	The predicted impact to a particular receptor/resource is considered to be slight and indistinguishable from natural background variations.
Minor Impact	A particular resource/receptor may experience a noticeable effect although the impact magnitude will be small and or the receptor of a low sensitivity.
Moderate Impact	The predicted impact on a particular resource/receptor is assessed as significant but amenable to mitigation. Moderate impacts should be mitigated wherever practicable in accordance with the ALARP principle.
Major Impact	The predicted impact on a particular resource/receptor is assessed to be of a high magnitude and or the resource/receptor of a high sensitivity. Mitigation measures should be such that there are no Major Residual Impacts following the implementation of the impact management/control measures.

Impacts that assessed as Negligible or Minor during the Impact Assessment require no additional management or mitigation measures (on the basis that the magnitude of the impact is sufficiently small, the receptor is of low sensitivity and or adequate controls to mitigate the impact are already included in the Project design). Negligible and Minor impacts are therefore not considered significant and are not consider further in the study.

Impacts evaluated as **Moderate** or **Major** require the implementation of further management or mitigation measures and as such are classified as ***significant*** impacts.

Major impacts always require further management or mitigation measures to minimize or reduce the impact to an acceptable level. An acceptable level is the reduction of a Major impact to a Moderate or lesser impact after mitigation. In seeking to mitigate Moderate impacts, the emphasis is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP).

7.11 MITIGATION AND MONITORING

The impact assessment process, and main objective of this EMP report, is to identify the potential adverse impacts associated with Project activities and to formulate measures to avoid or otherwise mitigate significant adverse impacts during the planning, design and implementation stages of the Project.

The following impacts mitigation hierarchy was applied for planned activities:

Avoid/Reduce at Source: Avoiding or reducing an impact at source by designing the Project so that a feature causing an impact is designed out or altered.

Abate on Site: This involves adapting or enhancing the basic design to abate the predicted impact at the site level; this category would include the installation of additional pollution control equipment.

Abate at Receptor: If an impact cannot be abated on-site then consider measures that can be implemented off-site to reduce impacts to receptors.

Repair or Remedy: Some impacts involve unavoidable damage to a resource which may be able to be remedied through restoration and reinstatement type measures.

Compensate in Kind/Compensate Through Other Means: Where other mitigation approaches are not possible or fully effective, then compensation for loss, damage or disturbance might be appropriate.

The following impacts mitigation hierarchy was applied for unplanned events:

Control: The objective is to reduce the risk to as reasonably practicable (ALARP) which can be achieved by reducing the likelihood of the initiating event, reducing the consequence, or by a combination of both.

Recovery: Typical contingency measures include Emergency Response Plans and Procedures.

The environmental performance of the Project will be monitored, and the scope of the monitoring will be commensurate with the Project's risks and impacts and with the Project's compliance requirements as agreed with the regulators via the approval of the Terms of Reference (TOR) for the Project.

7.12 RESIDUAL IMPACTS

In some cases, it may only be possible to reduce the impact to a certain degree. These impacts are therefore residual in the sense that they remain after mitigation measures have been designed into the intended activity.

In the assessment, residual impacts will be identified, and their significance further evaluated by repeating the impact assessment steps detailed herein with the added assumption that the recommended mitigation measures will be fully implemented by the Project Proponent

8.0 IMPACTS IDENTIFICATION STUDY

The potential environmental impacts associated with the Project were assessed by utilizing the methodology outlined above in **Section 7.0**.

It should be noted that the list of Project activities considered in this overview Impacts Identification study is not intended to be all-inclusive but rather to identify the key aspects of the Project which have the potential to interact with environmental and social receptors and result in significant adverse impacts.

Furthermore, the list of potentially impacted resources and receptors is a focused list of the key components of the natural and socio-economic cultural environment which are considered vulnerable or important in the context of the study objectives.

The impacts assessment was undertaken with respect to the two primary project stages (construction and operation) and the main findings are presented in **Tables 44** and **45** overleaf. It is important to note that this preliminary Impacts Identification Study takes into account the mitigation and any other control measures that are considered likely to be incorporated into the Project planning and design.

For ease of reference the impact assessment findings have been color coded according to the assigned impact rating as detailed in **Plate 16.**

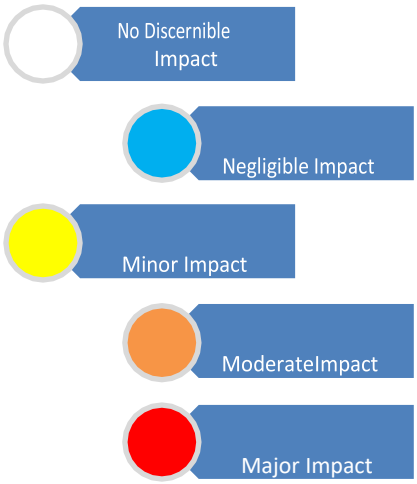


Plate 16: Preliminary Impacts Assessment Study - Impact Rating Key

Table 44: Scoping of Potential Impacts of Project Activities - **CONSTRUCTION**

Receptors/Hazards / Project Activities	Physical Environment															Ecology						Community Health & Safety										Heritage		
	Soil Quality and Composition	Subsidence	Soil Erosion	Sedimentation	Landscape and Visual	Air Quality (gases)	Air Quality (particulates)	Nuisance Noise	Vibration	Climate Change/GHG	Surface Water Quality	Groundwater Quality	Marine Water Quality	Water Resources	Natural Resource Depletion	Terrestrial Habitats & Ecology	Freshwater Habitats&Ecology	Marine Habitats & Ecology	Protected Areas	Endangered/Vulnerable Species	Key Biodiversity Areas	Infrastructure & Local Utilities	Life and Fire Safety	Traffic Safety	Air Quality	Water Quality	Water Security	Crop Yields	Nuisance Noise	Exposure to HazMat	Exposure to Pathogens	Archaeological Heritage	Cultural Heritage	Religious Heritage
PLANNED																																		
Construction activities																																		
Commissioning activities																																		
Electricity supply																																		
Water supply																																		
Hazardous materials																																		
Hazardous wastes																																		
Non-hazardous wastes																																		
Sanitary wastewater																																		
Stormwater																																		
LPG Storage																																		
Project Generated Traffic																																		
UNPLANNED																																		
Fires and explosions																																		
Falling Objects																																		
Spills and uncontrolled releases																																		

Table 45: Scoping of Potential Impacts of Project Activities - **OPERATIONS**

Receptors/Hazards / Project Activities	Physical Environment															Ecology						Community Health & Safety										Heritage		
	Soil Quality and Composition	Subsidence	Soil Erosion	Sedimentation	Landscape and Visual	Air Quality (gases)	Air Quality (particulates)	Nuisance Noise	Vibration	Climate Change/GHG	Surface Water Quality	Groundwater Quality	Marine Water Quality	Water Resources	Natural Resource Depletion	Terrestrial Habitats & Ecology	Freshwater Habitats & Ecology	Marine Habitats & Ecology	Protected Areas	Endangered/Vulnerable Species	Key Biodiversity Areas	Infrastructure & Local Utilities	Life and Fire Safety	Traffic Safety	Air Quality	Water Quality	Water Security	Crop Yields	Nuisance Noise	Exposure to HazMat	Exposure to Pathogens	Archaeological Heritage	Cultural Heritage	Religious Heritage
PLANNED																																		
Electricity supply																																		
Water supply																																		
Stormwater																																		
Sanitary wastewater																																		
Hazardous solid waste																																		
Non-hazardous solid waste																																		
Hazardous Materials (storage and use)																																		
Vehicular traffic																																		
Building & General Maintenance																																		
UNPLANNED																																		
LPG Leak																																		
Spills and uncontrolled releases																																		

8.1 SIGNIFICANT IMPACTS

The Impacts Identification Study has identified potentially significant adverse impacts associated with the **construction** and **operations** phase of the Project as detailed in **Table 46.**

Table 46: Potential Significant Adverse Impacts during Project Development

Construction Phase		
Environmental		
Activity/Source of Impact	**Potential Impacts**	**Maintenance Plan**
Construction activities	Air quality deterioration	This impact on air quality can be mitigated by spraying water during the construction phase of the excavated areas especially during dry condition. Controlling speed of construction vehicles could also reduce dust pollution.
	Nuisance noise	This negative impact will be short-term (limited to the duration of the construction works) and is not considered to be a significant threat to the health or wellbeing of humans.
Water supply	Subsidence	Turbidity and TSS values are high for underground resources, probably reflecting the inappropriate design of the tube wells or the fine sediment at the level of the pumping. The groundwater map extract of the Project Site Area is presented in Figure 11 in Appendix B.
	Groundwater quality	
	Water resources	
Stormwater discharges	Surface water quality	A temporary drainage network has been constructed to manage stormwater runoff which conveys stormwater to one discharge point which outfalls into the Thanlwin River to the immediate southwest of the Project Site
	Water resources	
	Freshwater ecology	
Community Health & Safety		
Activity/Source of Impact	**Potential Impacts**	
Construction activities	Air quality	CO2, SO2 and other greenhouse gas is due to transportation of delivered supplies to the hotel by vehicle movements. This emission can be minimized by doing regular vehicles maintenance.
	Nuisance noise	Employees operating that generate noise should be equipped with noise protection gears.
	Water quality deterioration	

Water supply	Water security	The construction of the Project will require the use of water and it is estimated that the Project will consume approximately 8 m3/day from ground water 120 ft tube well.
Stormwater discharges	Water quality deterioration	A temporary drainage network has been constructed to manage stormwater runoff which conveys stormwater to one discharge point which outfalls into the Thanlwin River to the immediate southwest of the Project Site

Operation Phase		
Environmental		
Activity/Source of Impact	**Potential Impacts**	
Water supply	Subsidence	The construction of the Project will require the use of water and it is estimated that the Project will consume approximately 8 m3/day from ground water 120 ft tube well.
	Groundwater quality	
	Water resources	
Community Health & Safety		
Activity/Source of Impact	**Potential Impacts**	
Water supply	Water quality deterioration	All the used water (grey water) which may include cleaning agents, disinfectants, and linen washing agents will be collected through separated channels or pipe lines into waste water treatment plant. Proper treatments will be given there before discharge in accordance with Mawlamyine Township Municipality guidelines.
	Water security	To ensure zero contamination or seepage by toilet wastes, hotel will use bio-tank sewer disposed system for cottages on lower ground.

9. ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

SMMHL has contracted SPA as the Project Manager for the construction phase of the Project. SPA is a subsidiary of Yoma Strategic Holdings (YSH) and as such conforms with the overarching requirements of the YSH EMS Management System. SPA will be responsible for implementing the construction phase requirements of the Environmental Management Plan (EMP).

It is understood that the Memories Group Company will manage the hotel as the Operator once it is completed and as such they will be responsible for implementing the operations phase requirements of the EMP.

9.1 ENVIRONMENTAL MANAGEMENT STRUCTURE & RESPONSIBILITY – CONSTRUCTION

9.1.1 Yoma Strategic Holdings

The chart below details the YSH personnel at ***corporate level*** who are responsible for environmental, social and health and safety performance across the wider group of YSH subsidiaries in Myanmar, which includes SPA Project Management.

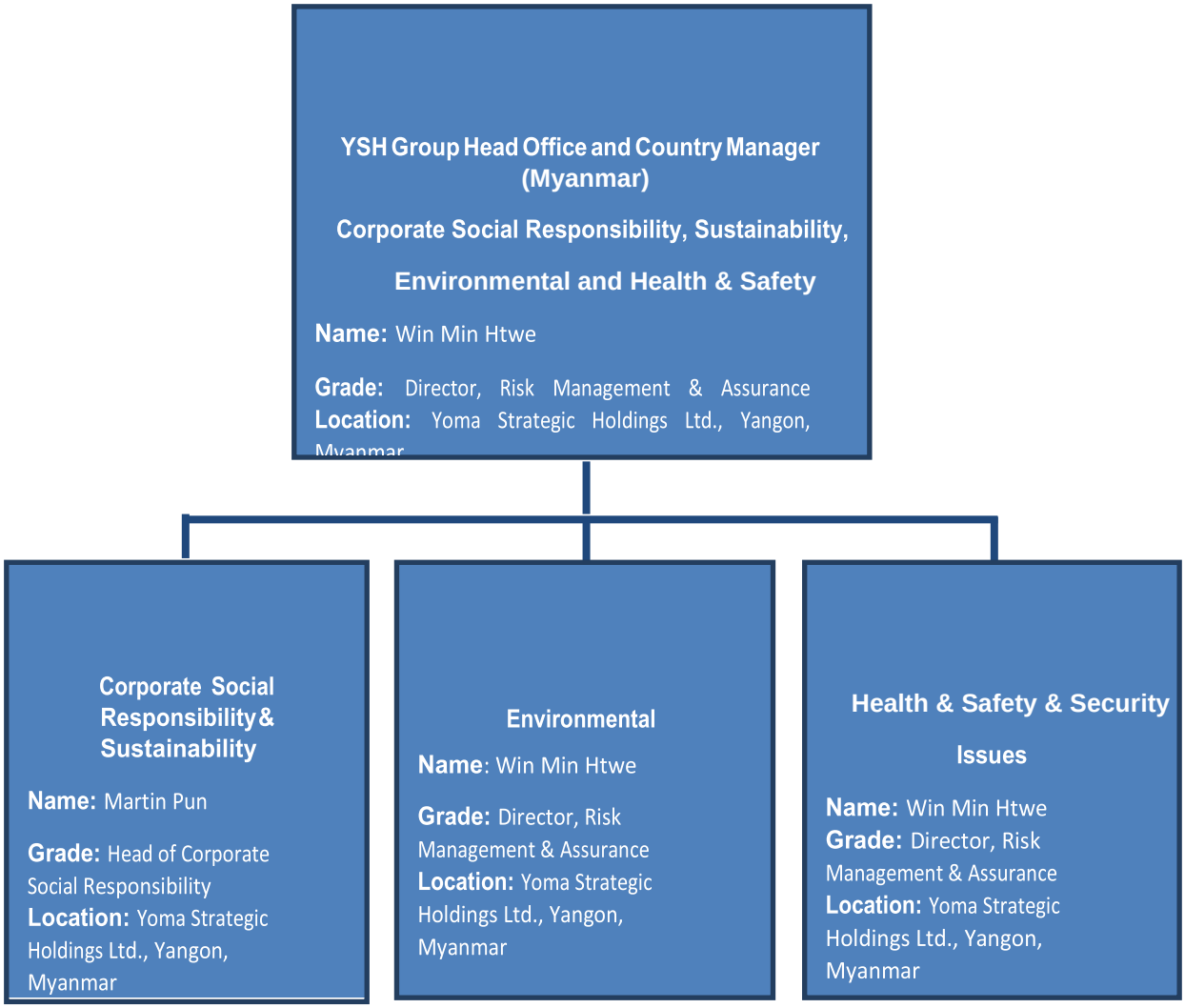


Plate 17: YSH Corporate CSR and EHS Assurance Structure

9.1.2 SPA Project Management

SPA is the Project Manager for the construction of the Project and has the primary responsibility for implementing the construction phase requirements of the EMP.

SPA's Environmental, Health and Safety (EHS) Project Team responsible for implementing the requirements of the construction phase Environmental Management Plan (EMP) are detailed in in **Plate 18.**

Plate 18: Responsible Persons for Implementing Construction Phase EMP

9.3 YSH ENVIRONMENTAL, HEALTH & SAFETY POLICY

Environmental, Health and Safety (EHS) Policy

Objective

Yoma Strategic Holdings Ltd ("YSH") and its subsidiaries (together "the Group") have implemented its policy on 'Environment, Health and Safety' ("EH&S") in support of a Group wide Corporate Governance framework,to:

- Foster greater awareness of sustainable approaches across the Group;
- Enhance its capabilities to identify and manage adverse impacts from all business activities;
- Instill a culture of 'no harm, less pollution and wider conservation approaches to protect the environment' in all business operations.

Our commitment

In line with International Finance Corporation's (IFC) Performance Standards, the Asian Development Bank's (ADB) Safeguard policy, national environmental policies and other applicable laws, the Group is required to safeguard the environment by:

- Incorporating environmental and social considerations into business strategy, and allocate adequate resources to manage EH&S risks associated with projects;
- Promoting a safe, clean and healthy environment and better work culture to minimize any adverse environment, health, safety and social impacts arising out of operations;
- Establishing EH&S system and processes to adhere to and comply with applicable legislation, regulations and other requirements pertaining to environment, health, safety , labour and community at large:
- Optimizing energy and resources by way of minimizing wastes and increasing use of environmentally sustainable products, materials and services;
- Monitoring, reporting and improving of applicable procedures and performances (where required) regularly; and
- Communicating this EH&S Policy to all employees, contractors, suppliers and business partners.
- This EH&S Policy will be disseminated to all employees, contractors, suppliers and business partners.

9.4 YSH CORPORATE ENVIRONMENTAL & SOCIAL MANAGEMENT SYSTEM

YSH established and adopted an Environmental and Social Management System (YSH ESMS) in 2014. The ESMS was developed in line with accordance with the general requirements of the International Finance Corporation (IFC) Performance Standards and has been subsequently updated to comply with the Asian Development Banks (ADB) Safeguard Policy Statement (SPS) requirements. The ESMS document is in line with YSH' s corporate commitment to adhere to international standards and best practices with respect to environmental and social performance.

The ESMS establishes YSH's commitment to put in place adequate environmental, social and health and safety (EHSS) management systems and protocols that will help manage the EHSS risks arising from the various activities of the wider group and embed sustainability considerations into the business model.

9.4.1 YSH Environmental and Social Policy & Mission Statement

The Environmental and Social Management System (ESMS) is a set of management processes and procedures which allows YSH to analyse, control and reduce the environmental and social impacts of its activities. Through the effective implementation of their ESMS, YSH hopes to minimize risks and improve operational efficiency throughout their operations.

The YSH ESMS focuses on three key activities including human resources management, environmental management and occupational health and safety management. Specific systems for managing community impacts and relations, including dealing with grievances are developed for special projects.

The ESMS allows YSH to analyse the environmental and social (E&S) impacts of its activities and help in managing its impacts by setting up an appropriate environmental and social policy for future growth. In alignment with the objectives of the E&S policy, which shall act as the centralized policy at the corporate level, the following policies of YSH effectively communicate the group's commitments to managing E&S risks and impacts in their operations:

- Code of Conduct ("the Code") that applies to all employees. The Code sets out the principles to guide employees in carrying out their duties and responsibilities to the highest standards of personal and corporate integrity when dealing with YSH, its customers, suppliers and the broader community;
- Occupational Health and Safety (OHS) Policy and Minimum Health and Safety Standards for Major Works; and
- Corporate Social Responsibility (CSR) strategy which defines the Group's commitment to giving back to the community. Even as the Group grows as a conglomerate, it remains committed in its efforts to help build a better society.

9.4.3 YSH ESMS Policy Framework

The YSH ESMS has been developed to comply with the following policy and regulatory requirements:

- Applicable Myanmar national, state and local regulatory requirements;
- The IFC Performance Standards (PS 1 to PS 8) Framework 2012 for Environmental and Social Sustainability;
- The World Bank Group General EHS Guidelines;
- ADB' s Safeguard Policy Statement 2009;
- Other ADB' s social policies and guidelines on:
    - 2011 Public Communications Policy;
    - 2001 Social Protection Strategy;
    - 2010 Gender mainstreaming guidelines; and
- Relevant International Labour Organization (ILO) conventions which are ratified by Myanmar government regarding labour standards and basic terms and conditions of employment.

9.4.4 YSH Framework for ESMS Implementation

The ESMS describes the process by which EHSS issues are identified at every stage of the project and details adequate mitigation measures, the institutional structure, resources and monitoring and control measures to be implemented. The ESMS describes the requirements for the following stages of a project.

- Environmental and social screening of potential projects;
- Environmental and social categorization of projects;
- Environmental and Social Due Diligence Assessments; Environmental and Social Impact Assessments;
- Ongoing monitoring of environmental and social performance;
- Labor and working conditions;
- Occupational health and safety (OHS);
- Land acquisition, resettlement, and livelihood restoration;
- Site selection and land procurement;
- Indigenous Peoples;
- Stakeholder engagement;
- Grievance mechanism for affected communities;
- Disclosure of information;
- Consultation and participation;
- Ongoing reporting to affected communities;
- Emergency preparedness and response;
- E&S requirements on contractors, sub-contractors, and primary suppliers;
- Pollution prevention;
- Biodiversity management;
- Resource efficiency and waste management;
- Waste minimization;
- Oil and hazardous materials usage and management;
- Climate change risk assessment;
- Institutional structure and capacity for ESMS implementation;
- Training programmes;
- Corporate monitoring and reporting programmes; and
- Continuous improvement: ESMS updating and modification.

9.5 EMP RESPONSIBILITIES

YSH Group has corporate level responsibility for monitoring the performance of all their staff and contractors with respect to the implementation of the Projects EMP although compliance will be overseen at the Project level by the SPA Project Management Services (SPA) team who are the designated Project Manager for the Project during its construction with overall responsibility for environmental, health and safety matters at the Project Site level. Where the measures set out in the construction stage EMP do not result in the achievement of the objectives, YSH and SPA will work to refine the measures as appropriate. The construction stage EMP should be fully integrated into the SMMHL's HSE management system, to ensure the following:

- Ownership of the plan, from the highest level;
- Appropriate resource allocation for implementation of the plan; and
- Effective implementation of the plan.

Overall responsibility for implementation of the EMP during the construction of the Project will be designated to the Project Director (Ms. Nwe Nwe Tun). The Project Director, together with the Environmental, Health and Safety officer (Mr. Kyaw Naing Min) and the Project Manager (Mr. Htun Linn Naing), will be responsible as a team for delivering the commitments contained within this EMP. This will involve the incorporation of the commitments into the design, working practices and the overall management procedures of the Project during its construction phase.

The Project Environmental team, in collaboration with the YSH Risk Management and Assurance team, will identify cases where any party fails to meet the requirements of the EMP, and any unforeseen adverse environmental impacts arising as a consequence, and to take the necessary corrective actions. In keeping with local environmental law, the Group will provide its function in identifying cases where the project as a whole is failing to meet the requirements of IFC' s standards and recommend corrective actions.

The organisational structure that defines roles, responsibilities, and authority to implement the EMP may vary during the project lifespan but will include designated in-house personnel to fulfil the following roles.

Project Director – ultimate responsibility for supervising the construction of the Project and monitoring the works undertaken by Project Manager, Environmental, Health & Safety Officer and contractors to ensure the works undertaken are in accordance with the specification and contractual requirements. This person is also responsible for ensuring that contractors and the environmental coordinator are implementing the environmental controls specified under the EMP and for conducting periodic inspections and audits with other team members to check for compliance.

Project Manager – ultimate responsibility for implementing the environmental controls specified under the EMP in coordination with Health & Safety Manager and Environmental Health & Safety Officer.

Health and Safety Manager - overall responsibility for the Health & Safety of employees, visitors and the public at the Project level. Duties include conducting regular inspections during construction, reporting to the Group on a regular basis, and supervising contractors' activities to ensure that occupational health and safety requirements are being met.

Environmental Officer - responsible for conducting the environmental monitoring program specified under the EMP. The person should have the relevant qualifications and experience in environmental monitoring and compliance auditing. The environmental management and monitoring requirements specified under the Project EMP should become an integral part of the overarching Environmental and Social Management System for the construction and operational phases of the Project.

Corporate Risk Management and Assurance – responsible for high level periodic audits and corporate reporting to ensure Project is being implemented in accordance with the requirements of both the Projects EMP and YSH corporate commitments to responsible environmental and social performance.

9.6 CONTRACTOR ENGAGEMENT/MANAGEMENT

In addition to the roles outlined above, all contractors engaged on the Project will be required to nominate an individual to oversee day to day contractor conformance with the environmental management requirements of the EMP. The contractors nominated Environmental and Health and Safety Supervisor should be suitably qualified and incorporated into the overarching EHS Management Team for the Project to ensure EMP compliance from the ground level up.

The contractors Environmental and Health and Safety Supervisors should conduct internal compliance reviews and submit performance review reports to the Environmental Manager and the OHS Manager for the Project on a weekly basis. The Project Developer will work with, and influence, Project contractors to ensure that all contractors are aware of and competent with respect to the:

- Important baseline conditions to be aware of, focusing on the key sensitivities of the surrounding environment;
- Environmental and social impacts that could potentially arise from their activities;
- Necessity of conforming to the requirements of the EMP (i.e. implementing the control and mitigation measures), in order to avoid or reduce those impacts;
- Roles and responsibilities to achieve that conformity, including with regard to change management and emergency response; and
- Documentation and reporting requirements and other ESMP compliance requirements.

Similarly, the Project will require that each of the contractor's institute training programmes for its personnel. Each contractor is responsible for site HSE awareness training for personnel working on the job sites. The contractors are also responsible for identification of any additional training requirements to maintain required competency levels.

9.7 ENVIRONMENTAL TRAINING

All employees shall undergo general environmental awareness training and training about their individual requirements and responsibilities under the construction stage EMP. For the workers and staff involved in the implementation, relevant environmental managers will identify the knowledge and skills necessary for implementation of the management systems and programs, and identify training requirements, in accordance with company's rules and regulations.

All persons responsible for undertaking work during the life of the project must be trained on the contents of the Project EMP. The management team is responsible for identifying the knowledge and skills necessary for the implementation of the EMP commitments and identifying any training requirements for the workers and staff involved in the implementation of the EMP.

The training should ensure that all employees understand their obligation to exercise due diligence for environmental matters. Employees in this instance means all people working on-site including contractors and subcontractors.

Management should ensure that all site personnel have a basic level of environmental awareness training. The environmental awareness training should include but not be limited to:

- What is meant by "Environment";
- Why the environment needs to be protected and conserved;
- How construction activities can impact on the environment;
- What can be done to mitigate against such impacts;
- Familiarization with the requirements of the EMP;
- Awareness of emergency and spills response provisions;
- Environmental emergency response training;
- Familiarization with site environmental controls;
- Social responsibility during construction; and
- Targeted environmental training for specific personnel.

Training schedules and roll out plans should be prepared in accordance with the requirements of the EMP. Training material should be customized in accordance with the individual and project requirements. Training material may vary from written manuals, online programs, computer-based training, face to face training, on the job training and audio lessons. The need for additional or revised training should be identified and implemented from the outputs of monitoring and reviewing the EMP. Records of all training should be maintained and should include; i) who was trained, ii) when the person was trained, iii) the name of the trainer, and iv) a general description of the training content.

9.8 Environmental Management Structure & Responsibility – Operations

SMMHL is the Project Manager for the operation of the Project and has the primary responsibility for implementing the operation phase requirements of the EMP.

SMMHL's Environmental, Health and Safety (EHS) Project Team responsible for implementing the requirements of the operation phase Environmental Management Plan (EMP) are detailed in in **Plate 19**.

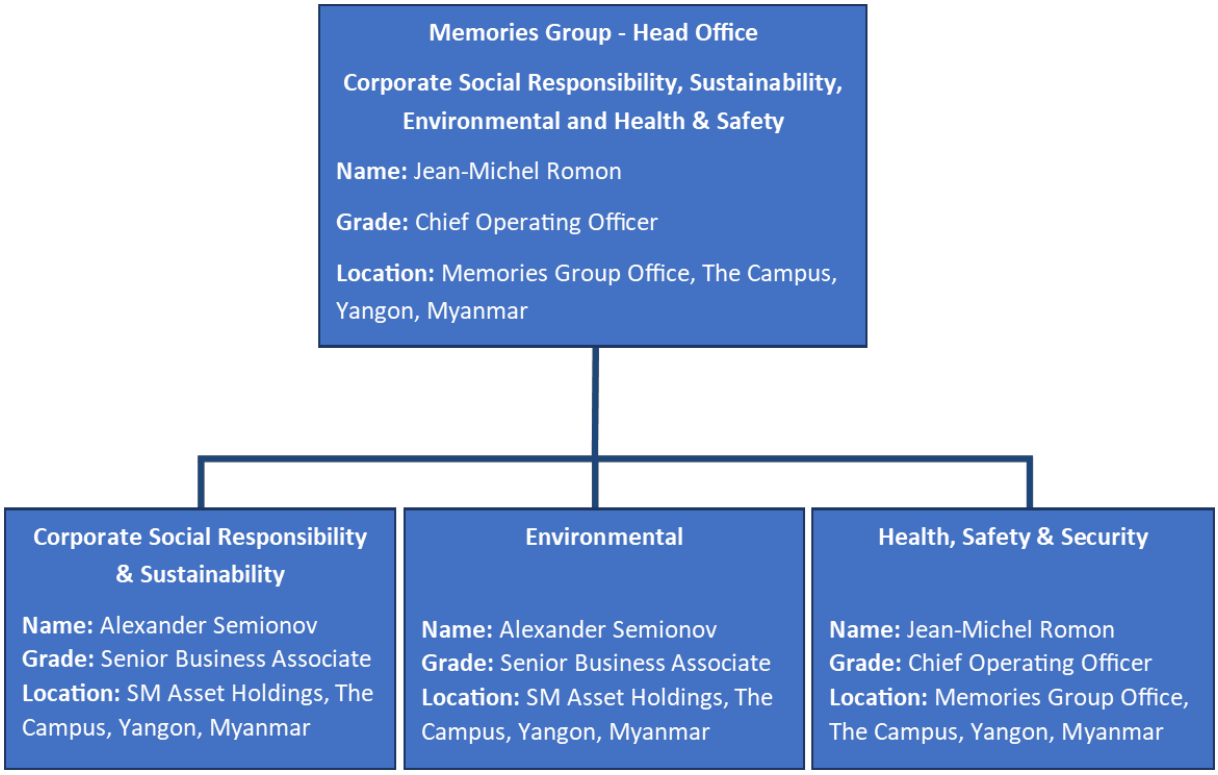


Plate 19: Responsible Persons for Implementing Operation Phase EMP

9.9 Emergency Contacts

In the event of an environmental incident the following emergency contact numbers should be used. Any environmental incident should be reported to the Emergency Response Controller without delay. The Emergency Response Controller will take all necessary measures to ensure that all environmental incidents are dealt with in a rapid and appropriate manner. Emergency contact numbers are provided in **Table 47**.

Table 47: Environmental Incidents Contact List

Emergency Contact	Contact Details
SPA Security Office	09 421031964
Police Station	057 26984
Mawlamyine Fire Brigade	057 27241
Ambulance	09 777 400 199
EPC (Township)	057-2025880, 057-21501
Mawlamyine City Development Committee (MCDC)	057-2024835, 057-2024887
Labour Office	057-2027079, 057-2024118
Township Administration Office	057-27492, 057-27493

9.10 Environmental Management Activities and Controls

For each of the potentially significant impacts presented in **Table 46**, the Environmental Management Plan (EMP) sets out the following in a tabular format:

- Impact source;
- Impact type;
- Potential mitigation/control measures;
- Specific actions required to ensure mitigation measures are implemented; and
- The responsible party.

Tables 48 To 49 overleaf outlines the key elements of the Outline Environmental Management Plan for the construction and operational phases of the Project.

Table 48: Construction Phase Environmental Management Plan (EMP) for the Suggati Hotel Development Project

Activity/Source of Impact	Potential Impacts	Mitigation Measures	Significance of Residual Impacts	Specific Actions	Responsibility	Timeline	Budget Estimate
Construction activities	Nuisance noise generation	Restrict primary noise generating activities to normal working hours (08.00 – 17.30)	Negligible	Conduct training for staff and contractors on general environment awareness	SPA	Immediately and ongoing	-
Construction Activities	Nuisance noise generation	Monitor ambient noise levels bi-annually	-	Measure ambient noise levels at a location adjacent the generator bi-annually to monitor compliance with EQG 2015, MONREC	SPA	Biannually	3,000 USD/Yr
Construction Activities	Air quality deterioration; Windblown dusts:	Deploy water bowser to site and keep site surfaces wetted down	Minor	Conduct training for staff and contractors on general environment awareness	SPA	Immediately and ongoing	-
Generator and other combustion engine emissions	Air quality deterioration	Routine monitoring and maintenance of engines and all equipment to ensure optimal efficiency	Negligible	Implement and enforce machinery maintenance programme	SPA	Immediately and ongoing	-
Construction Activities	Air quality deterioration	Monitor ambient air quality bi-annually at one location	-	Measure ambient air quality at a location adjacent the generator bi-annually to monitor compliance with EQG 2015, MONREC	SPA	Biannually	6,000 USD/Yr

Activity/Source of Impact	Potential Impacts	Mitigation Measures	Significance of Residual Impacts	Specific Actions	Responsibility	Timeline	Budget Estimate
Water Supply	Over-exploitation of local aquifer	Implement 3R Policy; Reduce, Reuse, Recycle	Minor	Train all personnel in the importance of conserving water and reusing water wherever possible	SPA	Immediately and ongoing	-
Stormwater runoff	Surface water contamination (sedimentation)	Install silt traps at all temporary drainage discharge points & ensure they are adequately maintained	Negligible	Instruct contractor to build silt traps at all stormwater discharge points and ensure they are adequately maintained	SPA	Immediately and ongoing	-
Stormwater runoff	Surface water contamination	Monitor stormwater runoff quality	-	Collect samples at temporary drainage site discharge point and submit to ISO 17025 accredited laboratory for analysis	SPA	Biannually	3,000 USD/Yr
Stormwater runoff	Surface water contamination	Monitor stormwater runoff quality	-	Check monitoring results conform with EQG 2015, MONREC standards	SPA	Biannually	-
Accidental spills	Soil and groundwater contamination / surface water quality and aquatic ecology	Safe storage	Negligible	Construct dedicated storage areas for all hazardous materials and hazardous wastes with adequate secondary containment	SPA	Immediately	-

Table 49: Operations Phase Environmental Management Plan (EMP) for the Suggati Hotel Development Project

Activity/Source of Impact	Potential Impacts	Mitigation Measures	Significance of Residual Impacts	Specific Actions	Responsibility	Timeline	Budget Estimate
Abstraction of groundwater for scheme supply	Over abstraction and depletion of important natural resource	Determine sustainable yield of aquifer	-	Conduct stepped discharge pumping tests to determine the sustainable yield of the target aquifer	SPA	Before operations	15,000 USD
Abstraction of groundwater for scheme supply	Ground subsidence	Determine sustainable yield of aquifer	-	Conduct stepped discharge pumping tests to determine the sustainable yield of the target aquifer	SPA	Before operations	-
Abstraction of groundwater for scheme supply	Over abstraction and depletion of important natural resource	Consult with relevant government agencies	-	Apply for groundwater use license	SPA	Before operations	-
Abstraction of groundwater for scheme supply	Community Water Security	If pumping tests indicate proposed abstraction exceeds recharge capacity, then switch to municipal piped water for supply	Negligible	Conduct feasibility studies with respect to switching from groundwater to municipal piped water as the main supply source	SPA	Before operations	-
Wastewater discharges	Surface water contamination / aquatic ecology	Monitor wastewater system influent and effluent quality	-	Collect wastewater influent and effluent samples from inlet and outlet point of wastewater treatment system.	Hotel Operator	Quarterly during operations	2,000 USD/yr
Wastewater discharges	Surface water contamination / aquatic ecology	Monitor wastewater system influent and effluent quality	-	Submit recovered samples to ISO 17025 accredited laboratory for analysis	Hotel Operator	Quarterly during operations	2,000 USD/yr

Activity/Source of Impact	Potential Impacts	Mitigation Measures	Significance of Residual Impacts	Specific Actions	Responsibility	Timeline	Budget Estimate
Wastewater discharges	Surface water contamination / aquatic ecology	Monitor wastewater system influent and effluent quality	-	Check wastewater discharge quality conforms with the relevant government standards	Hotel Operator	Quarterly during operations	-
Wastewater discharges	Surface water contamination / aquatic ecology	Ensure wastewater treatment system is adequately maintained and operating at optimal performance	Negligible	Compare untreated wastewater (influent) and treated wastewater (effluent) quality to determine performance status of WWTP	Hotel Operator	Quarterly during operations	(see above)
Accidental leakage/spillage of hazardous materials	Soil, groundwater surface water contamination	Store all hazardous materials securely	Negligible	Ensure all hazardous materials and hazardous wastes storage areas have adequate secondary containment	Hotel Operator	Routinely during operations	-
Storage of flammable/explosive gases (propane)	Life and Fire Safety	Store all flammable/explosive gases in accordance with good international practice	Negligible	Ensure a minimum safe distance between LPG cylinders and any fixed source of ignition. Ensure that the installation and service pipework is regularly inspected and maintained	Hotel Operator	Routinely during operations	-
Backup Electricity Generating Set	Local air quality deterioration	Select fuel efficient low emissions genset	Negligible	Review Genset specifications	SPA	Before operations	-
		Routine monitoring and maintenance to ensure optimal efficiency		Implement and enforce machinery maintenance programme	Hotel Operator	Routinely during operations	

9. 11 Mitigation Measures & Monitoring Plan

Environmental Monitoring Plan which is part of the Environmental Management Plan and needed to specify the parameter and the program to distinguish the anticipated changes. The following table shows the parameter, method and program for the point that is to be measured.

Noise

No	Point of Pollution	Affected	Parameter	Indication	Method	Person	Duration
1	Surrounding of Project Area	Nosie	Sound Level	dB	Sound Level Meter		Daily

Water & Waste Water

No	Point of Pollution	Affected	Parameter	Indication	Method	Person	Duration
1	Surrounding	Waste Water	Flow rate	pH, Turbidity, Colour, Conductivity, Iron, Manganese, Sulphate, Fluoride, Alkalinity, Total Hardness, Chloride, BOD, COD	Lab Analysis	Person In Charge	Daily, Weekly or Monthly

Air

No	Point of Pollution	Affected	Parameter	Indication	Method	Person	Duration
1	Surrounding	Air	Exhaust Air Temp/ Pressure, Nitrogen dioxide, Ozone, PM10a, PM2.5b, Sulphur dioxide	Order Level	Lab Analysis	Person In Charge	Daily, Weekly or Monthly

Solid Waste

No	Point of Pollution	Affected	Parameter	Indication	Method	Person	Duration
1	Surrounding	Solid Waste	Volume/ Weight	Volume	Visual, Weight Measurement	Person In Charge	Daily, Weekly or Monthly

9.11 Significance of Residual Impacts

Provided that the additional mitigation and management measures described in **Tables 48** and **49** described above are followed, there should be no significant residual environmental impacts associated with the Project.

If the groundwater pumping tests show that abstraction level will not exceed natural recharge, the impacts to groundwater resources/community water security can be downgraded to **MINOR**.

If the groundwater pumping tests indicate that the proposed abstraction volume will exceed recharge, then it is recommended to switch the water supply from groundwater to municipal piped supply to avoid potential adverse impacts to groundwater resources/community water security.

9.12 Environmental Quality Monitoring Plan

Some potential environmental impacts can be predicted with a degree of precision, although some can only be accurately evaluated once the activity commences by conducting environmental monitoring. It is a requirement of the EMP that environmental monitoring and reporting is conducted throughout the lifecycle of the Project.

Monitoring will be required in order to demonstrate compliance with relevant environmental quality standards and the Project Proponents commitment to environmental and social performance. The environmental monitoring will also provide verification of the effectiveness of the control measures inbuilt into the Project design.

The key objectives of the environmental monitoring activities are as follows:

- To measure compliance with statutory environmental quality standards;
- To provide an early indication if any of the environmental control measures or practices are failing to achieve acceptable standards; and
- To provide a basis for continuous review and improvements to the operational monitoring programme.

In formulating the environmental monitoring programme, the following considerations and strategies have been applied:

- Consistent with national regulatory requirements;
- Consistent with internationally acceptable practices;
- Responsive to detect environmental changes/trends;
- Logistically practical; and
- Cost effective.

The following sections outline the recommended environmental monitoring activities for the construction and operational phases of the Project. It is recommended that SPA and the Hotel Operator make sufficient budgetary and resourcing allowances to facilitate the implementation of the environmental management and monitoring measures detailed herein.

9.13 CONSTRUCTION PHASE ENVIRONMENTAL QUALITY MONITORING

The following environmental monitoring regime is recommended to be implemented for the construction phase of the Project.

9.13.1 Ambient Air Quality Monitoring

It is recommended that ambient air quality is measured bi-annually at one location during the construction phase of the Project in order to monitor the impact of Project activities on local air quality.

The proposed location of the ambient air quality monitoring station is shown on **Plate 19** below. The results of the monitoring activities should be compared against the Myanmar Ambient Air Quality Standards which can be found in **Section 6.4**.

9.13.2 Community Noise Level Monitoring

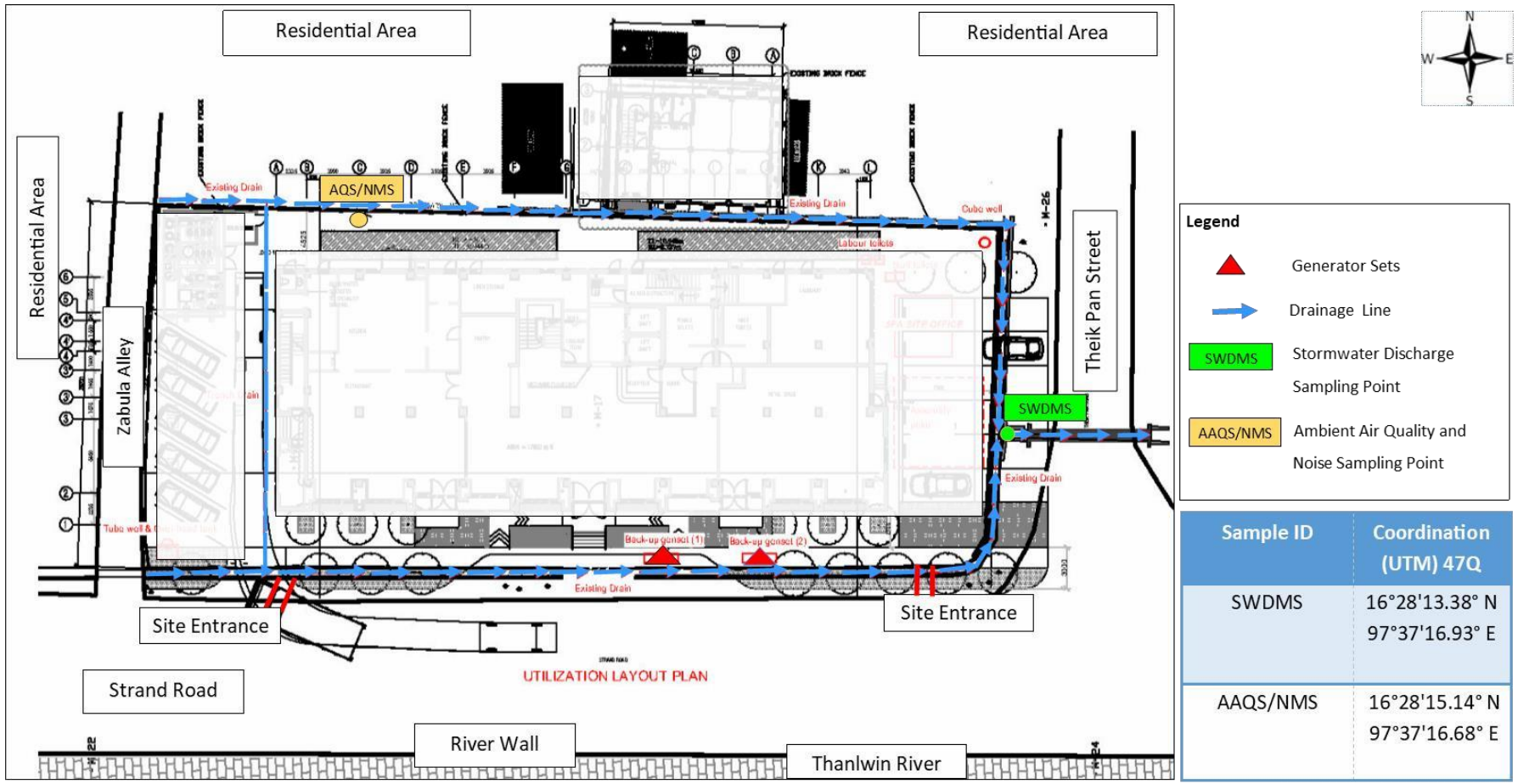
It is recommended that ambient noise levels are measured bi-annually at one location during the construction phase of the Project in order to monitor the impact of Project activities on local noise levels.

The proposed location of the ambient noise level sampling point is shown on **Plate 19** below. The results of the monitoring activities should be compared against the Myanmar Ambient Noise Quality Standards which can be found in **Section 6.6**.

9.13.3 Surface Water Quality

It is recommended that stormwater discharge quality is measured bi-annually at the offsite discharge point during the construction phase of the Project in order to monitor the impact of Project activities on local surface water quality.

The proposed location for stormwater runoff surface water sampling point is shown on **Plate 19** below. The results of the monitoring activities should be compared against the Myanmar Construction Phase Water Quality Standards which can be found in **Section 6.5**.



Sample ID	Coordination (UTM) 47Q
SWDMS	16°28'13.38° N 97°37'16.93° E
AAQS/NMS	16°28'15.14° N 97°37'16.68° E

Source: *SPA Project Management, Mawlamyine Hotel, 2018.*

Scale: *Not to Scale*

Plate 20: Proposed Location of Construction Phase Environmental Monitoring Activities

9.13.4 Construction Phase Environmental Monitoring Scope and Programme

Table 50 presents details the scope, location and frequency of environmental monitoring that is recommended to be undertaken during the **construction phase** of the Project.

Table 50: Location, Scope and Frequency of Environmental Monitoring Activities

Location ID	Coordinates	Parameters Measured	Frequency
SWDMS	16°28'13.38 °N 97°37'16.93° E	See Section 6.5 (Table 29)	Biannually
AAQS	16°28'15.14°N 97°37'16.68°E	See Section 6.4	Biannually
NMS	16°28'15.14°N 97°37'16.68°E	See Section 6.6	Biannually

AAQS: Ambient Air Quality Station

NMS: Noise Monitoring Station

SWDMS: Stormwater Discharge Monitoring Station

9.14 OPERATIONAL PHASE ENVIRONMENTAL QUALITY MONITORING

The following environmental monitoring regime is recommended for the operations phase of the Project.

9.14.1 Wastewater Quality

It is recommended that untreated sanitary wastewater (influent) and treated sanitary wastewater (effluent) samples are collected at ***quarterly intervals*** in order to measure the performance of the wastewater treatment system and to verify that the quality of the treated sanitary wastewater effluent complies with the statutory wastewater quality standards for discharges into surface waters.

The samples should be collected at the wastewater inlet and treated wastewater outlet points on the wastewater treatment system.

The recovered samples should be submitted to an ISO 17025 accredited testing laboratory and analysed for the parameters listed in **Table 30** herein.

9.15 ENVIRONMENTAL COMPLIANCE AUDITING

Regular EMP compliance audits should be undertaken by the SPA EHS Quality Assurance Team during the construction phase of the Project. Once the Project is handed over to the Hotel Operator the responsibility for compliance with the operational phase requirements of the EMP passes to them.

The audit and inspection frequencies will be established by YSH/SPA and increased or decreased according to the findings and the degree of confidence arising from the audit findings. Furthermore, independent third party audits shall be undertaken on a bi-yearly basis to measure compliance with the EMP. The EMP will subject to on-going review and development as deemed necessary to ensure that it remains appropriate to all aspects of the Project. All audit findings will be reviewed by the YSH Corporate

Social Responsibility, Sustainability, Environmental, Health and Safety Country Manager and where corrective actions are deemed necessary, specific plans (with designated responsibility and timing) will be developed aimed at continuous improvement in environmental, social and health and safety performance.

10. Corporate Social Responsibility Plan

Along with EMP, Corporate Social Responsibility (CSR) Plan is also formulated to be implemented by SM Mawlamyine Hotel Limited during the long term operation period. The SM Mawlamyine Hotel Limited strongly believed that a hotel/resort and tourism business can achieve sustainable profits, only by minimizing environmental footprint caused by itself and sharing the benefits with employees and local community. The aim of CSR is to ensure social well-being of the employees and their family members, better living condition and transparent and friendly relationship with the communities nearby.

No	Activity	Responsibility	Timing	Estimated Budget (USD per annum)
1	Provide free emergency medical care. Annual medical checkup and vaccination for employees.	SM Mawlamyine Hotel Limited	Annually	USD 2,000
2	Social and environmental assistance to nearest villages of Mawlamyine township (provide teaching materials to school, basic medicines to clinic, conduct environmental education program, tree planting program, contribute for local pagoda festival)		Annually	USD 1,500
3	Cooperation with nearby hotels, businesses and concerned authorities for local environmental safety and sanitation (contribution to Mawlamyine Township Municipality for collective sewage/ waste water disposed system, cleaning and maintenance of drainages, roads, power lines)		Annually	USD 1,500
4	Contributions to local infrastructure development (for better development of power supply, water supply, roads, health and sanitation facilities in the area in cooperation with nearby hotels, businesses and concerned authorities)		Annually	USD 1,000
	Total			USD 6,000

11. Public Consultation and Information Disclosure

In order to ensure the public involvement, the following procedures were followed during EMP report preparation. EMP team also carried out interaction with local communities and related stakeholders during field survey to collect the public concerns and suggestions. The casual meeting is held at different stakeholders especially the neighbors of proposed project site.

Stakeholder Meeting

Subject	:	Stakeholder Meeting, Environmental Management Plan for Hotel Suggati Mawlaying
Venue	:	Suggati Meeting Room
Date	:	15th July 2017
Time	:	10:00 AM – 12:00 PM
Attendees	:	25

Meeting Agenda

- Open the meeting
- Opening speech
- Presenting the objectives of performing the Environmental Impact Assessment
- Presenting the hotel operations
- Presenting the initial environmental examination of hotels by SLP environmental services
- Questions and answers by participants
- Closing speech
- Close the meeting

Government Organization and Department

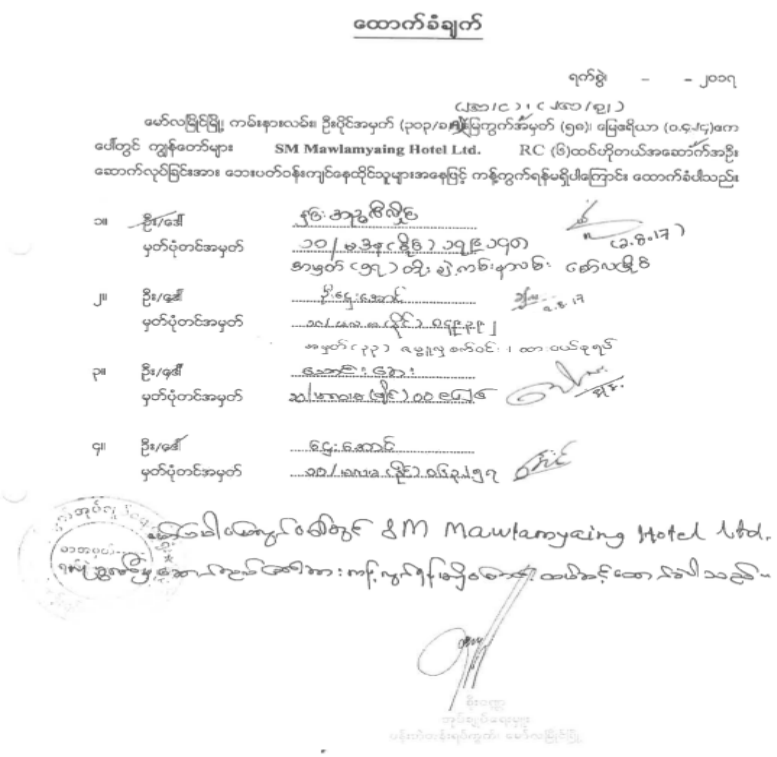
No.	Name	Occupation	Department
1.	U Than Htut Khine	Deputy Director	MOHT (Mon State)
2.	Daw Win Win Kyi	Chief Engineer	CDC (Mon State)
3.	U Ko Ko Latt	Assistant Director	GAD (Mon State)
4.	U Than Htut Lwin	Assistant Director	MOLIP (Mon State)
5.	U Win Aung	Second Officer	DLRA (Mon State)
6.	D Thu Thu Aung	Dy Officer	MOEC (Mon State)

MOHT = Ministry of Hotel & Tourism
CDC = City Development Committee
GAD = General Administration Department
MOLIP = Ministry of Labor, Immigration & Population
MOALI = Ministry of Agriculture, Livestock and Irrigation
MOEC = Ministry of Environmental Conservation

Local People

No.	Name	Occupation
1.	D Hnin Inzli Hlaing	Neighborhood
2.	U Htay Aung	Neighborhood
3	U Thaung Aye	Neighborhood
4	U Htay Aung	Neighborhood

The recommendation letter and Inspection photos of local communities can be seen as the following.


ထောက်ခံချက်

SM Mawlamyaing Hotel Ltd.

12.0 CONCLUSIONS

SLP Environmental has prepared the Environmental Management Plan for the Suggati Hotel Project. The study was undertaken in general accordance with the requirements stipulated in Chapter VII of the ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE, Ministry of Environmental Conservation and Forestry, Notification No. 616 / 2015 (29 December 2015). The study was also conducted cognisant of guidance presented in:

International Finance Corporation (IFC) Environmental, Health, and Safety Guidelines for Tourism and Hospitality Development (April 2007).

The significant potential adverse environmental impacts associated with the Project have been identified and evaluated (see **Section 8)** and SLP has formulated a robust project specific Environmental Management Plan (EMP) to mitigate the effects of significant adverse environmental impacts and ensure that legislative compliance and standards of good practice are upheld during the execution of the Project (see **Section 9).**

Provided that the recommended mitigation measures are appropriately implemented there should be no significant residual impacts as a consequence of Project activities and all impacts will have been appropriately mitigated to be as low as reasonably practical.

It should be noted that decommissioning activities were not assessed in the study as a separate and standalone decommissioning plan will be developed at the appropriate time taking into account the most cost effective and best practicable methods, legal requirements, industry practices and the site setting at the time any decommissioning takes place.

13. REFERENCES & SOURCES OF INFORMATION

The following documents and sources of information were utilized during the assessment:

1. ADB' s Safeguard Policy Statement 2009
2. ADB's Public Communications Policy, 2011
3. ADB's Social Protection Strategy, 2001
4. ADB's Gender mainstreaming guidelines, 2010
5. Conservation of Water Resource and River Law (No.8/2006)
6. Construction Phase Water Quality Standards (Final Draft EQG, 2015, MOECAF)
7. Country Report of Myanmar, Ministry of Social Welfare, Relief and Resettlement, Myanmar 2014
8. Environmental Impact Assessment Procedure, The Ministry of Environmental Conservation and Forestry (2015)
9. Environmental Conservation Law, Law No. 9/2012, 30th March 2012
10. Environmental Conservation Rules (2013), The Ministry of Environmental Conservation and Forestry (MOECAF)
11. International Finance Corporation Environmental Health and Safety Guidelines, April 2007
12. International Finance Corporation (IFC) Environmental, Health, and Safety Guidelines for Tourism and Hospitality Development, April 2007
13. Manual on Cyclone: Causes, Effects & Preparedness, UN Habitat, March 2015
14. Mawlamyine as A Commercial City in Greater Mekong Subregion, Yin Min Paik and Wyityi Win, 2016
15. https://weatherspark.com/y/112640/Average-Weather-in-Mawlamyine-Myanmar-(Burma)-Year-Round
16. Myanmar Protected Areas: Context, Current Status and Challenges, Istituto Oikos/BANCA, 2011
17. Myanmar: Third GMS Corridor Town Development Project in Mon State, ADB, April 2017
18. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, International Finance Corporation (IFC), January 2012
19. Performance Standard 2: Labor and Working Conditions, International Finance Corporation (IFC), January 2012
20. Performance Standard 3: Resource Efficiency and Pollution Prevention, International Finance Corporation (IFC), January 2012
21. Performance Standard 4: Community Health, Safety, and Security, International Finance Corporation (IFC), January 2012
22. Performance Standard 5: Land Acquisition and Involuntary Resettlement, International Finance Corporation (IFC), January 2012
23. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living

Natural Resources, International Finance Corporation (IFC), January 2012

24. Performance Standard 7: Indigenous Peoples, International Finance Corporation (IFC), January 2012
25. Performance Standard 8: Cultural Heritage, International Finance Corporation (IFC), January 2012
26. Ramsar Convention on Wetlands, 1971
27. Sanitary Wastewater Quality Standards (Final Draft EQG, 2015, MOECAF)
28. Seismic Zone Map of Myanmar
29. The Public Health Law of 1972, Ministry of Health
30. Underground Water Act 1930, Burma Act IV 1930
31. Urban Development Plan for regional cities (JICA, 2016)
32. Wildlife & Protected Areas Law, 1994

Appendix A SLPMONREC LICENSE

SLP Environmental Services

SLP Environmental is one of the leading environmental consultancy companies in Asia with many satisfied clients and a proven project delivery record across all countries within South East Asia. SLP is providing a broad range of:

- high quality environmental consultancy,
- planning,
- social science,
- ecology,
- health and safety and risk management consulting and
- advisory services across a range of industry sectors for over a decade.

SLP Environmental has extensive experience working on numerous highly sensitive projects and can be confident that the quality of work is such that it will withstand robust third party scrutiny. SLP is also acutely aware of the potential financial and reputational liabilities that often accompany sensitive environmental and social issues, and our clients can rest assured that SLP Environmental is fully cognizant of these commercial sensitivities. It can be reach the website through www.slpenvironmental.com.

REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 00008 Date 01 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၅၁၆/၂၀၁၅ အရ သယ်ဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

(a)	Name of Organization (အဖွဲ့အစည်းအမည်)	SLP Environmental Co., Ltd.
	Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်)	Mr. Stephen Pearmain
(b)	Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား)	British
(c)	Identity Card /Passport Numberof the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်)	528826156
(d)	Address of organization (ဆက်သွယ်ရန်လိပ်စာ)	10/109 Trendy Office Building, Sukhumvit Soi 13, Klong Toei Nua, Wattana, Bangkok. info@slpenvironmental.com , 6621687016
(e)	Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Organization
(f)	Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Appendix B FIGURES

***Source**: Google Earth, 2018.*

***Scale**: Not to scale*

Figure 1:	Project Site Location
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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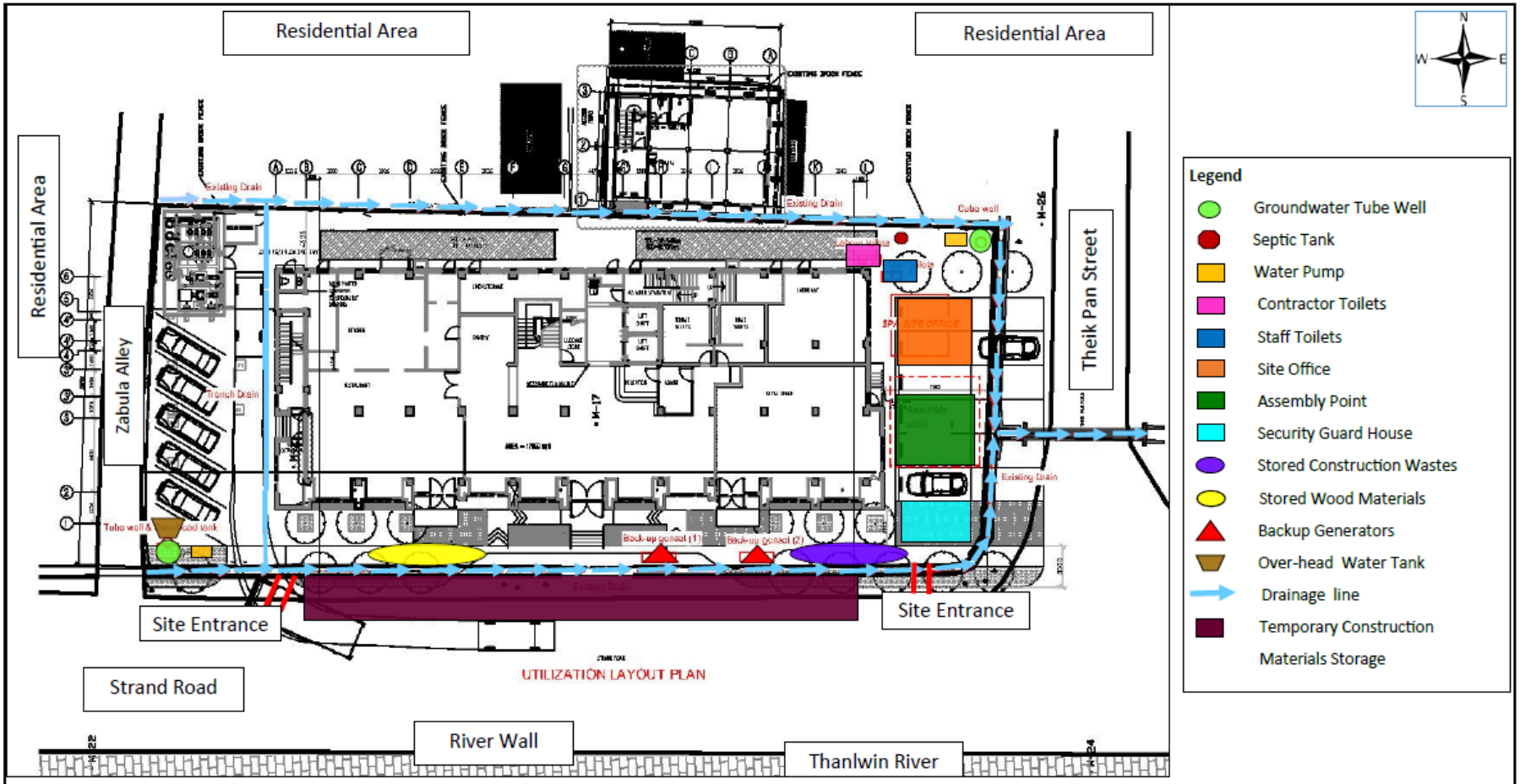

Source: SPA Project Management, Mawlamyine Hotel, 2018.

Scale: Not to Scale

Figure 2:	Construction Phase Layout Plan with Key Site Features
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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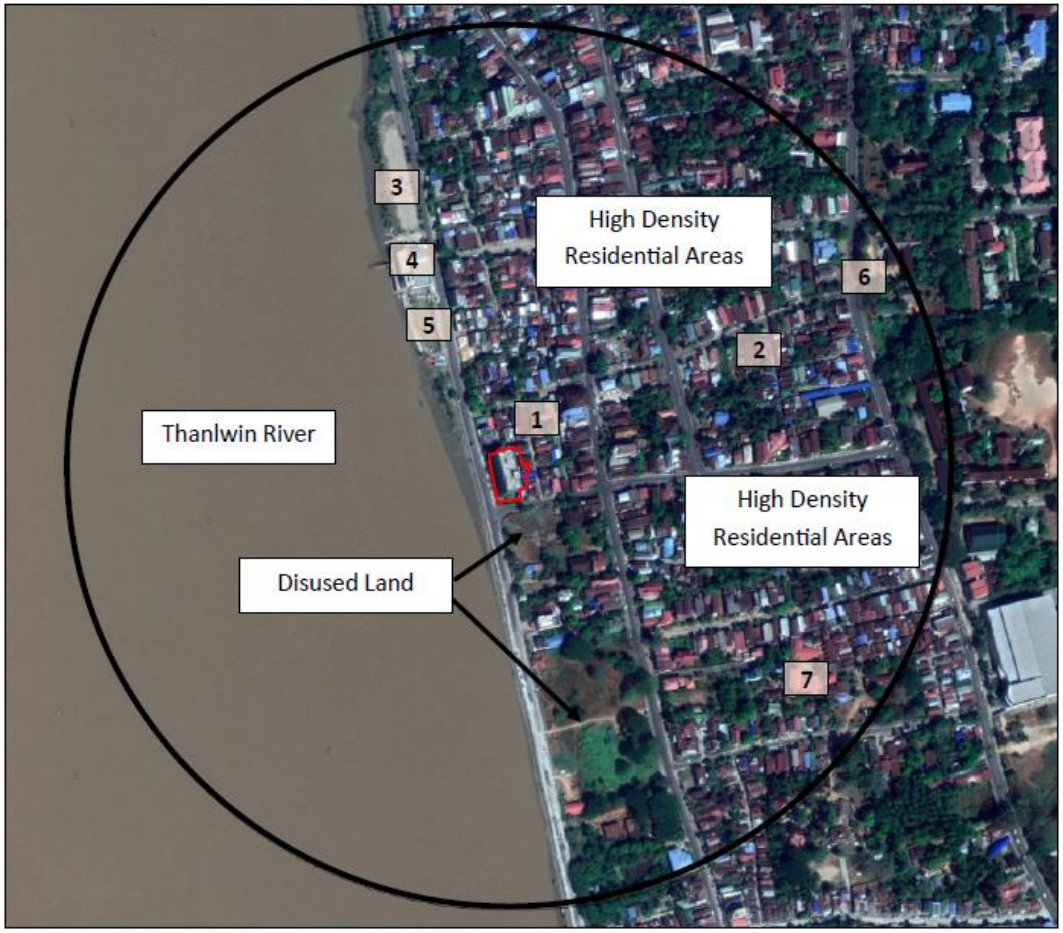

Legend

○	500 m Radius
▭	Approximate Site Boundary
1	Mawlamyine Emergency Rescue
2	Myanmar CP Livestock Co., Ltd.
3	Play Ground
4	Kyarr Jetty
5	YAMANYA River Side
6	No.7 Basic Education Middle School
7	Bago Pariyatti Monastery

Source: Google Earth, 2018.

Scale: Not to scale

Figure 3: Surrounding Landuses Plan
Project Name: Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number: SLP_1147
Client: Southern Myanmar Mawlamyine Hotel Limited.
Date: June 2018
Revision: 1

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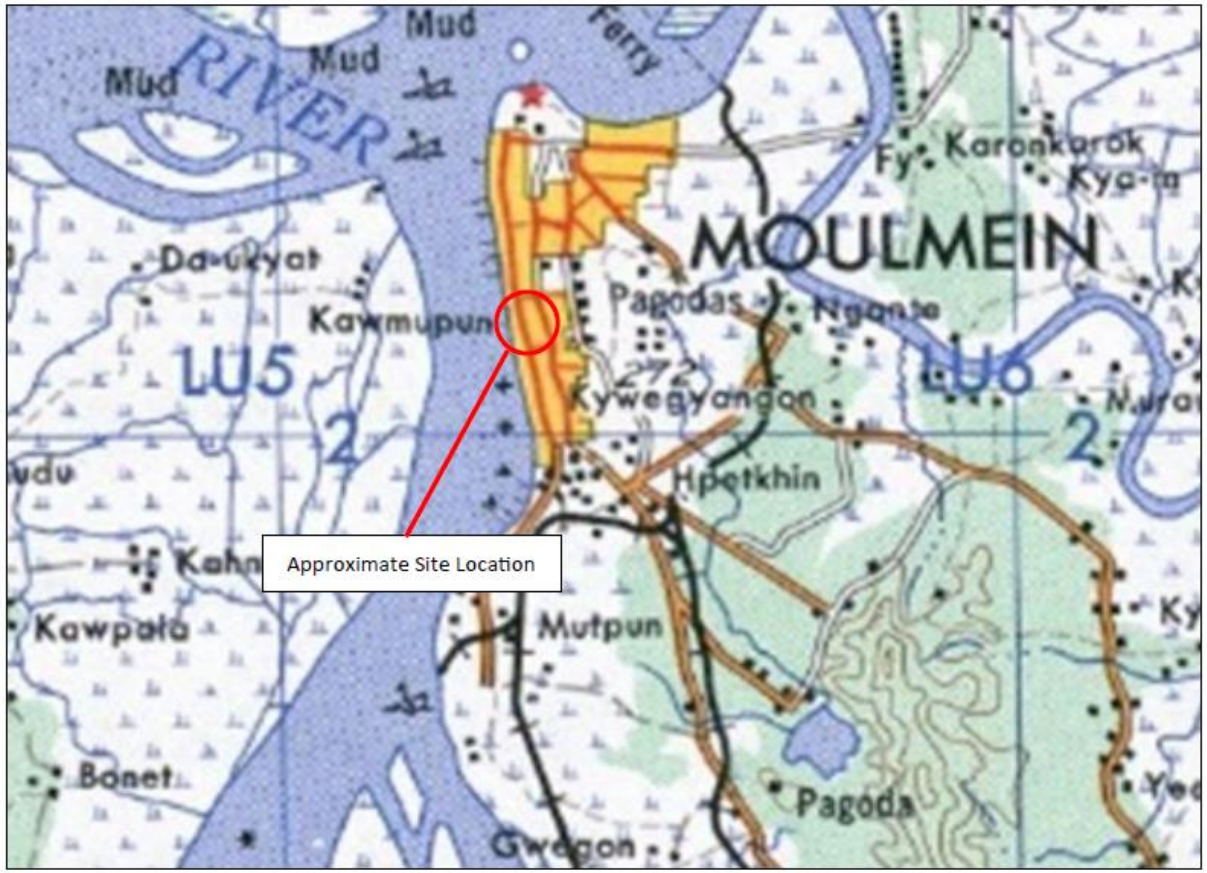

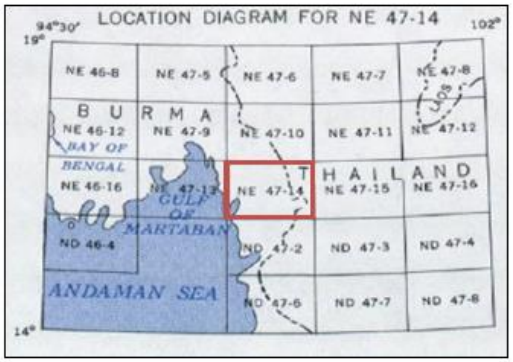

Legend

- Woods/Brushwood
- Rice Cultivation Area
- Populated Area
- Railroads

Source: The Army Map Service (PVBM), Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1954, Series U542, Sheet No. 5-47-21, Edition 1-AMS dated 1959. *Scale: 1:250,000*

Figure 4:	Historic Landuse Map
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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Figure 5:	Google Earth Imageries Dated 2001, 2005, 2012, 2014 and 2015
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
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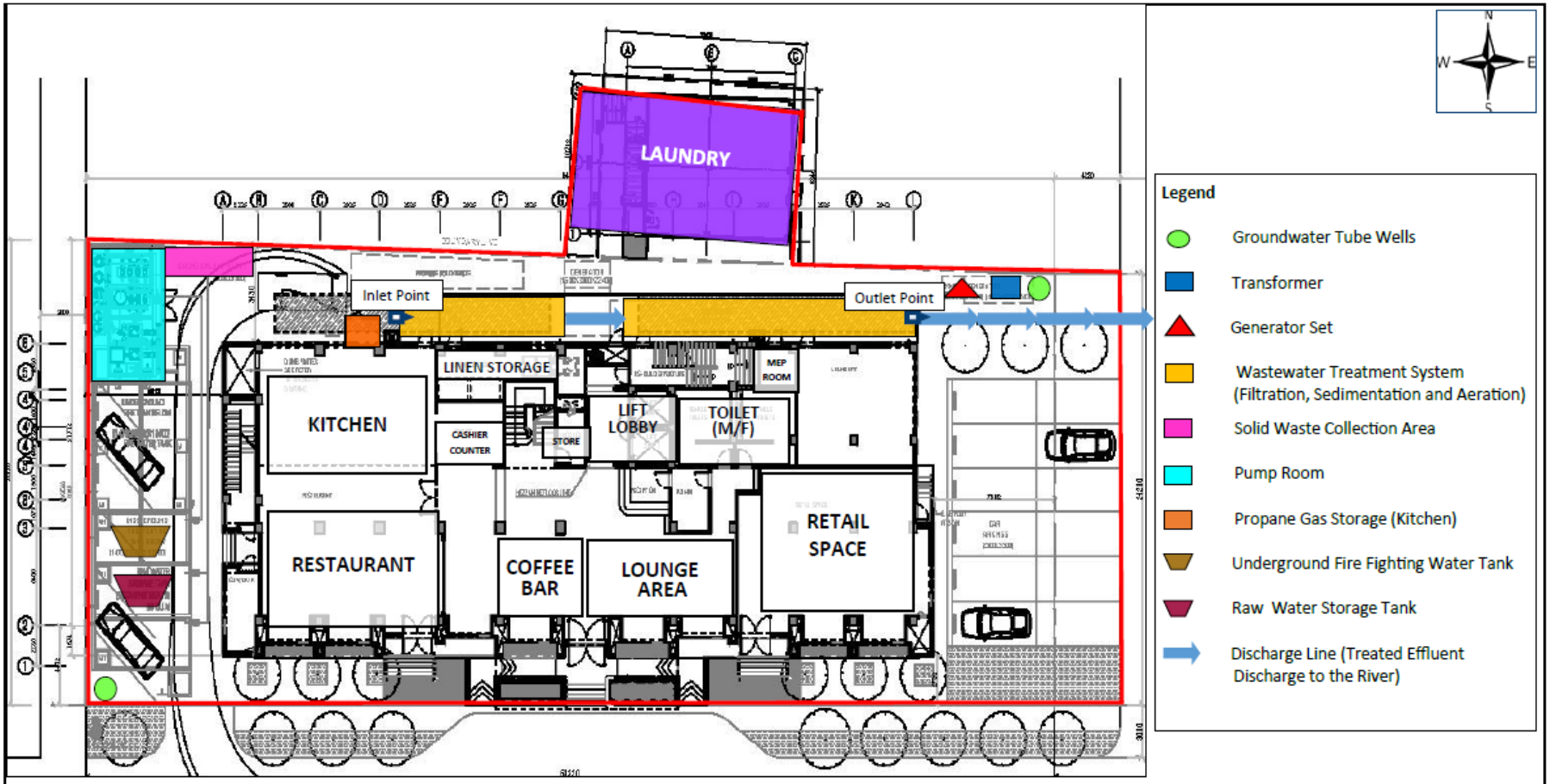

Source: *SPA Project Management, Mawlamyine Hotel (MMH), 2018.*

Scale: *Not to Scale*

Figure 6:	Operational Phase Layout Plan with Key Site Features
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
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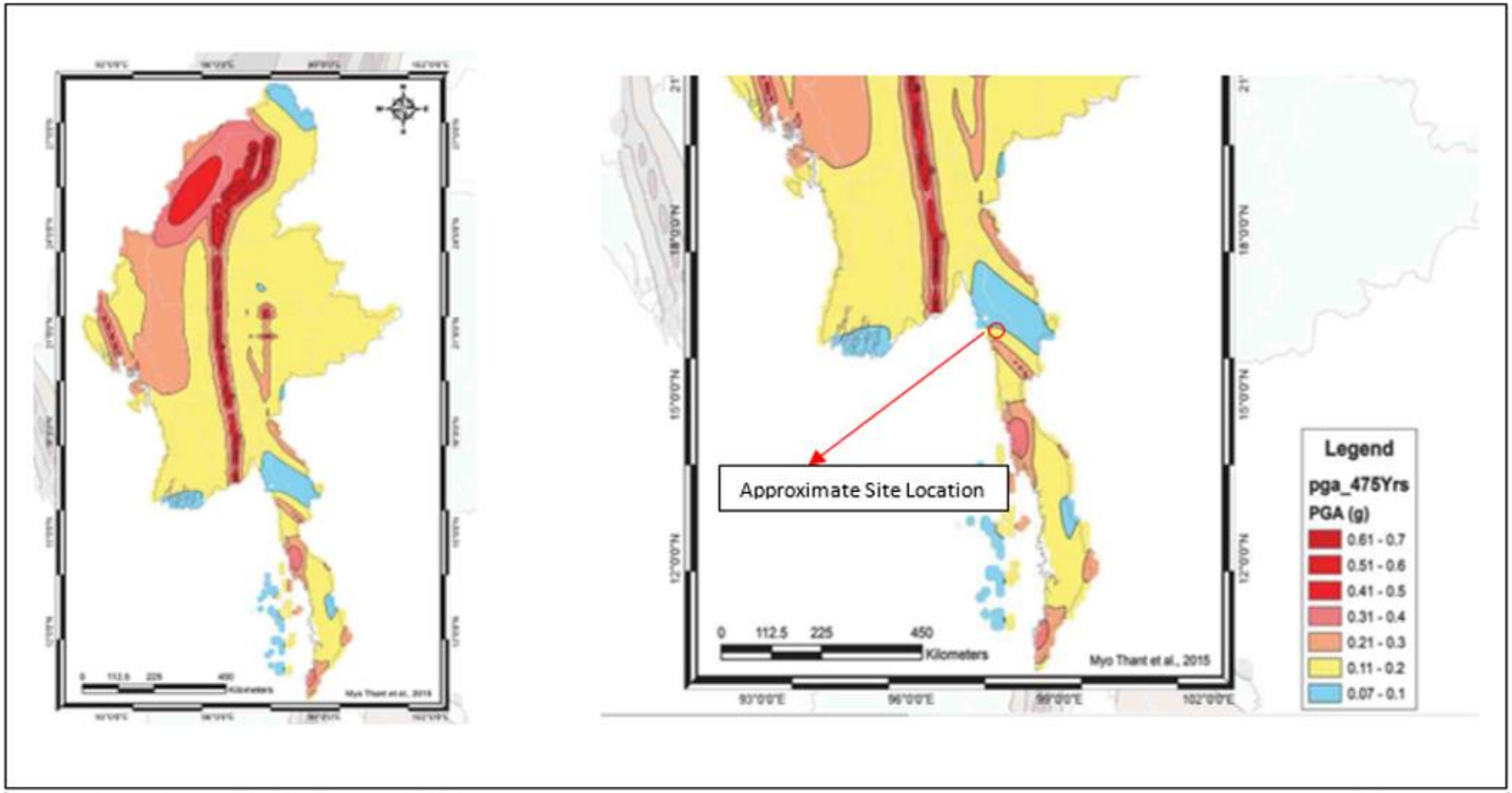

Source: *Seismic Hazard Profile of Myanmar, 2015.* ***Scale:*** *Not to scale*

Figure 7:	Seismic Hazard Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
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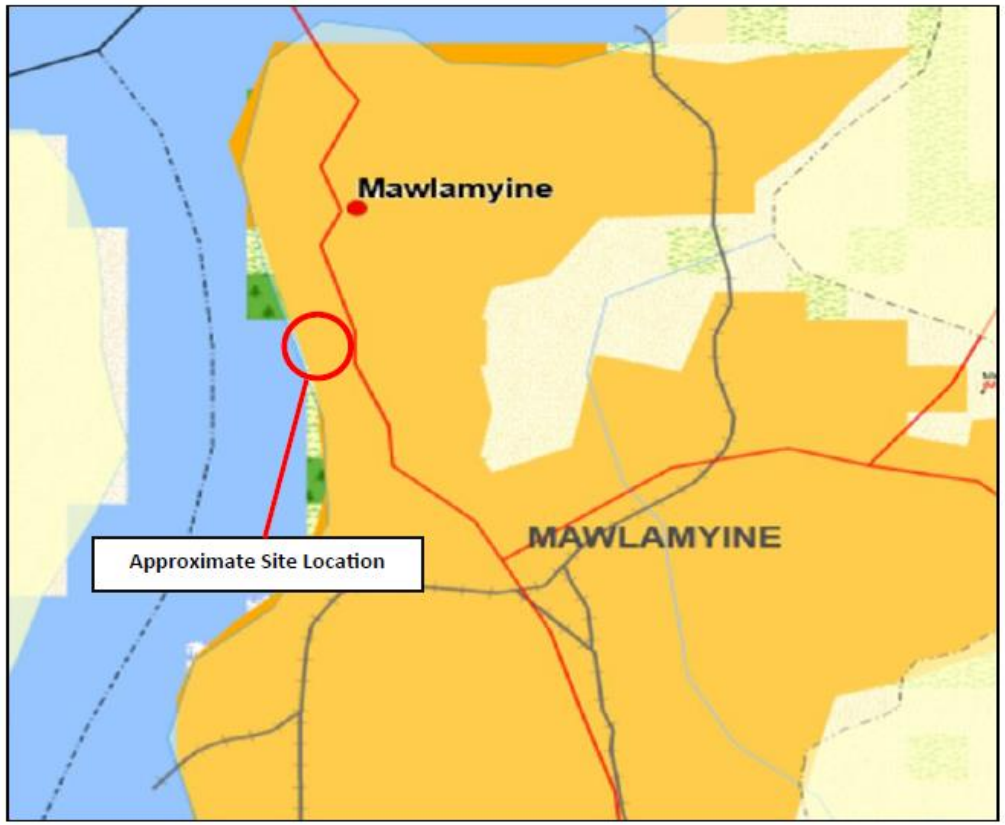

N
W E
S

Legend

- Approximate Site Location
- Village
- Town
- Road
- Railway
- Shore
- Township Boundary
- District Boundary
- State Boundary
- Crop and Vegetation
- Forest
- Mixed Forest
- Grassland
- Shrubland
- Snow Ice
- Urban Built-up
- Bare Land
- Wetland
- Water

***Source**: Mawlamyine Township Map, MIMU 154vo4, 2016.*

Scale: Not to scale

Figure 8:	Landuse Map of the Project Site
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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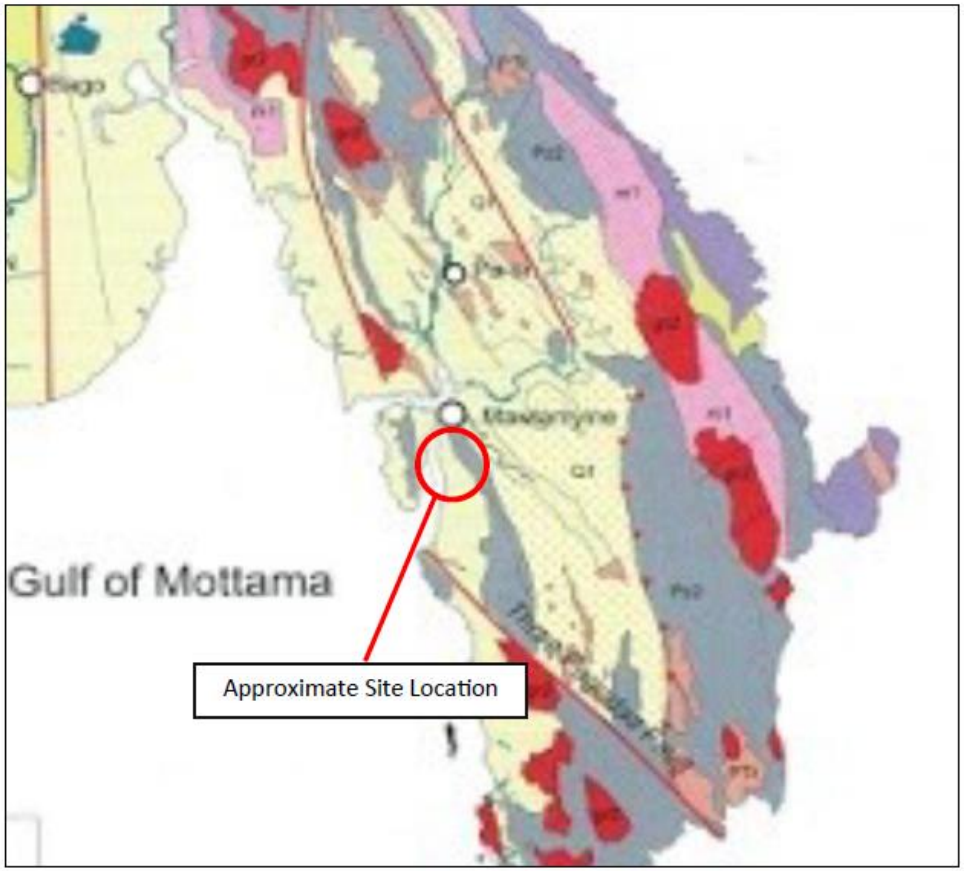

Legend

Approximate Site Location

Sedimentary and Metasedimentary Rocks

Q2 - Holocene
Young Alluvium

C - Carboniferous
Taungnyo formation Lebyin Group,
Mergui Group and its equivalents

Source: *Geology Map of Myanmar (2014), Myanmar Geoscience Society.*

Scale: *Not to scale*

Figure 9:	Geological Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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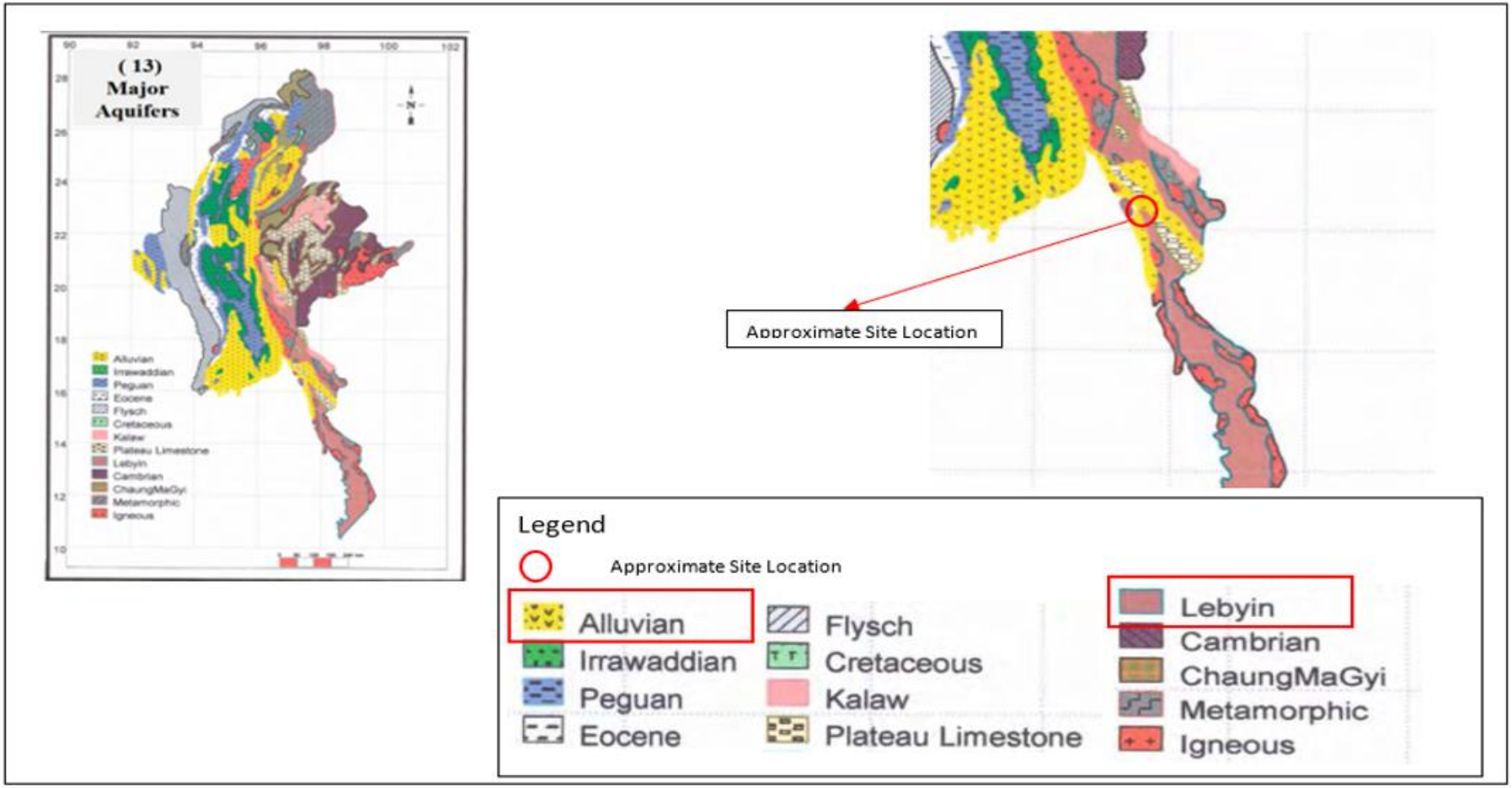

Source: Water Resources Utilization Department, Union of Myanmar

Scale: *Not to*

Figure 10:	Groundwater Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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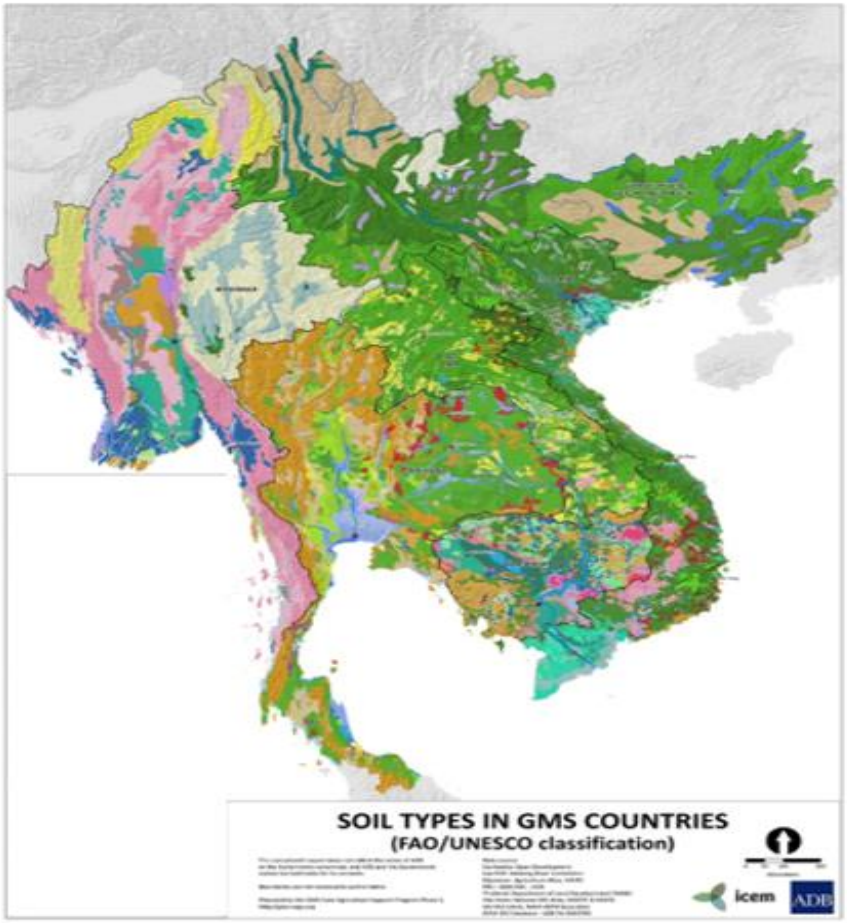

Legend

- FL - Fluvisols
- FLc - Calcaric Fluvisols
- FLd - Dystric Fluvisols
- FLdg - Gleyi-dystric Fluvisols
- FLe - Eutric Fluvisols
- FLt - Thionic Fluvisols
- FLu - Umbric Fluvisols
- FRr - Rhodic Ferralsols
- FRu - Humic Ferralsols
- FRx - Xanthic Ferralsols
- GL - Gleysols

Source: *Soil Type in Greater Mekong Sub-region Countries, ADB/UNESCO, 2017.*

Scale: *Not to scale*

Figure 11:	Soil Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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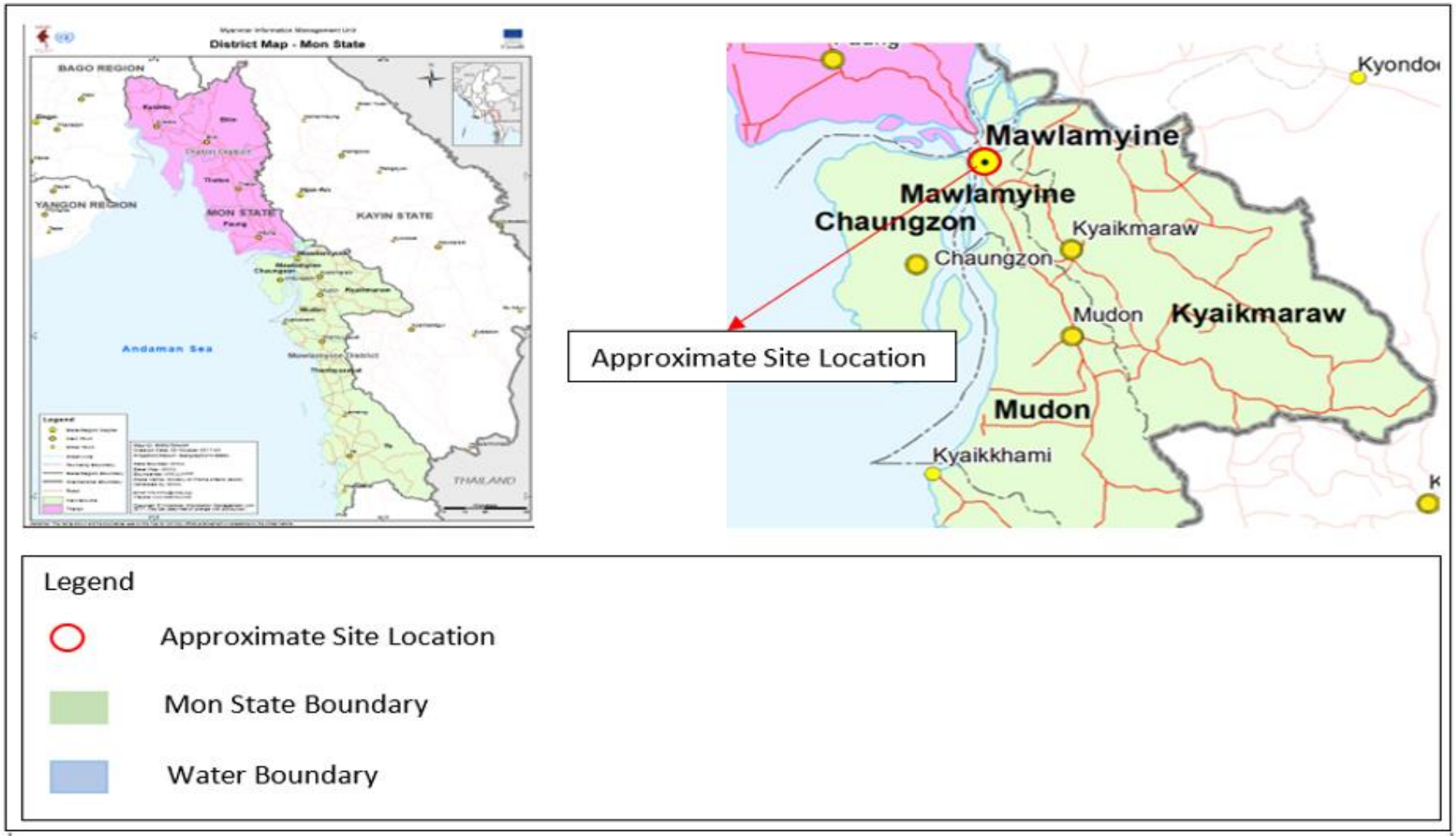

Source: *Physical Features of Mon State, Maphill, 2013.* ***Scale:*** *Not to scale*

Figure 12:	Surface Water Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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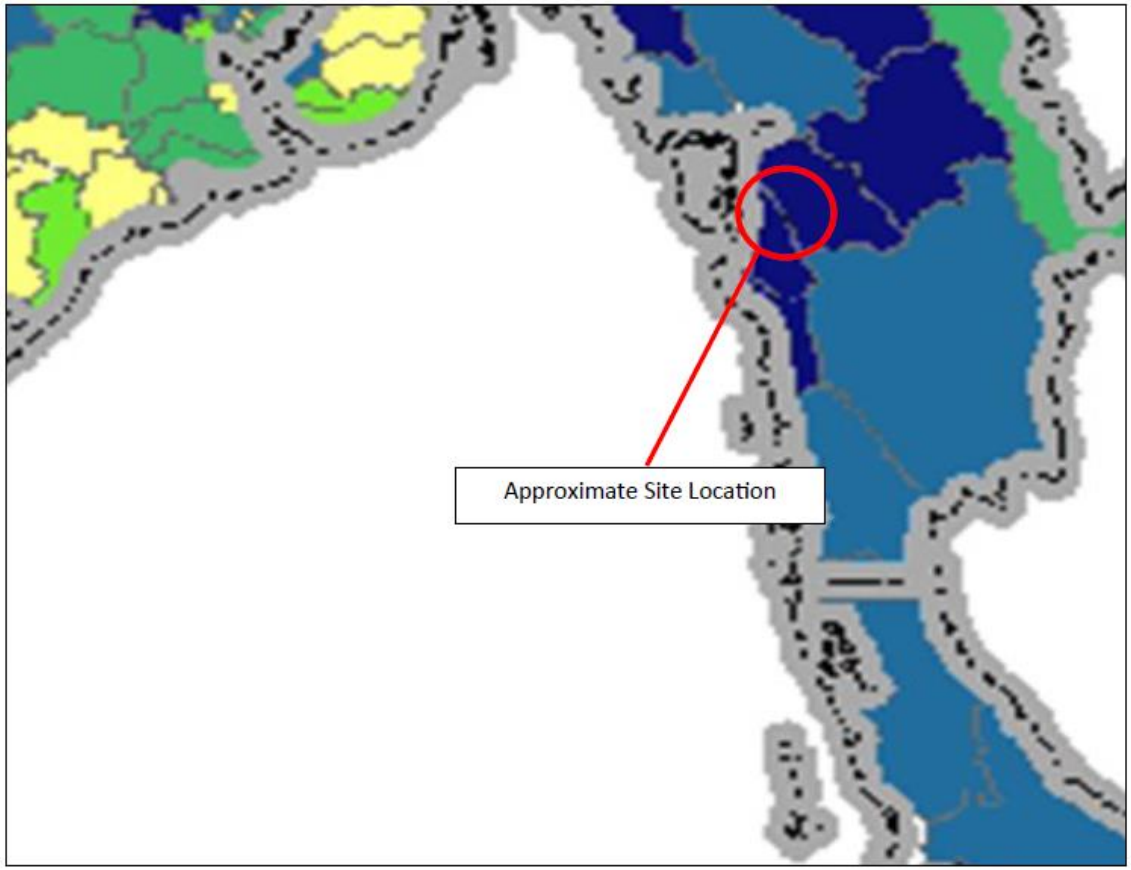

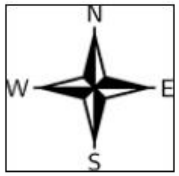

Legend

- Approximate Site Location
- <10 %
- 10 - 25 %
- 25 - 50 %
- 50– 75 %
- >75 %

Source: *International Water Management Institute, Myanmar Census, 2014.*

Figure 13:	Groundwater Map Extract
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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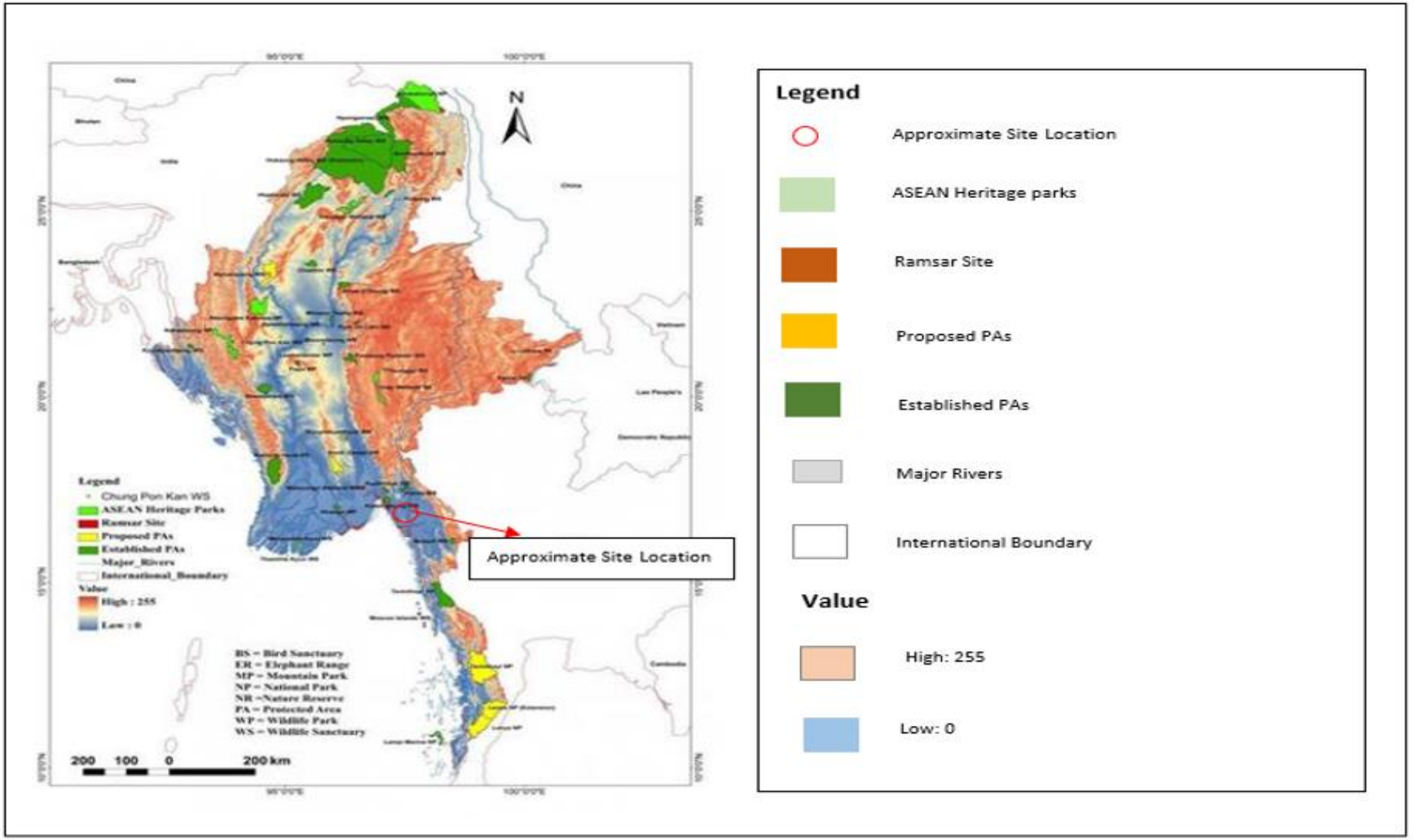

Source: Myanmar Environmental Portal, 2015.

Figure 14:	Protective Areas Map Extract
ProjectName:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
ProjectNumber:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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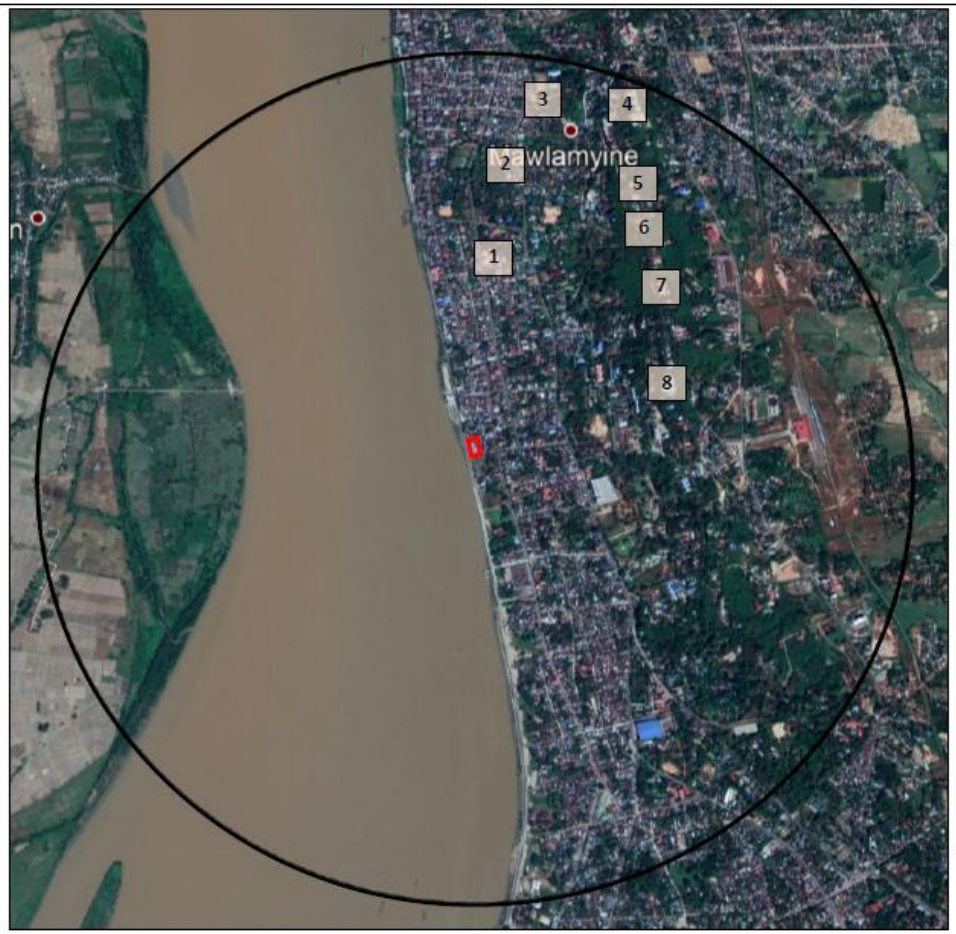

Legend

○	2 km Radius
▭	Approximate Site Boundary
1	Kyaik Thoke Pagoda
2	Mon Cultural Museum
3	St. Patrick's Church
4	Tang Pauk Monastery
5	Aung Theint Di Pagod
6	Law Ka Thara Puu Pagoda
7	U Khanti Pagoda
8	U Zina Pagoda

Source: Google Earth, 2018.

Scale: Not to scale

Figure 15:	Surrounding Cultural Heritage Sites Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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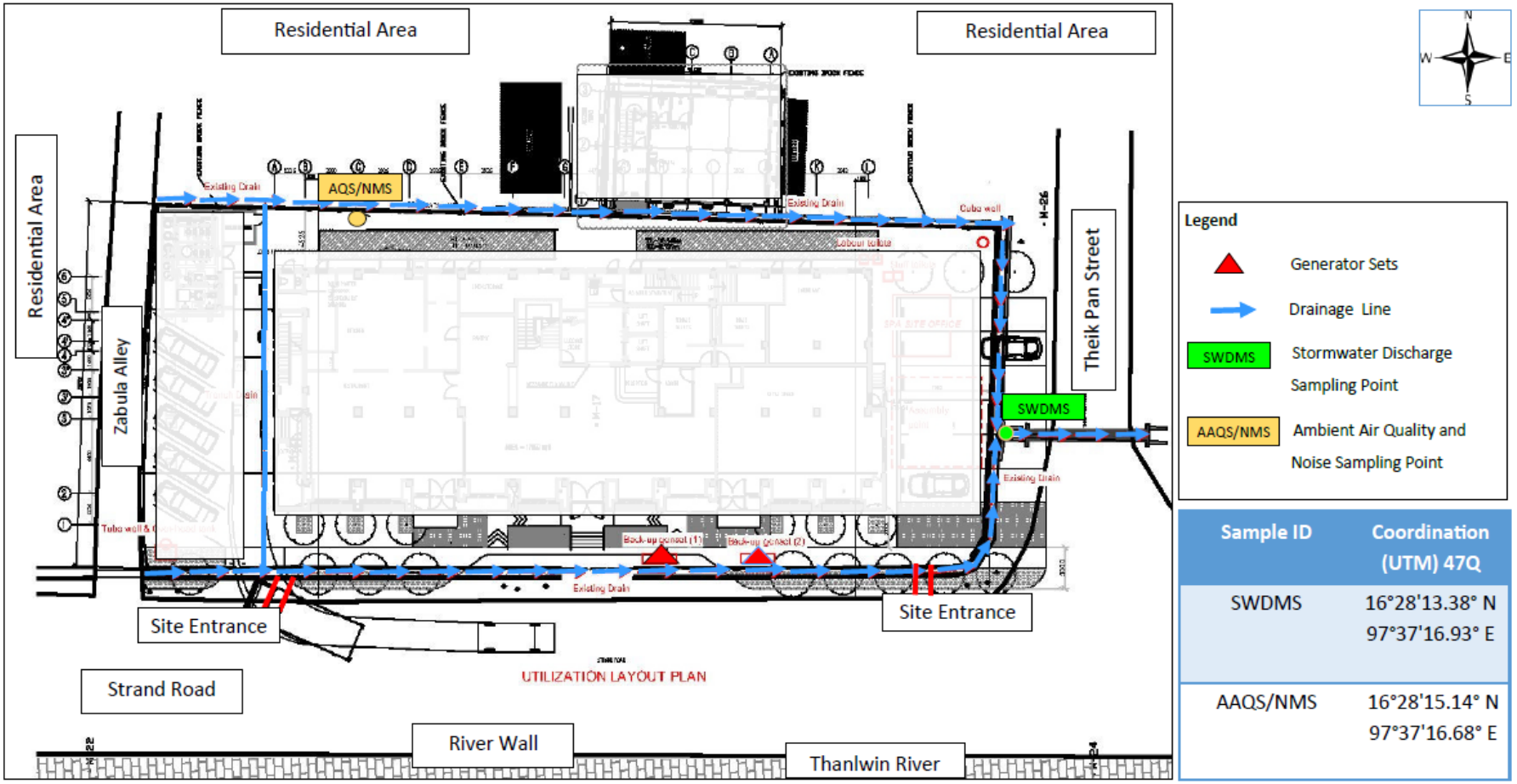

Sample ID	Coordination (UTM) 47Q
SWDMS	16°28'13.38° N 97°37'16.93° E
AAQS/NMS	16°28'15.14° N 97°37'16.68° E

Source: *SPA Project Management, Mawlamyine Hotel, 2018.*

Scale: *Not to Scale*

Figure 16:	Proposed Location of Construction Phase Environmental Monitoring Activities
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited.
Date:	June 2018
Revision:	1

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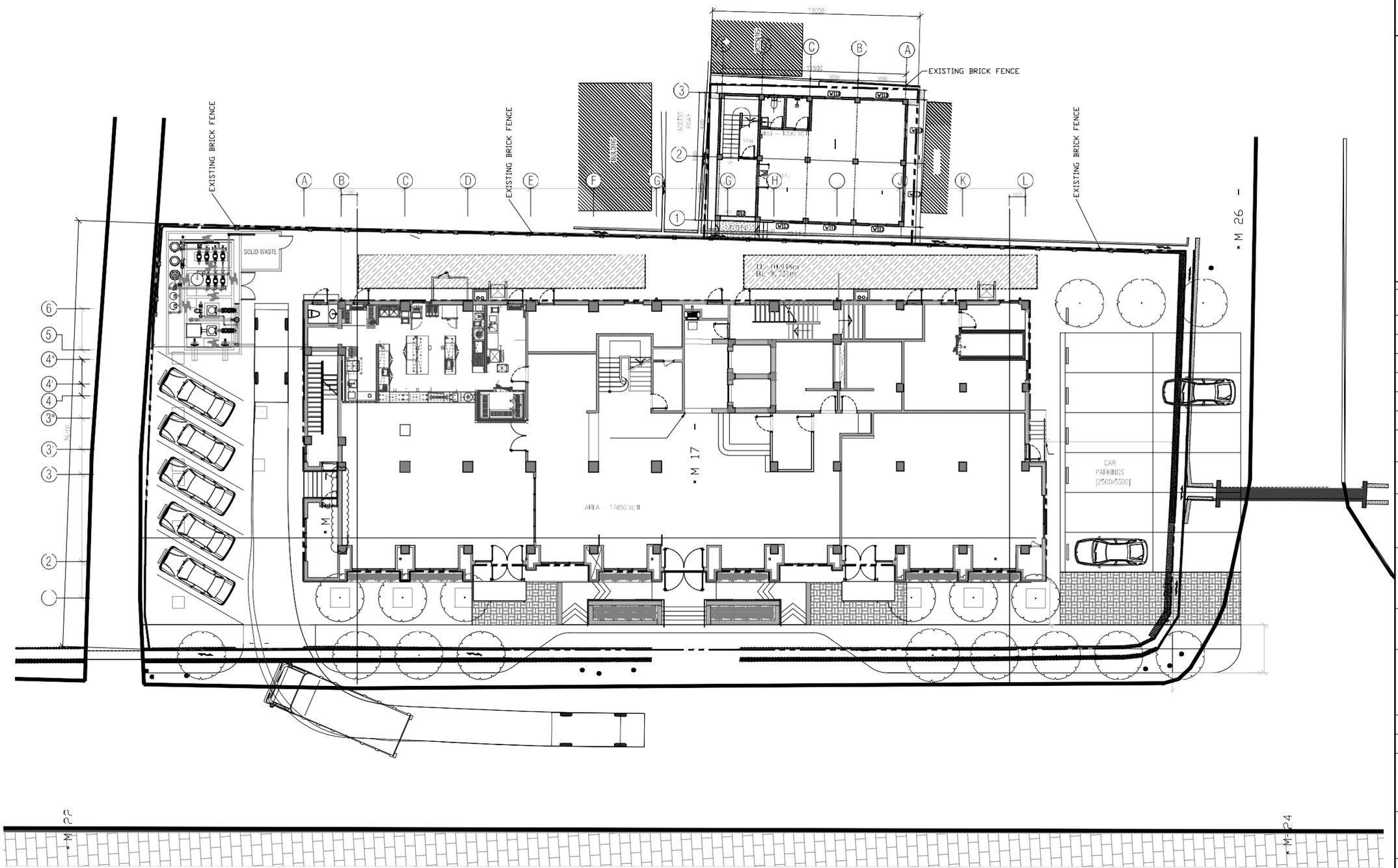

NOTE:

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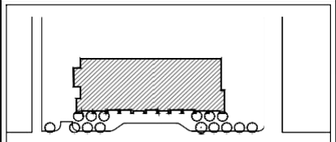

ISSUANCE : FOR CONSTRUCTION

09	FOR CONSTRUCTION FOR	16.03.2018
08	CONSTRUCTION FOR	19.2.2018
~~07~~	CONSTRUCTION FOR	~~12.1.2018~~
	CONSTRUCTION FOR	
06	TENDER(REVISE]	13.12.2017
05		25.08.2017

REV Date:

Project Code: MMH

Project Name:

Project Address: STRAND ROAD MAW LA MYAING

Client Name: SPA Project Management

Dwg Title:

Scale : -1:250 File Location: -

Drawn: -MMH Plot Date: 16.03.2018

Project Architect - HNIN YI MYINT @ SNOW

Dwg No. A-101 Rev 09

Project number 2017.02

SPA DESIGN Pun Hlaing Golf Estate Avenue Hlaing Tharyar Township, Yangon, Myanmar.

Layout Plan

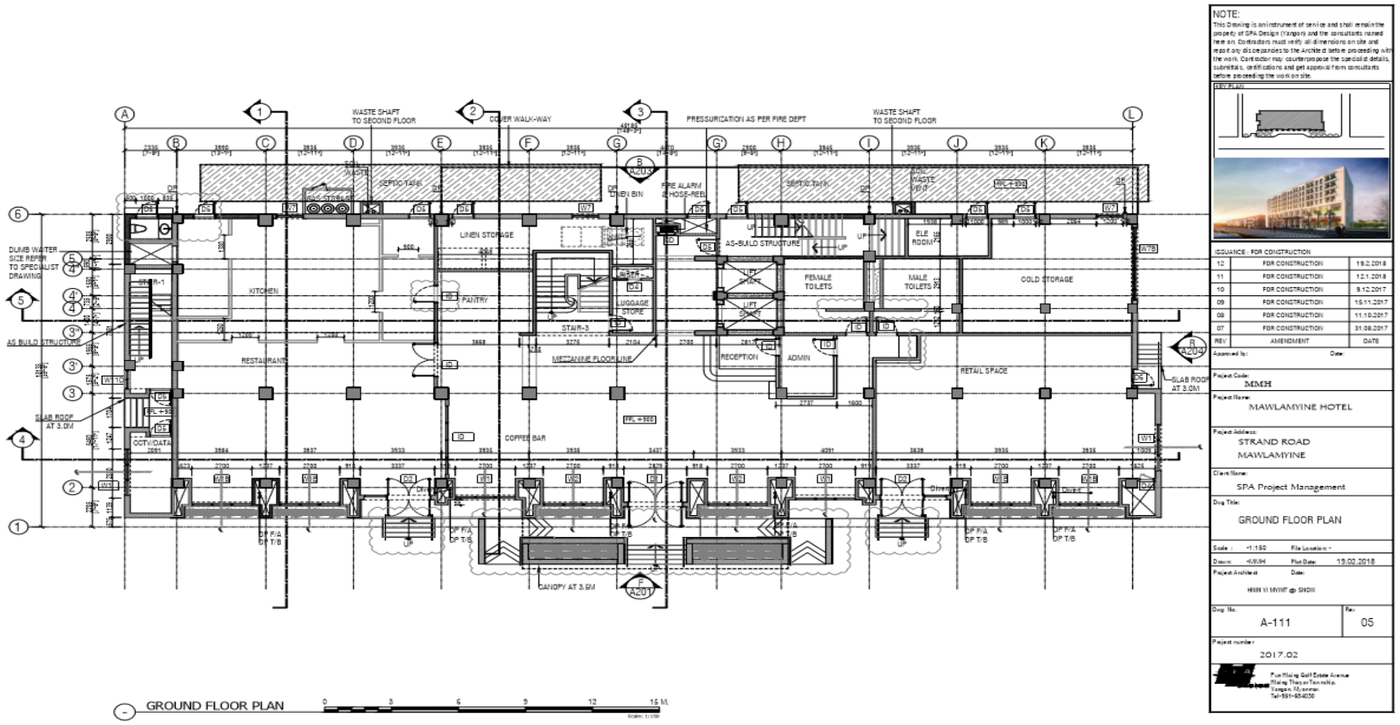

Figure 18:	Ground Floor Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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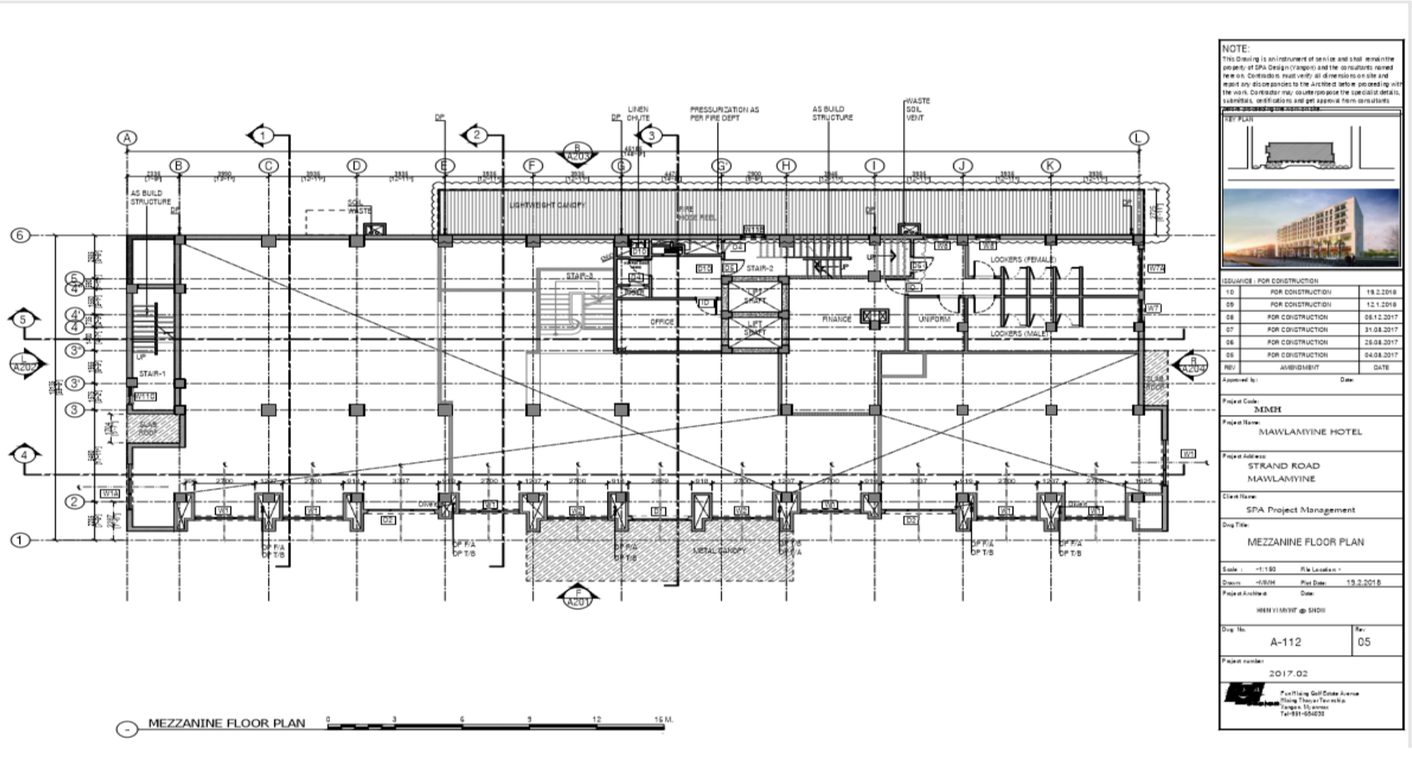

Figure 19:	Mezzanine Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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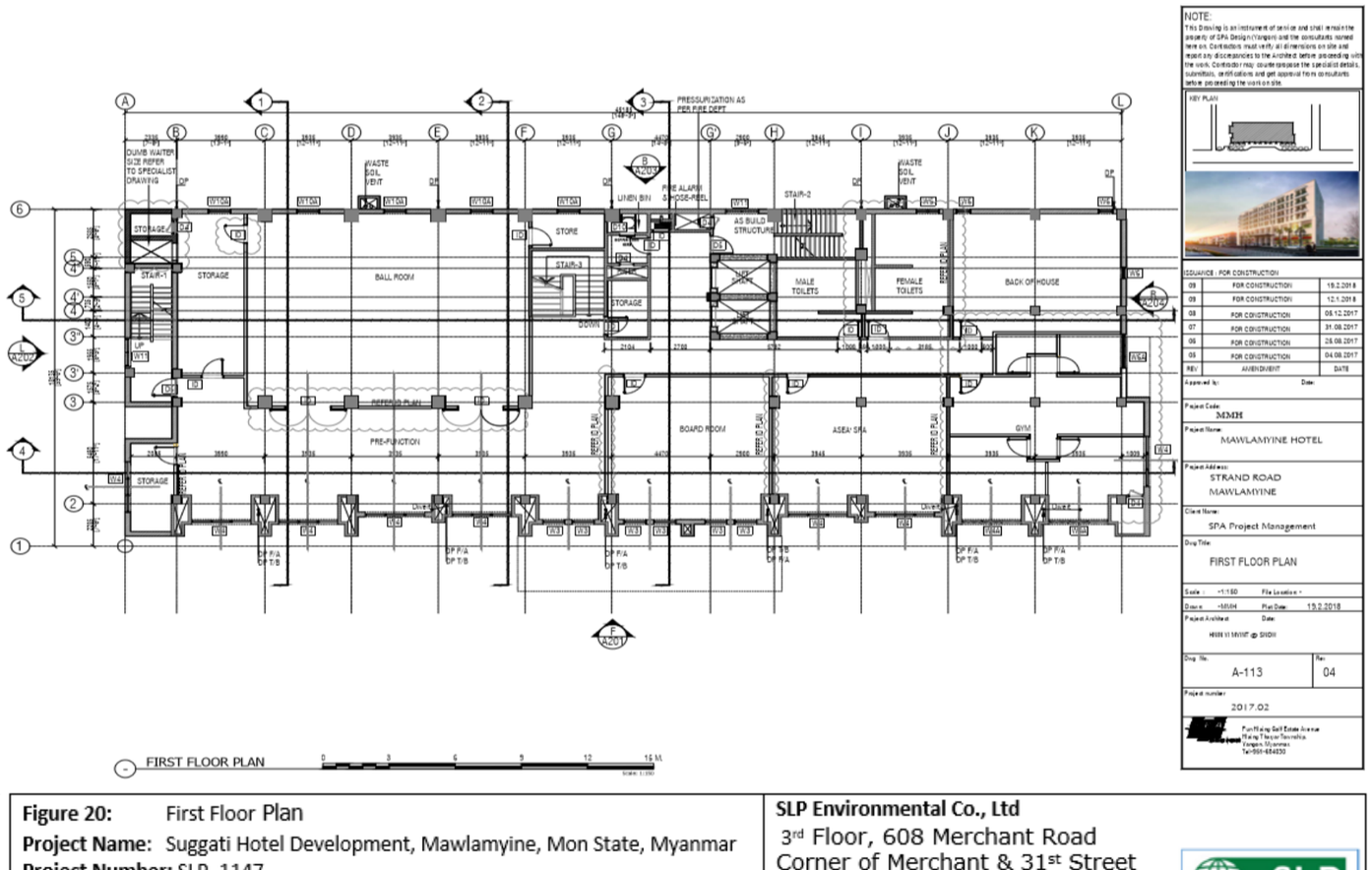

Figure 20:	First Floor Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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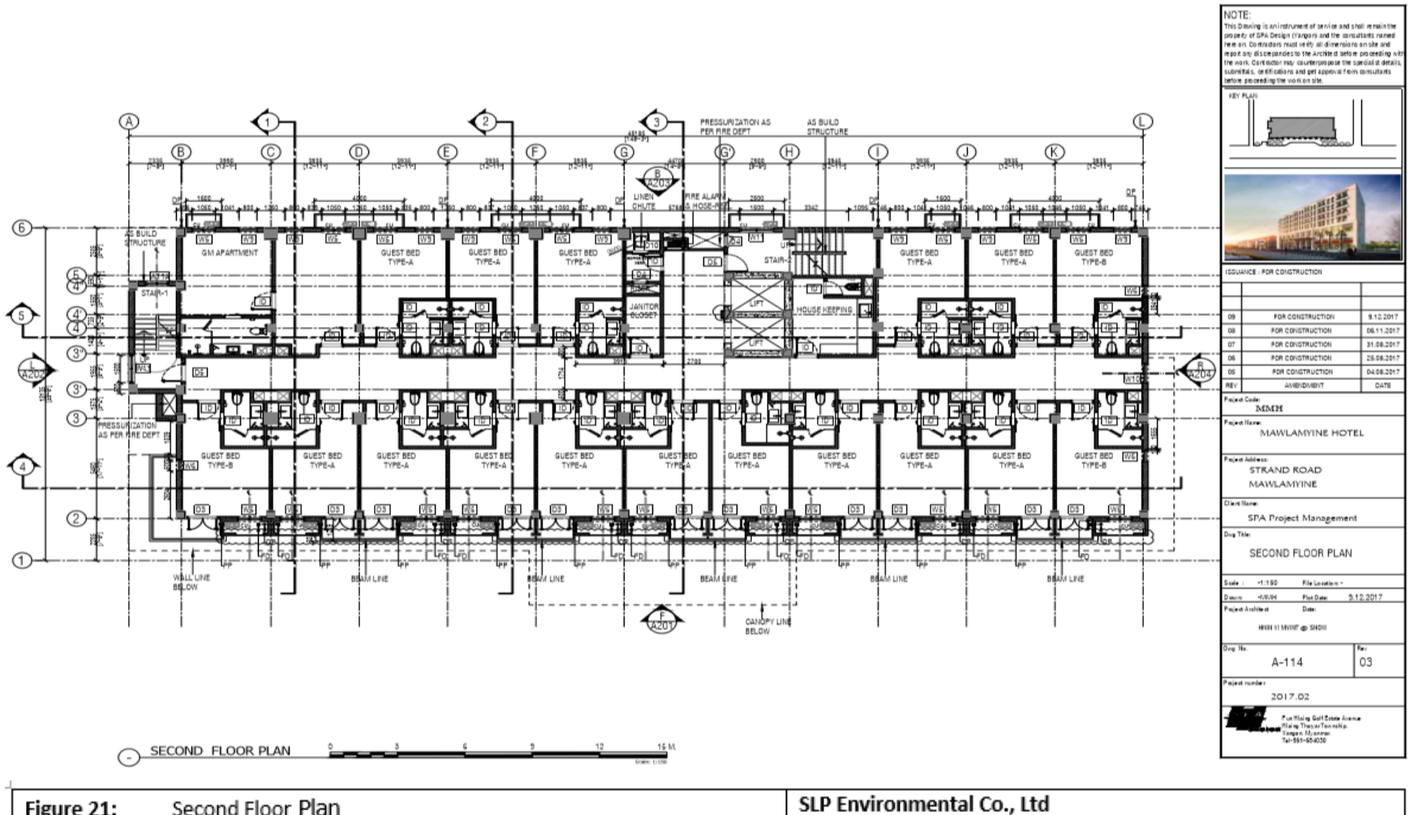

Figure 21:	Second Floor Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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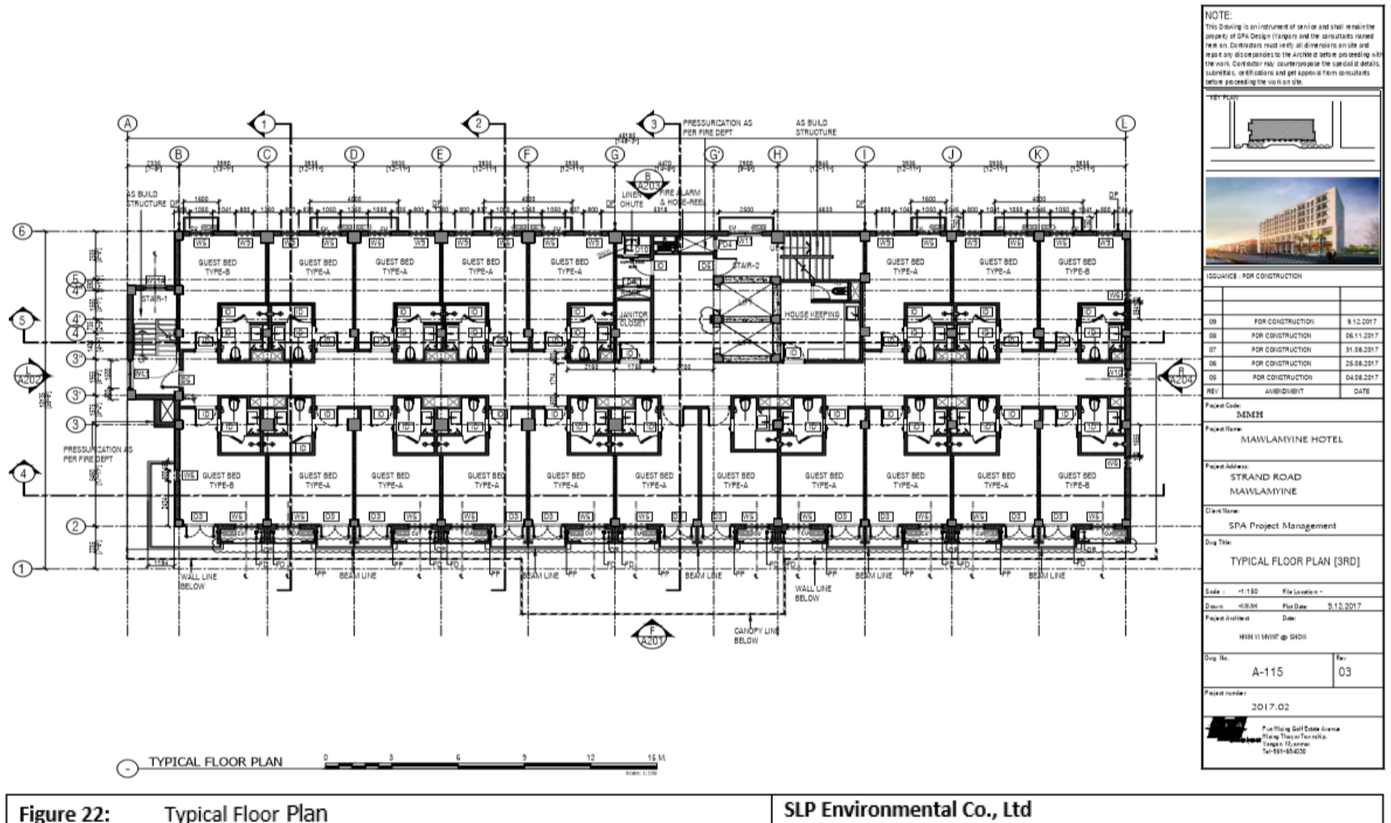

Figure 22:	Typical Floor Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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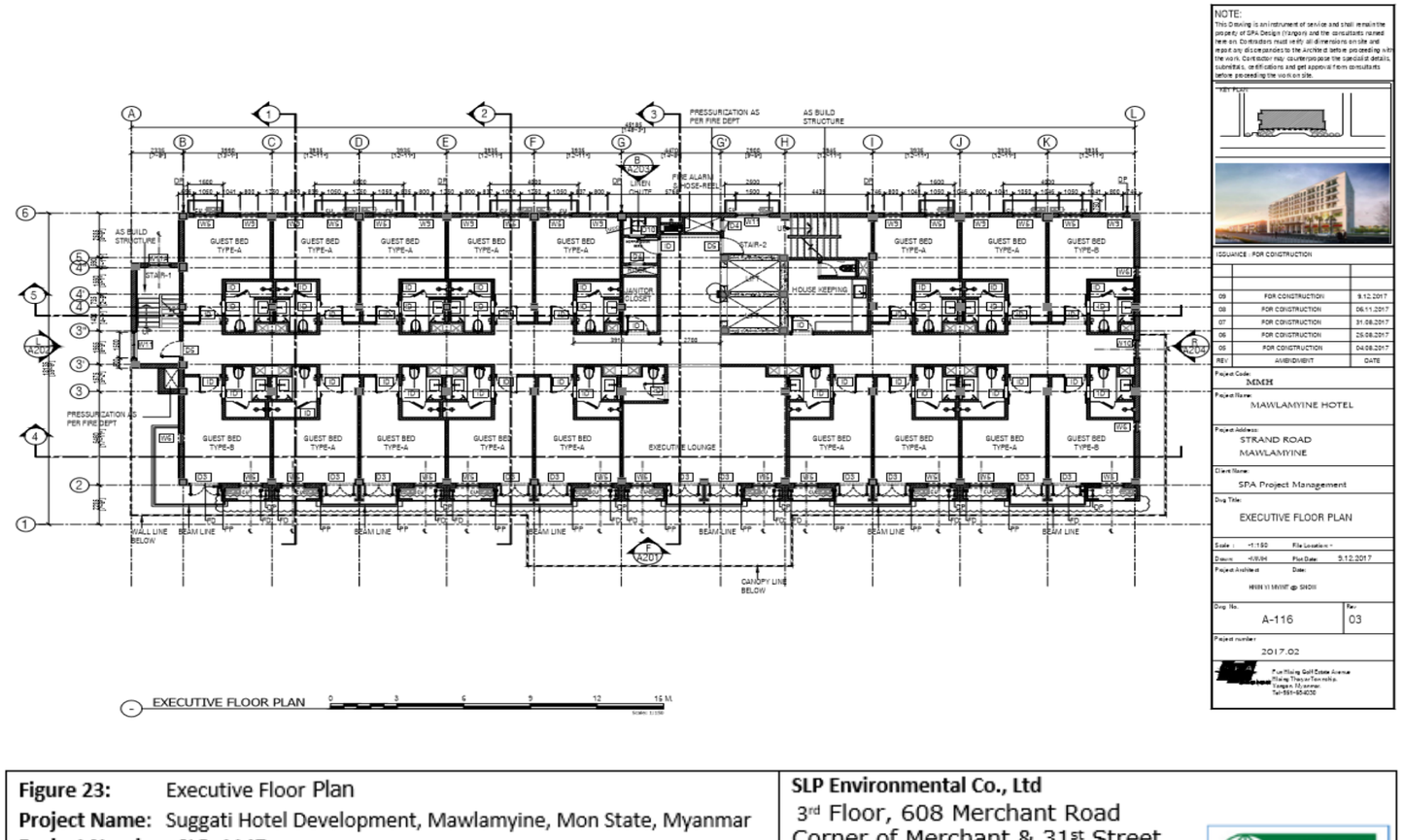

EXECUTIVE FLOOR PLAN 0 3 6 9 12 15 M.

Figure 23: Executive Floor Plan **Project Name:** Suggati Hotel Development, Mawlamyine, Mon State, Myanmar **Project Number:** SLP_1147 **Client:** Southern Myanmar Mawlamyine Hotel Limited **Date:** June 2018 **Revision:** 2	**SLP Environmental Co., Ltd** 3rd Floor, 608 Merchant Road Corner of Merchant & 31st Street Pabedan Township Yangon, Myanmar www.slpenvironmental.com

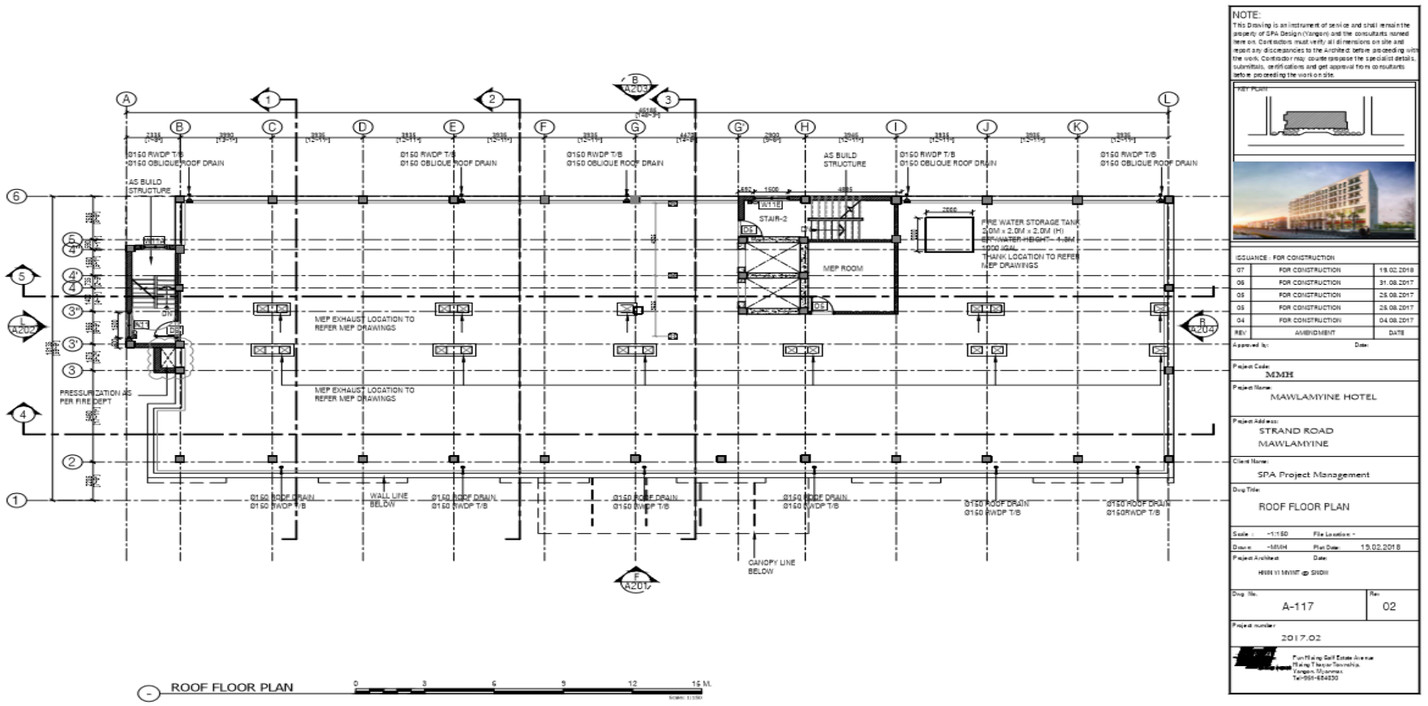

Figure 24:	Roof Floor Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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KEY PLAN

ISSUANCE : FOR CONSTRUCTION

REV	AMENDMENT	DATE
05	FOR CONSTRUCTION	18.02.2018
04	FOR CONSTRUCTION	25.08.2017
03	FOR CONSTRUCTION	04.08.2017

Approved by: Date:

Project Code: MMH

Project Name: MAWLAMYINE HOTEL

Project Address: STRAND ROAD MAWLAMYINE

Client Name: SPA Project Management

Drwg Title: FRONT ELEVATION

Scale : =1/150 File Location =

Drawn : SM Plot Date: 19.02.2018

Project Architect Date:

HMM VI MHM @ SNDW

Drwg No.: A-201 Rev: 03

Project number: 2017.02

Pun Hlaing Golf Estate Avenue
Hlaing Thayar Township
Yangon, Myanmar
Tel:+951-654330

Figure 25:	Front Elevation Plan
Project Name:	Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number:	SLP_1147
Client:	Southern Myanmar Mawlamyine Hotel Limited
Date:	June 2018
Revision:	2

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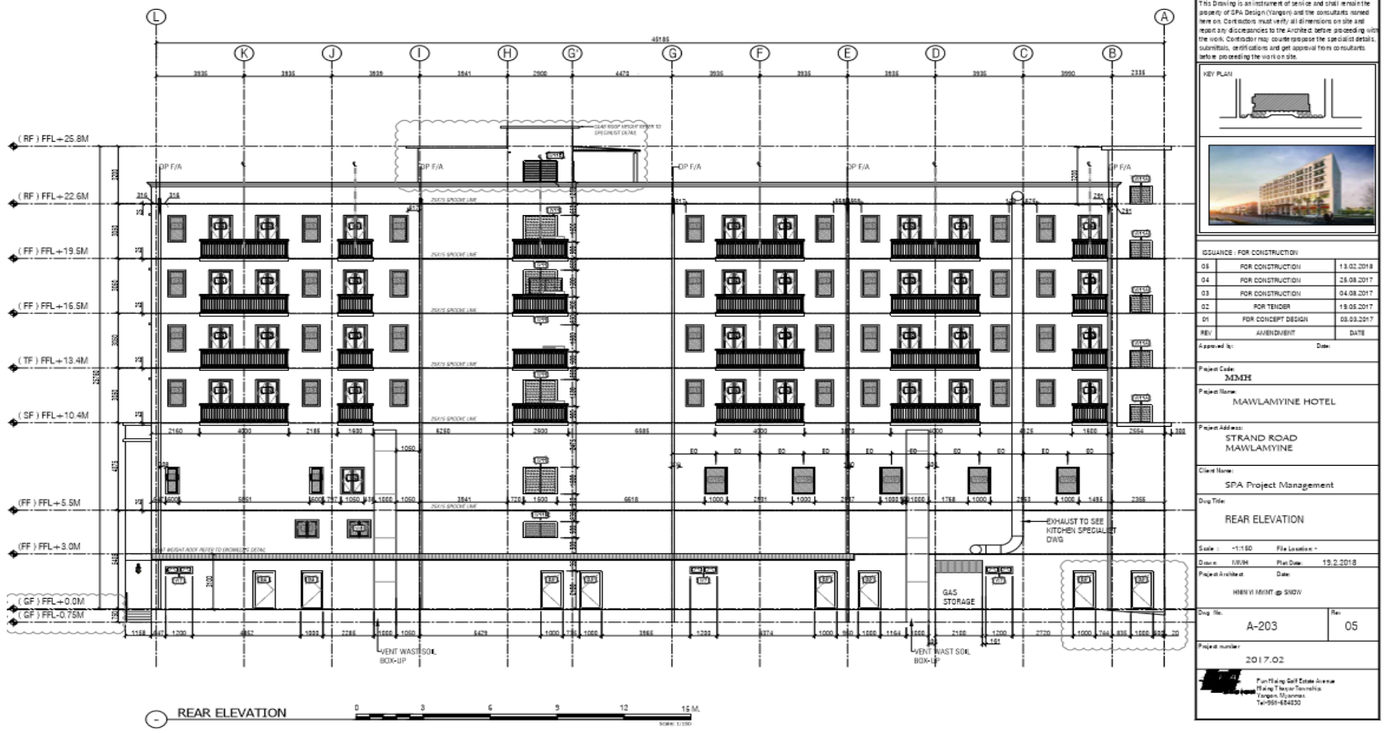

Figure 26: Rear Elevation Plan **Project Name:** Suggati Hotel Development, Mawlamyine, Mon State, Myanmar **Project Number:** SLP_1147 **Client:** Southern Myanmar Mawlamyine Hotel Limited **Date:** June 2018 **Revision:** 2	**SLP Environmental Co., Ltd** 3rd Floor, 608 Merchant Road Corner of Merchant & 31st Street Pabedan Township Yangon, Myanmar www.slpenvironmental.com

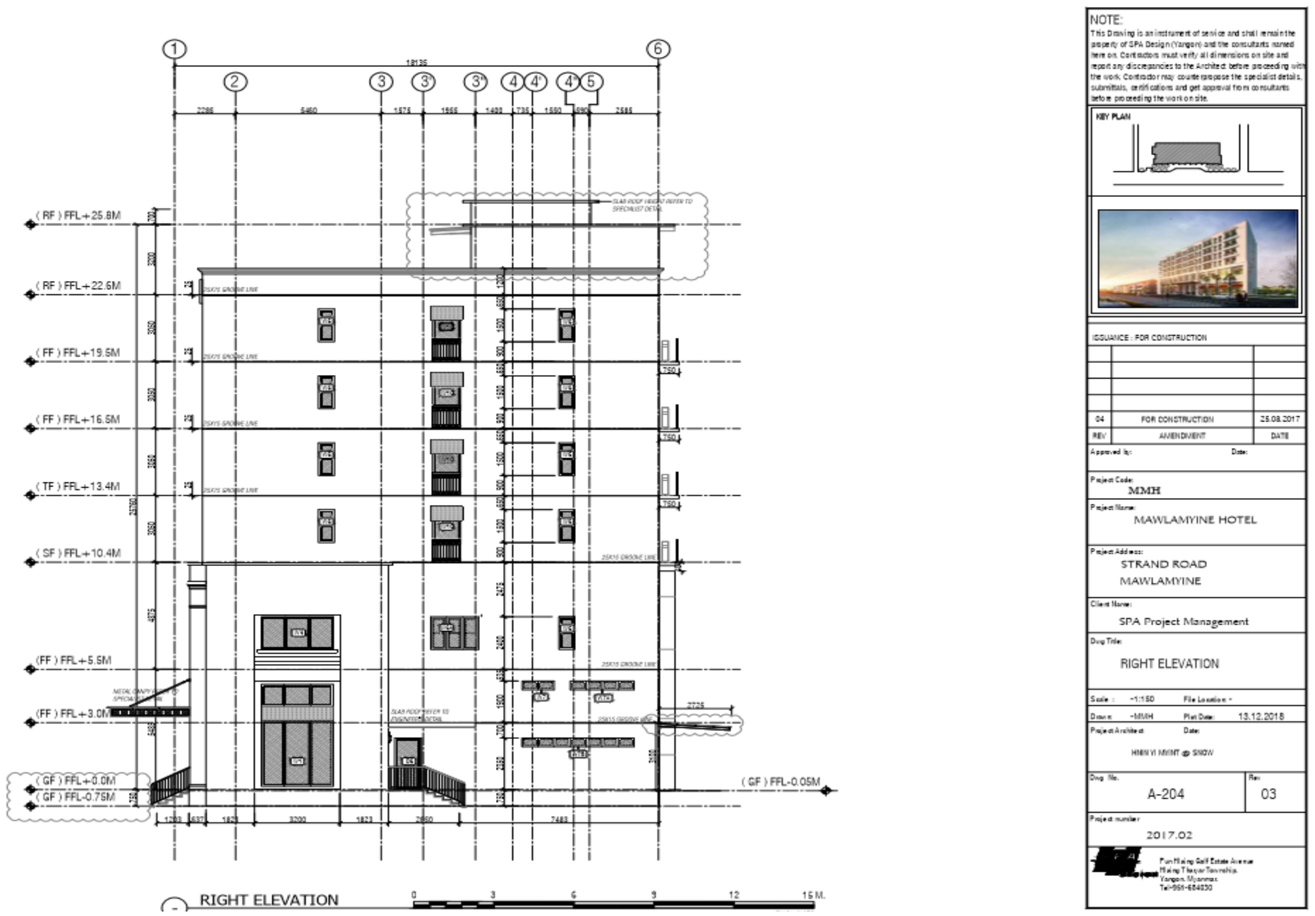

Figure 27: Right Elevation Plan
Project Name: Suggati Hotel Development, Mawlamyine, Mon State, Myanmar
Project Number: SLP_1147
Client: Southern Myanmar Mawlamyine Hotel Limited
Date: June 2018
Revision: 2

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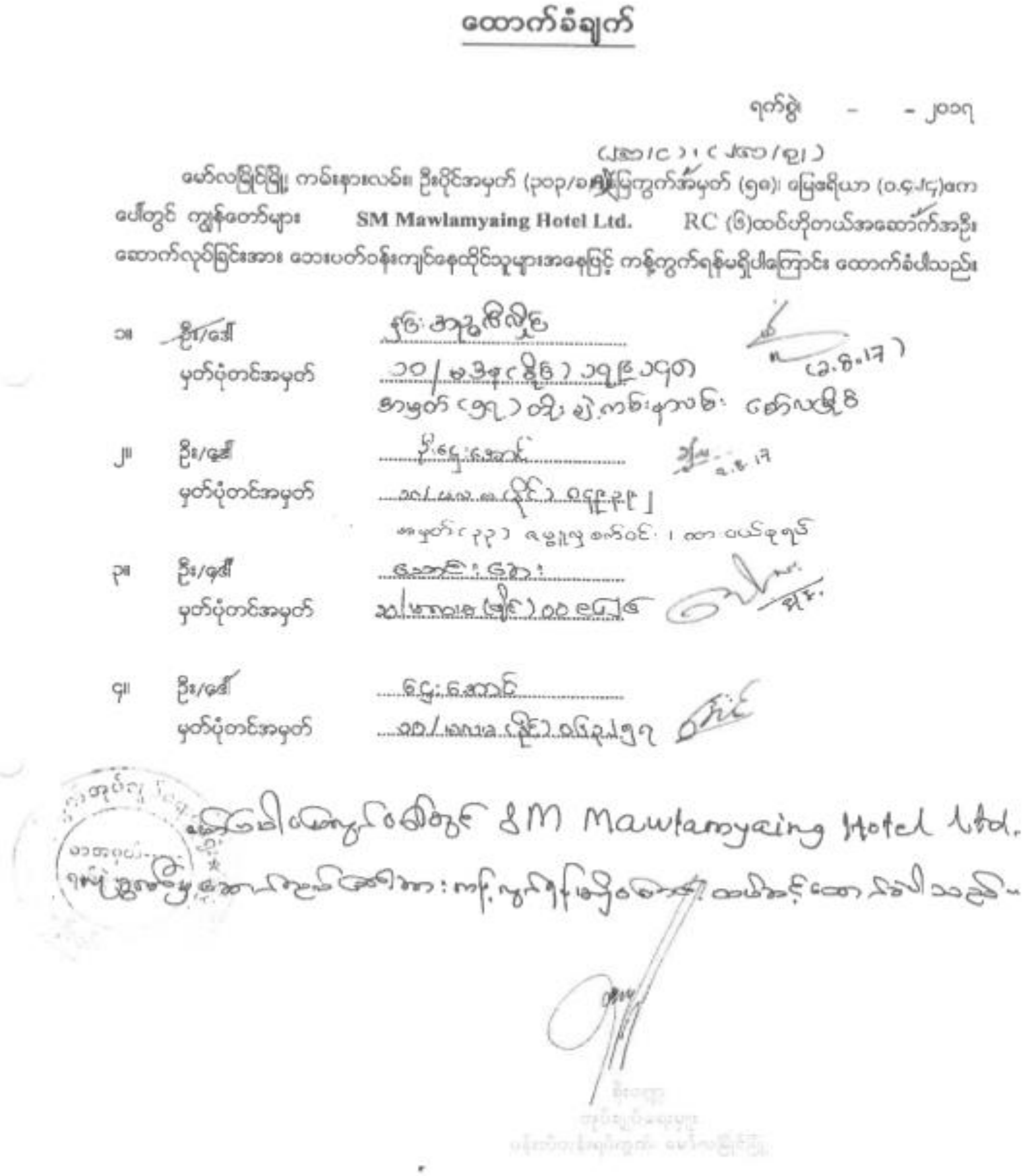
Appendix C PHOTO LOG

The Project Management team and SLP Environmental services met local communities living near the proposed hotel site and carried out public consultation process creating a chance to local public and related stakeholders to express their opinions, suggestions and needs during EMP formulation of the project. The recommendation letter of local communities can be seen as the following figure.



ထောက်ခံချက်

ရက်စွဲ - - ၂၀၁၇

မော်လမြိုင်မြို့ ကမ်းနားလမ်း၊ ဦးပိုင်အမှတ် (၁၀၃/ခ)၊ မြေကွက်အမှတ် (၅၈)၊ မြေဧရိယာ (၀.၄၂၄)ဧက ပေါ်တွင် ကျွန်တော်များ SM Mawlamyaing Hotel Ltd. RC (၆)ထပ်ဟိုတယ်အဆောက်အဦး ဆောက်လုပ်ခြင်းအား ဘေးပတ်ဝန်းကျင်နေထိုင်သူများအနေဖြင့် ကန့်ကွက်ရန်မရှိပါကြောင်း ထောက်ခံပါသည်။

၁။ ဦး/ဒေါ်

မှတ်ပုံတင်အမှတ်

၂။ ဦး/ဒေါ်

မှတ်ပုံတင်အမှတ်

၃။ ဦး/ဒေါ်

မှတ်ပုံတင်အမှတ်

၄။ ဦး/ဒေါ်

မှတ်ပုံတင်အမှတ်

SM Mawlamyaing Hotel Ltd.

Environmental Management Plan

Suggati Mawlamyine Hotel Project-Southern Myanmar Mawlamyine Hotel Limited.
No. 58, the corner of Strand Road and Theik Pan Street, Pabedan Ward, Mawlamyine, Mon State, Myanmar

Photo 1: The Subject Site located on the Strand Road.

Photo 2: Entrance to the Subject Property

Photo 3: Final Discharge line located to the west of the Subject Property

Photo 4: Strand Road located to the west of the Subject Property

Photo 5: Theik Pan Street located to the south of the Subject Property

Ref: SLP1147_Photolog_Suggati Mawlamyine Hotel Project _Rev 2

Photo 6: Staff Toilets located in the east of the Subject Property

Photo 7: Labourer Toilets located behind the Staff Toilets in the east of the Subject Property

Photo 8: Septic Tank located next to the labour toilet in the east of the Subject Property

Photo 9: Wastewater Discharge Point located along the southern boundary of the Subject Property

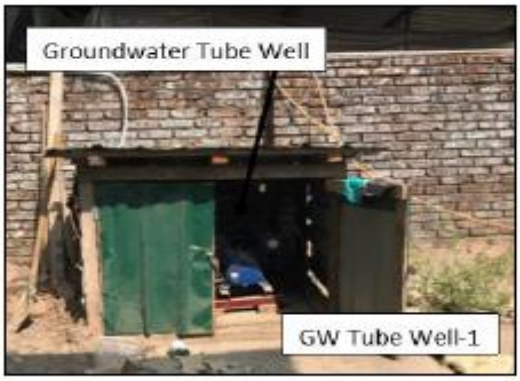


Photo 10: Groundwater Tube Well-1 located in the east of the Subject Property

Photo 11: Groundwater Tube Well-2 located in the north of the Subject Property

Photo 12: Water Pump located next to the Groundwater Tube Well 1 in the east of the Subject Property

Photo 13: Wastewater Discharge line located in the south of the Subject Property

Photo 14: Backup generator-1 located in the west of the Subject Property

Photo 15: Backup generator-2 located in the west of the Subject Property

Photo 16: Stored wood debris located adjacent to the west of the inside area of Subject Property

Photo 17: Stored gravel bags located adjacent to the west of the inside area of Subject Property

 **Photo 18:** Overhead tank located in the north of the Subject Property	 **Photo 19:** Construction water storage tank located under the overhead water tank in the north of the Subject Property
 **Photo 20:** Construction sand bags located to the south of the inside area of Subject Property	 **Photo 21:** Construction steel and fibre pipes located inside to the east of the Subject Property
 **Photo 22:** Stored Paint located in the first floor of the building	 **Photo 23:** Stored Paint located in the first floor of the building

Photo 24: Stored diesel located in the first floor of the building

Photo 25: Stored gas cylinder located in the first floor of the building

Photo 26: Construction gypsum board located at the ground floor of the building

Photo 27: Construction sand and gravel located at the ground floor of the building

Photo 28: Construction Materials (Steel Rebar, Iron Rods and Wood) located adjacent to the west of the Subject Property Boundary

Photo 29: Construction Materials (Sand and Gravel) located adjacent to the west of the Subject Property Boundary

Photo 30: Construction Limestone located adjacent to the west of the outside area Subject Property Boundary

Photo 31: Construction bricks located adjacent to the west of the outside area Subject Property Boundary

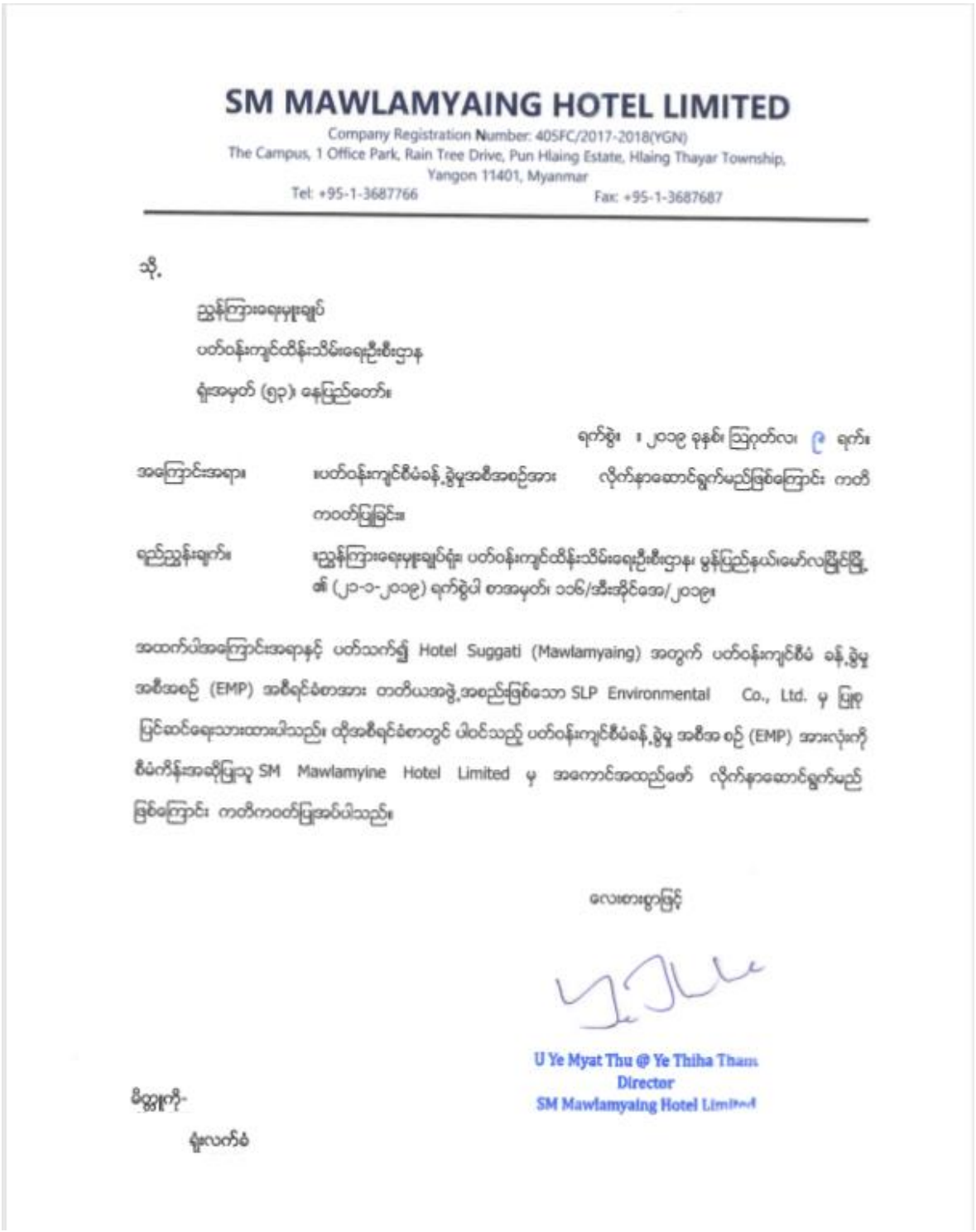
Photo 32: Small Drain located in the east of the Subject Property

Photo 33: Zabula Alley located in the north of the Subject Property

Photo 34: Zabula Alley located in the east of the Subject Property

Photo 35: The east of the Subject Property

Photo 36: Commitment Letter for EMP Implementation



SM MAWLAMYAING HOTEL LIMITED

Company Registration Number: 405FC/2017-2018(YGN)
The Campus, 1 Office Park, Rain Tree Drive, Pun Hlaing Estate, Hlaing Thayar Township,
Yangon 11401, Myanmar
Tel: +95-1-3687766 Fax: +95-1-3687687

သို့

ညွှန်ကြားရေးမှူးချုပ်
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ရုံးအမှတ် (၅၃)၊ နေပြည်တော်။

ရက်စွဲ။ ။ ၂၀၁၉ ခုနှစ်၊ ဩဂုတ်လ ၉ ရက်။

အကြောင်းအရာ။ ။ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အား လိုက်နာဆောင်ရွက်မည်ဖြစ်ကြောင်း ကတိကဝတ်ပြုခြင်း။

ရည်ညွှန်းချက်။ ။ညွှန်ကြားရေးမှူးချုပ်ရုံး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ မွန်ပြည်နယ်၊ မော်လမြိုင်မြို့၏ (၂၁-၁-၂၀၁၉) ရက်စွဲပါ စာအမှတ်၊ ၁၁၆/အီးအိုင်အေ/၂၀၁၉။

အထက်ပါအကြောင်းအရာနှင့် ပတ်သက်၍ Hotel Suggati (Mawlamyaing) အတွက် ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှု အစီအစဉ် (EMP) အစီရင်ခံစာအား တတိယအဖွဲ့အစည်းဖြစ်သော SLP Environmental Co., Ltd. မှ ပြုစုပြင်ဆင်ရေးသားထားပါသည်။ ထိုအစီရင်ခံစာတွင် ပါဝင်သည့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) အားလုံးကို စီမံကိန်းအဆိုပြုသူ SM Mawlamyine Hotel Limited မှ အကောင်အထည်ဖော် လိုက်နာဆောင်ရွက်မည် ဖြစ်ကြောင်း ကတိကဝတ်ပြုအပ်ပါသည်။

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