INITIAL ENVIRONMENTAL EXAMINATION REPORT ON

BO WEI ISLAND

FOR

CENTURY BRIGHT GOLD COMPANY

Prepared by
HRD Environmental Training and Services Company Limited
Room.3, Bdg.2,Quarter 3, Insein Road, Mayangon Township,Yangon Mayangon Township,Yangon,Myanmar

Jun 2019

ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်

Certificate of Incorporation

အိတ်ချ်အာဒီ အင်ဗာရော်မင်တယ် ထရိန်နင် အန်ဒ် ဆားဗစ် ကုမ္ပဏီ လီမိတက်

HRD ENVIRONMENTAL TRAINING AND SERVICES COMPANY LIMITED

Company Registration No. 117441881

မြန်မာနိုင်ငံကုမ္ပဏီများအက်ဥပဒေ ၁၉၁၄ ခုနှစ် အရ

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အား ၂၀၁၆ ခုနှစ် နိုဝင်ဘာလ ၄ ရက်နေ့တွင်

အစုရှယ်ယာအားဖြင့် တာဝန်ကန့်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ

အဖြစ် မွေးဖွားမှတ်ပုံတင်ခွင့် ပြုလိုက်သည်။

This is to certify that

HRD ENVIRONMENTAL TRAINING AND SERVICES COMPANY LIMITED

was incorporated under the Myanmar Companies Act 1914 on 4 November 2016 as a Private Company Limited by Shares.

ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ

Registrar of Companies

ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန

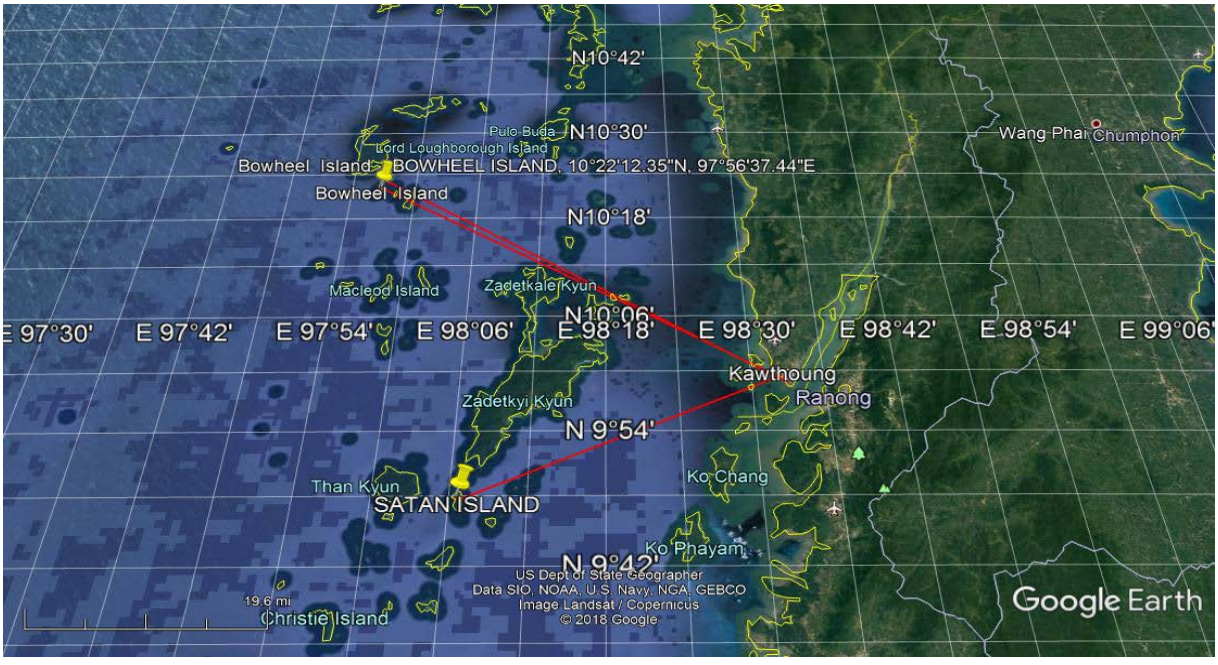
Directorate of Investment and Company Administration

Former Registration No. 3633/2016-2017(YGN)

HRD Environmental Training and Services Co., Ltd.
Human Resource Development Environmental Training and Services
Register Address: Room.3, Bdg.2,Quarter 3, Insein Road, Mayangon Township,Yangon
Phone : +95 49201658,+95 9256036414
Email :, hrd.environment2019@gmail.com

တနင်္သာရီတိုင်းဒေသကြီး၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့မှ အနောက်ဖြောက်ဘက် ပင်လယ်ပြင်ရေပြင်မိုင် 49.29 MILES (79.33 Km) အကွာအဝေး၊ မြောက်လတ္တီကျူ10°22'12.35"N, နှင့်အရှေ့လောင်ဂျီကျူ 97° 56'37.44"E ပေါ်ရှိ ဘိုဝီးကျွန်းပေါ်တွင် century Bright Gold Company မှ အပန်းဖြေဟိုတယ် Resort များ တည်းဆောက်ခြင်းလုပ်ငန်းနှင့်စပ်လျဉ်း၍ ကနဦး သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း ဆိုင်ရာလုပ်ငန်းအတွက် HRD Environmental Training and Services Co.,Ltd မှ ဆောင်ရွက်ပြီး မိမိတို့ကျွမ်းကျင်မှုနယ်ပယ်အလိုက် တာဝန်ယူဆောင်ရွက်ကြသည်မှာ မှန်ကန်ကြောင်း ဝန်ခံကတိပြုပါသည်။

Prof. Dr. Aung Lay Tin
(Professor and Head of Mining Engineering Department ,Yangon Technological University)
Senior ESIA Team Leader
HRD Environmental Training and Services Co.,Ltd
Email.aunglaytin@gamil.com
Phone.09256036414



BOWHEEL ISLAND

BOWEI ILSAND IS 49.29 MILES (79.33 Km) AWAY FROM KAWTHAUNG

Project Team of HRD Environmental Training and Services Co.,Ltd

Serial No.	Full Name	Education	Responsibility
1	Dr.Aung Lay Tin	BE,ME,Ph.D (Mining,YTU)	Management and Others, Air and Noise, Pollution Control
2	Mr.Kyaw Soe	BE(Metallurgy),YTU,2002 M.Sc Beihang University (China),2006 Ph.D Beihang University (China),2011	Management and Others
3	Dr. Kyaw Zay Moe	Ph.D (Batany)	Ecological Consultant, Biodiversity
	Dr. Ko Myint	Ph.D (Batany)	Ecological Consultant , Biodiversity
4	Daw Swe Mar Kyaw	A.G.T.I (EP),Pyay, B.Sc (Phys;),2003, Dip.EIA/EMS,MS (EAM)	Socio-Economy
5	Daw Thazin Htwe	BE(IT),Thanlyni,2009 Dip.EIA/EMS,MS (EAM)	Socio-Economy
6			
7	Daw Khin Than Sin Aye	BE(Civil),Magaway TU,2014 ,ME (CIVIL),YTU	Ground water and Hydrology; Construction
8	Daw Thin Naing Aye	BE(Civil),Hmawbi,2013 ME (CIVIL),YTU	Ground water and Hydrology;
9	Daw Nilar lwin	BE(Civil),Hmawbi,2013 ME (CIVIL),YTU	Ground water and Hydrology;
10	Yuzana Moe Myint	Bsc(Forest), 2014, Dip. in EIA & EMS	Biodiversity
11	Nanda Nwe	BE(CEIT),Hmawbi, Dip.EIA/EMS,MS (EAM)	Socio-Economy;
12	Phyo Maung Maung	BE(Mining),WYTU,2012	Socio-Economy
13	U San Oo	Bsc(geology),Magway,2007, M.Eng(Gadjah mada University, Indonesia,2012	Geology and Soil
14	Mg Aung Ze Yar Wint	Bsc(Forest), 2015, Dip. in EIA & EMS	Pollution Control
15	Mg Tint Naing Zaw	Bsc(Forest), 2015, Dip. in EIA & EMS	Lawer
16	Mg Si Thu		Facilitator
17	Dr.Myo Min Htun	Ph.D (Metallurgy)	Waste Management, Hazard

ဝန်ခံကတိပြုလွှာ

တနင်္သာရီတိုင်းဒေသကြီး ၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့နယ် ၊ စူငယ်ဘာလိုင်း ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် (2/OSS စူငယ်ဘာလိုင်းကြေးပြင်တိုင်၊မြေဧရိယာ ၁၉၄.၀၀ ဧက အနက် ၁၁.၈၆ ဧကပေါ်တွင် ဟိုတယ်နှင့်အပန်းဖြေစခန်းများ တည်ဆောက်ခြင်း လုပ်ငန်း နှင့် ပက်သက်ပြီး ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှု အစီရင်ခံစာများမှာ ပြည့်စုံမှန်ကန်ကြောင်းနှင့် အဆိုပါ အစီရင်ခံစာ Environmental Monitoring Plan များကို လိုက်နာဆောင်ရွက်မည်ဖြစ်ပါ ကြောင်း ဝန်ခံကတိပြုပါသည်။

စီမံကိန်းဒါရိုက်တာ

အကောင်အထည်ဖော်ဆောင်ရွက်မည့်ကုမ္ပဏီအုပ်စု- Century Bright Gold Co., Ltd

Contact Phone No	**- 09969444900, 095351002,09977999919**
Contact Person	**- U Ye Myat Tun**
Company Address	**- 3rd Floor, Co-Operative Business Center, Corner of Sayarsan Rd & New University Avenue Rd, Bahan Township, yangon**
Project Location	**- Bo Wei Island, kawthaung District, Thanintharyi Division**
Land Use	**- 11.86 Acre**
Type of Investment	**- Local Investment (100 %)**

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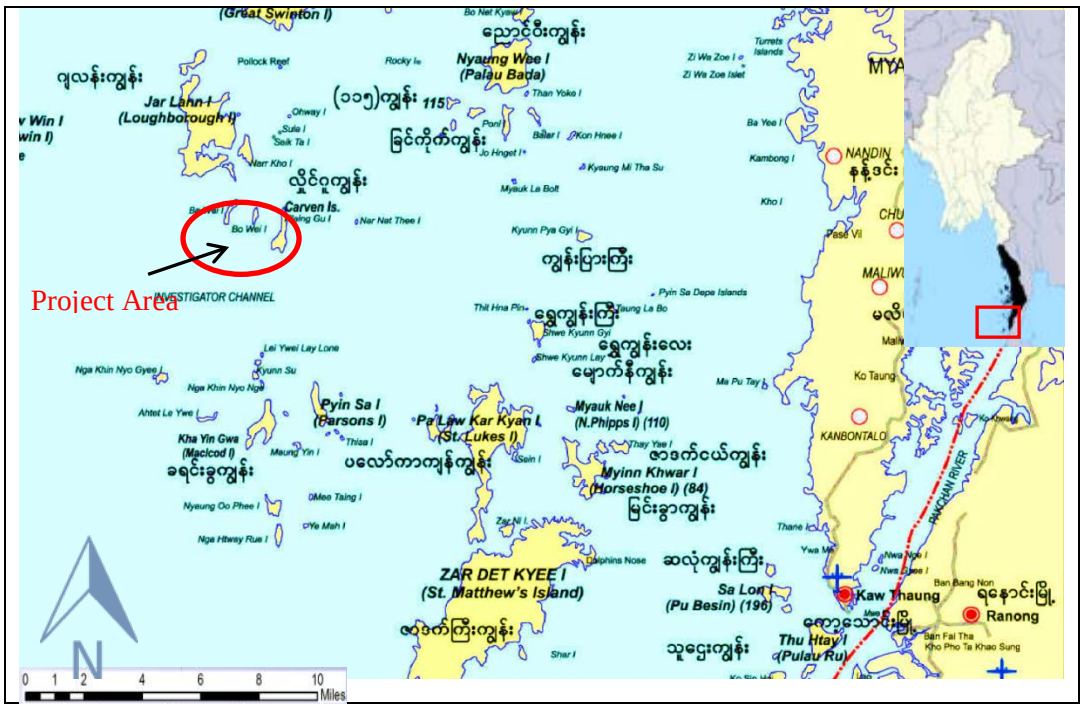
၁။ နိဒါန်း

တနင်္သာရီတိုင်းဒေသကြီး၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့မှ အနောက်မြောက်ဘက် ပင်လယ်ပြင်ရေပြင်မိုင် 49.29 MILES (79.33 Km) အကွာအဝေး၊ မြောက်လတ္တီကျူ 10°22'12.35"N, နှင့်အရှေ့လောင်ဂျီကျူ 97° 56'37.44"E ၊ ကော့သောင်းမြို့နယ် ၊ စူငယ်ဘာလိုင်း ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် (2/OSS စူငယ်ဘာလိုင်းကြေးပြင်တိုင်၊ ခွင့်ပြုမိန့်ကျပြီး မြေဧရိယာ ၁၉၄.၀၀ ဧက အနက် ၁၁.၈၆ ဧက ၊ ဘိုဝိုးကျွန်းပေါ်တွင် century Bright Gold Company မှဟိုတယ်အပန်းဖြေစခန်း စီမံကိန်းအား အကောင်အထည်ဖော် ဆောင်ရွက်ရန်ရှိပါသည်။ စီမံကိန်းသည် နိုင်ငံသားရင်နှီးမြှုပ်နှံမှု ၁၀၀ % ဖြစ်ပြီး ယခုစီမံကိန်းအတွက် နိုင်ငံတော်မှ နစ်ပေါင်း (၃၀) ငှားရပ်ပြီး ရင်းနှီးမြှုတ်နှံမှုမှာ ကျပ်သန်း (၄၈၀၀) ကျော် ဖြစ်ပါသည်။ ဤစီမံကိန်းလုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) လုပ်ငန်းအား HRD Environmental Training and Service Co.,Ltd က ၂၀၁၉ ခုနှစ်၊ ဇူလိုတွင် စတင်ဆောင်ရွက်ခဲ့ပြီး လုပ်ငန်းများကို ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဥပဒေ ၂၀၁၂၊ ပတ်ဝန်းကျင် ထိန်းသိမ်ရေးနည်းဥပဒေ(2016)၊ မြန်မာနိုင်ငံ ရင်နှီးမြှုတ်နှံမှုဥပဒေ နှင့် ၂၀၁၅ ပတ်ဝန်းကျင် ထိခိုက်ဆန်းစစ်ခြင်းလုပ်ထုံးလုပ်နည်းပါ ပြဋ္ဌာန်းချက်များအတိုင်း လိုက်နာဆောင်ရွက် ထားပါသည်။



ပုံ (၁) ဟိုတယ်တည်ဆောက်မည်ဖြစ်သော ဘိုဝိုးကျွန်း

၂။ ရည်ရွယ်ချက်

တနင်္သာရီတိုင်းဒေသကြီး၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့မှ အနောက်မြောက်ဘက် ပင်လယ်ပြင်ရေပြင်မှိုင် 49.29 MILES (79.33 Km) အကွာအဝေး၊ မြောက်လတ္တီကျူ 10°22'12.35"N, နှင့်အရှေ့လောင်ဂျီကျူ 97° 56'37.44"E ၊ ကော့သောင်းမြို့နယ် ၊ စူငယ်ဘာလိုင်း ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် (2/OSS စူငယ်ဘာလိုင်းကြေးပြင်တိုင်၊ ခွင့်ပြုမိန့်ကျပြီး မြေဧရိယာ ၁၉၄.၀၀ ဧက အနက် ၁၁.၈၆ ဧက ၊ ဘိုဝိုးကျွန်းပေါ်တွင် century Bright Gold Company မှဟိုတယ်အပန်းဖြေစခန်း စီမံကိန်းအား တည်ဆဲ ဥပဒေနှင့် ညီ ညွတ်မှု ရှိ/မရှိအား အကဲဖြတ်ရန်၊ စီမံကိန်းတည်ရှိရာ ဒေသ၏ နောက်ခံ လူမှုစီးပွား အခြေအနေများ၊ ပတ်ဝန်းကျင် ဆိုင်ရာ အချက်အလက်များကို လေ့လာသုံးသပ်ရန်၊ စီမံကိန်းဆိုင်ရာ အချက်အလက်များကို အများပြည်သူအား ထုတ်ဖေါ် ကာ ဆွေးနွေး ညှိနှိုင်းခြင်း၊ အကြံပြုချက်များရယူခြင်းဆောင်ရွက်ရန်၊ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင် နှင့်လူမှုစီးပွားအပေါ် သက်ရောက်မှုများကို လေ့လာတွက်ဆရန်နှင့်ဆိုးကျိုး သက်ရောက်မှု များကို လျော့ချကုစားရန်နည်းလမ်းများ၊ ကောင်းကျိုးသက်ရောက်မှုများကို ဆပ်ွားမြှင့်တင်ရန် နည်းလမ်း များ ရှာဖွေဖေါ်ထုတ်ရန်ဟူသည့် ရည်ရွယ်ချက်များဖြင့် Century Bright Gold Company Ltd မှ ဆောက်လုပ်သော ဟိုတယ်အပန်းဖြေစခန်း စီမံကိန်းလုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ထိုက်ခိုက်မှု ဆန်းစစ်ခြင်း (IEE) လုပ်ငန်းများကို ဆောင်ရွက်ခဲ့ပါသည်။

၃။ ဥပဒေရေးရာ သုံးသပ်ချက်

ပတ်ဝန်းကျင်ထိုက်ခိုက်မှုဆန်းစစ်ခြင်း ပညာရှင်အဖွဲ့သည် စီမံကိန်းလုပ်ငန်းရပ်များအား ဥပဒေနှင့် ညီ ညွတ်မှု ရှိ/မရှိ ကို သက်ဆိုင်ရာ တည်ဆဲဥပဒေများနှင့် တိုက်ဆိုင်စိစစ်ခဲ့ပါသည်။ တိုက်ဆိုင်စစ်ဆေးခဲ့သည့် ဥပဒေအချို့မှာ နိုင်ငံခြားရင်းနှီ းမြှုတ်နှံမှုဥပဒေနှင့် နည်းဥပဒေ၊ ၂၀၁၂ The Environmental Conservation Law အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ၊ ၁၉၅၁ခု အလုပ်ရုံ အလုပ်သမား အက်ဥပဒေ ၊ ၁၉၅၃ မြန်မာနိုင်ငံ ဟိုတယ်နှင့် ခရီးသွားလာရေး ဥပဒေ၊ 1990 The Myanmar Marine Fisheries Law၊ ရပ်ကွက်သို့မဟုတ် ကျေးရွာအုပ်စု အုပ်ချုပ်ရေး ဥပဒေနှင့် အခြား သက်ဆိုင်ရာ ဥပဒေများ ဖြစ်ကြပါသည်။

၄။ လေ့လာရေး လုပ်ငန်းရပ်များ

တနင်္သာရီတိုင်းဒေသကြီး၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့မှ အနောက်မြောက်ဘက် ပင်လယ်ပြင် ရေပြင်မိုင် 49.29 MILES (79.33 Km) အကွာအဝေး၊ မြောက်လတ္တီကျူ 10°22'12.35"N, နှင့်အရှေ့လောင်ဂျီကျူ 97° 56'37.44"E ၊ ကော့သောင်းမြို့နယ် ၊ စူငယ်ဘာလိုင်း ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် (2/OSS စူငယ်ဘာလိုင်းကြေးပြင်တိုင်၊ ခွင့်ပြုမိန့်ကျပြီး မြေဓရိယာ ၁၉၄.၀၀ ဧက အနက် ၁၁.၈၆ ဧက ၊ ဘိုဝိုးကျွန်းပေါ်တွင် Century Bright Gold Company မှ ခွင့်ပြုမိန့်ကျပြီးမြေဧက ၁၉၄ ဧကအနက်၊ မြေဧက (၁၁.၈၆) ပေါ်တွင် အခြေပြု ဆောင်ရွက်ခဲ့ ပါသည်။ လေ့လာရေး လုပ်ငန်းစဉ်တွင် ပါဝင်သည့် လုပ်ငန်းရပ်များမှာ ကနဦးလေ့လာမှု၊ နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်း၊ ဒေသခံလူ့အဖွဲ့ အစည်းများနှင့်တွေ့ဆုံခြင်း၊ စီမံကိန်းကြောင့် ထိခိုက်ခံစားရနိုင်ခြေရှိသည့်သူများ၊ ဒေသဆိုင်ရာ အုပ်ချုပ်ရေးအဖွဲ့အစည်းများ၊ ရပ်ရွာအခြေပြုအဖွဲ့များ၊ လူမှုအဖွဲ့အစည်းများ နှင့်တွေ့ဆုံခြင်းများ၊ အသေးစိတ်အ ချက်အလက်များအား တိုင်းတာကောက်ယူခြင်း၊ သက်ရောက်မှု ဖော်ထုတ်ခြင်းနှင့် အကဲဖြတ်ခြင်း၊ အစီရင်ခံ စာ မူကြမ်းပြုစုခြင်း၊ တွေ့ရှိချက်များကို အများပြည်သူအား ထုတ်ဖေါ်ခြင်းနှင့် အပြီးသတ် အစီရင်ခံစာ ပြုစုခြင်း တို့ဖြစ်ကြပါသည်။ အသေးစိတ်အချက် အလက်များ ကောက်ယူရာတွင် တိုက်ရိုက်လေ့လာခြင်း၊ တစ်ဦး တစ်ယောက်ချင်းဖြစ်စေ အဖွဲ့လိုက်ဖြစ်စေ တွေ့ဆုံမေးမြန်းခြင်း၊ သာဘာဝ အရင်းအမြစ်များကို လေ့လာခြင်း၊ ရာသီဥတု အခြေအနေများကိုလေ့လာခြင်း၊ စီမံကိန်းအတွင်းနှင့် စီမံကိန်းပြင်ပရှိ ရေအရည်အသွေး တိုင်းတွာစစ်ဆေးခြင်းများ ပါဝင်ပါသည်။ သက်ရှိအရင်းအမြစ်များကို လေ့လာရာတွင် စီမံကိန်းတည်ရှိရာ နေရာတွင် ပေါက်ရောက်သည့် သစ်ပင်များကို လေ့လာခြင်း၊ ကျေးငှက်တိရွစ္ဆာန်များနှင့် ရေနေသတ္တဝါများကို လေ့လာခြင်းများ ပါဝင်သည်။ လူမှုစီးပွားနှင့်ဆိုင်သော အချက်အလက်များကို ကောက်ယူရာတွင် စီမံကိန်းဝန်းကျင်တွင် အခြေချနေထိုင်သော လူဦးရေအခြေအနေ၊ စီးပွားရေးအခြေအနေ၊ အလုပ်အ ကိုင်၊ လူထု ၏ ပညာရေးအခြေအနေ လေ့လာမှုများ ပါဝင်ပါသည်။

၅။ စီမံကိန်းလုပ်ငန်းစဉ်များ

ဘန်ဂလိုများ မဆောင်ရွက်မီ စီမံကိန်းဧရိယာရှိ ချုံနွယ်များ၊ အပင်များ နှင့် အဟန့် အတားအပင်းများကို ဖယ်ရှား ရှင်းလင်းရမည်ဖြစ်ပါသည်။ ပထမနှစ်တွင် ကျွန်း၏ ကမ်းဇ ခြေ နရာ ပြင်ဆင်ခြင်း၊ ဆိပ်ခံတံတားနေရာနှင့် ဆိပ်ကမ်းမြေယာများ ပြင်ဆင်ခြင်း၊ အဆောက်အဦများ ဆောက်လုပ်ရန် မြေညှိခြင်း၊ Bench Villa (၇၂) လုံး၊Panaroma Swinning Pool (၁၀) လုံး၊ ၊ boat House (24) လုံး ဆောက်လုပ်ခြင်း လုပ်ငန်းများ ပါဝင်ပါသည်၊ Out door facility များအဖြစ် floating Themative Pool and Floating Jacuzzy Hut (၆)လုံး တည်ဆောက်မည်ဖြစ်သည်။ အဝတ်လျော်ဖွတ်ခြင်းအတွက် အဝတ်လျော်စက် ၇ လုံး၊1Hp အားရှိ လေအေးပေးစက် ၇၅ လုံး တပ်ဆင်ခြင်း၊ 2Hp လေအေးပေးစက် ၁၀ လုံးတပ်ဆင်ခြင်း၊ 5Hp လေအေးပေးစက် ၄ လုံးတပ်ဆင်ခြင်း၊ရေခဲသေတ္တာအလုံး ၈၀ ၊ Chest Freezer (8) လုံး၊ အဝတ်ခြောက်ခံစက် ၂ လုံး တပ်ဆင်ခြင်း လုပ်ငန်းများ ပါဝင်မည်ဖြစ်သည်။ စီမံကိန်းအနေဖြင့် 3 KVA မီးစက် ၂ လုံး တပ်ဆင်အသုံးပြုမည်ဖြစ်သည်။ ရေချိုသုံးစွဲမှုမှာ မြေအောက်ရေ တူးဖော် သုံးစွဲမည်ဖြစ်သည်။ အညစ်အကြေး စွန့်ပစ်ခြင်းလုပ်ငန်း အတွက် Biofilter ၂ လုံးတင်ဆင် အသုံးပြုမည်ဖြစ်သည်။

၆။ စီမံကိန်း၏ ရည်ရွယ်ချက်

(က)ဟိုတယ်လုပ်ငန်းခွဲကို ရင်းနှီးမတည် လုပ်ကိုင်ခြင်းဖြင့် ရင်းနှီးမြှုပ်နှံမှု ကဏ္ဍတိုးတက် မြင့်မားလာစေရန်

(ခ) ဟိုတယ်လုပ်ငန်းဖြင့် နိုင်ငံခြားသား ခရီးသွားဧည့်သည်များ ပိုမိုဝင်ရောက်လာနိုင်ပြီး နိုင်ငံတော်အတွက် အခွန်ငွေ ပိုမိုရရှိလာစေရန်

(ဂ) မြန်မာ့ရေပိုက်နက်အတွင်းရှိ ကျွန်း၊ရေမြေ၊ သဘာဝသယံဇာတ အလှအပများကို ထိန်းသိမ်းစောက်ရှောက်သွားရန်နှင့် ဒေသအတွက် အကျိုးရှိရှိ အသုံးချသွားနိုင်ရန်

(ဃ) ကော့သောင်းဒေသအတွင်း လုပ်သားများ အလုပ်အကိုင်အခွင့်အလမ်းများ ရရှိစေပြီး ဆင်းရဲနွမ်းပါးမှု လျော့ကျစေရန်

(၈)နိုင်ငံခြားသား ခရီးသွားလုပ်ငန်း တိုးတက်လာခြင်းဖြင့် ဒေသအတွင်း လက်မှုအရောင်းဆိုင်များ၊ ကမ်းခြေအပန်းဖြေလုပ်ငန်းများ၊ စားသောက်ဆိုင်လုပ်ငန်းများ ဝင်ငွေတိုးတက်ရရှိစေပြီး နိုင်ငံခြား ဝင်ငွေ ရရှိလာစေရန်

၇။ စီမံကိန်းဒါရိုက်တာ အဖွဲ့ဝင်များ

(က) ဒေါ်ခင်ကြူအေး - Managing Director

(ခ) ဦးဝင်းမင်းသန်း - Project Director

(ဂ) ဦးရဲမြတ်ထွန်း - Operating Manager

(ဃ) ဦးတင်ကိုကို - Admin Manager

၈။ တွေ့ဆုံဆွေးနွေးမှုများမှ ဆွေးနွေးချက်များ

(၁) လူနေပတ်ဝန်းကျင်နှင့် အလွန်ဝေးကွာသောကြောင့် မည်သို့မျှ မပြောလိုပါကြောင်း

(၂ လျောက်ထားသောမြေသည် လယ်မြေ၊ယာမြေ၊ ဥယျာဉ်မြေ၊ စားကျက်မြေများ ပါဝင်မှု မရှိခြင်းကြောင့် ထောက်ခံပါကြောင်း

(၃) တောင်သူလယ်သမားများ၏ စိုက်ပျိုးမြေများ မရှိသည်အတွက်ကြောင့် ထောက်ခံပါကြောင်း

(၄) ကျွန်းပေါ်တွင် သဘာအလျောက်ပေါက်ရောက်နေသော အပင်များရှိခြင်းကြောင့် မခုတ် စေလို ကြောင်း

(၆) လျောက်ထားသော ဇရိယာသည် သစ်တောကြီးဝိုင်းဇရိယာနှင့်လွတ်ကင်းပြီး သစ်ပင်ကြီး များ နှင့် ဒီရေတောများ ပေါက်ရောက်မှု မရှိခြင်းကြောင့် ထောက်ခံပါကြောင်း

(၇) လျောက်ထားသောမြေသည် သစ်တောဦးစီးဌာနမှ စိုက်ပျိုးထားသော စိုက်ခင်းများ မရှိခြင်း ကြောင့် သဘောတူပါကြောင်း

(၈) ခရီးသွားလုပ်ငန်များ တိုးတက်လာနိုင်ကြောင်း

(၉) ဒေသခံများအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများ ရရှိလာနိုင်မှာ ဖြစ်ပါကြောင်း

(၁၀) နိုင်ငံတော်အတွက် အခွန်ဝင်ငွေများ တိုးတက်လာမှာ ဖြစ်ကြောင်း

(၁၁) တရားမဝင် ငါးဖမ်းလုပ်ငန်းများအား တားဆီးကာကွယ်နိုင်မှာ ဖြစ်ကြောင်း

(၁၂)ပင်လယ်ပြင် သဘာဝအရင်းအမြစ်များကို ထိန်းသိမ်းကာကွယ်စောက်ရှောက်နိုင်ပြီး စဉ်ဆက် မပြတ် ဖွံ့ဖြိုးတိုးတက်သော ခရီးသွားလုပ်ငန်းများ ဖြစ်ထွန်းလာနိုင်မှာ ဖြစ်ပါကြောင်း

(၁၃)ကော့သောင်းမြို့နယ် သစ်တောဦးစီးဌာနမှကွင်းဆင်းစစ်ဆေးမှု ပြုလုပ်ပြီး ထောက်ခံချက်များ ရထားပြီး ဖြစ်ပါကြောင်း

(၁၃)ဘန်ဂလိုအပန်းဖြေစခန်းအား သဘာဝပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးမှု၊ ကျွန်း များ၏ ဂေဟစနစ်နှင့် ရေသယံဇာတများ ပျက်ဆီးဆုံးရှုံးမှု မရှိစေဘဲ ထိန်းသိမ်းမည် ဆိုပါက လုပ်ကိုင်ခွင့် ပြုသင့်ပါကြောင်း စစ်ဆေးတွေ့ရှိရပါသည်။

(၁၄) ယခင်က မည်သူတစ်ဦးတစ်ယောက်မျှ လုပ်ကိုင်ရန် လျှောက်ထားခြင်းမရှိကြောင်း

၉။ သက်ရောက်မှုဖော်ထုတ်ဆန်းစစ်ခြင်းနှင့် ကု စားရန်နည်းလမ်းများ

ဖြစ်ပေါ်လာနိုင်သည့် လူမှုစီးပွားသက်ရောက်များကို ဖော်ထုတ်ရန် စီမံကိန်းလုပ်ငန်းစဉ်များကို သက်ရောက်ခံ ပတ်ဝန်းကျင်နှင့် ချိတ်ဆက်ကာ ဆက်စပ်ဖော်ထုတ်ခဲ့ပါသည်။ စီမံကိန်းကြောင့် စီမံကိန်းဇရိယာ၏ ပတ်ဝန်းကျင်တွင် ဖြစ်ပေါ်သည့် ပတ်ဝန်းကျင်နှင့်လူမှုစီးပွားသက်ရောက် များကို ရှင်းလင်း ဆွေးနွေးထားပါသည်။

(က) မြေထုပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှု

စီမံကိန်းအကောင်ထည်ဖော် ဆောင်ရွက်မှုကြောင့် မူလပေါက်ရောက်နေသော အပင်ငယ်များကို ခုတ်ထွင် ရှင်းလင်းမှုပြုလုပ်ရာတွင် အဖိုးတန် သစ်ပင်များကို ထိခိုက်နိုင်သလို မြေသား များ ပြင်ဆင်ရာတွင် ပင်လယ်အတွင်းသို့ ရွံ့မြေများ ၊ နန်းမြေများ ကျရောက်နိုင်ပါသည်။ ဟိုတယ်သုံး စွန့်ပစ် ပစ္စည်းများဖြစ်သော ပုလင်းခွံ၊ ဗူးခွံ ၊သံဖူး၊ ပလပ်စတစ် စသည့် ပစ္စည်းများကြောင့် ပတ်ဝန်းကျင်မြေသားများအပေါ် ညစ်ညမ်းမှု ဖြစ်စေနိုင်ပါသည်။ အဆောက်အဦး ဆောက်လုပ်ရန် အတွက် အုတ် သဲ ဘိလပ်မြေများ သစ်များ ဝါးများ သယ်ယူပို့ဆောင်ရာတွင် ကမ်းခြေတွင် ညစ်ညမ်းမှု ရှိနိုင်ပါသည်။ ဟိုတယ်လုပ်ငန်းသုံး စွန့်ပစ်ပစ္စည်းများ၊ အမှိုက်သရိုက်များကို စနစ်တကျ မစွန့်ပစ်ပါက မြေသားများအပေါ် ညစ်ညမ်းမှု ဖြစ်စေနိုင်ပါသည်။ ဒီဇယ်ဂျင်နရေတာ များ သုံးစွဲခြင်း ကြောင့် စက်သုံးဆီများ ဖိတ်ဆင်မှုကြောင့် ညစ်ညမ်းမှု ဖြစ်စေနိုင် ပါသည်။

သက်ရောက်မှုကုစားရန် နည်းလမ်းများ

1. အဆောက်အဦးဆောက်လုပ်ရန်အတွက် စုပုံထားသော သစ်များ၊ဝါးများ၊ အုတ် ကျောက် ဘိလပ်မြေများကို စနစ်တကျ စုပုံရန်
2. အဆောက်အဦး ဆောက်လုပ်ပြီးပါက စွန့်ပစ် အမှိုက် သစ်စ ဝါးစ များကို မီးရှို့ဖျက်ဆီးရန်
3. ဟိုတယ်သုံး စွန့်ပစ် ပစ္စည်းများဖြစ်သော ပုလင်းခွံ၊ ဗူးခွံ ၊ ပလပ်စတစ် စသည့် စွန့်ပစ်ပ စ္စည်းများကို ကော့သောင်းမြို့သို့ ပြန်သယ်လာပြီး မြို့နယ်စည်ပင်သာယာရေးကော်မတီမှ သတ်မှတ်ထားသော နေရာတွင်သာ စွန့်ပစ်ရန်

4. -ဒီဇယ်ဆီ ခါတ်ဆီများကို အသုံးပြုရာတွင် မြေပေါ်သို့ မကျရောက်အောင် စနစ်တကျ သုံးစွဲရန်

5. စွန့်ပစ်ပစ္စည်းများကို ပစ္စည်းအမျိုးအစားအလိုက် သတ်မှတ်နေရာများတွင် စနစ်တကျ စွန့်ပစ်နိုင်ရန်

6. စွန့်ပစ်ပစ္စည်း အမှိုက်အမျိုးအစားများကို ခွဲခြားသိမ်းဆည်းပြီး ကော့သောင်းမြို့နယ် စည်ပင်သာယာရေးအဖွဲ့နှင့်ဆက်သွယ်ကာ စနစ်တကျ စွန့်ပစ်ရန်

(ခ) လေထုပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှု

စီမံကိန်းကြောင့် လေထုအပေါ်သက်ရောက်မှု လွန်စွာနည်းပါးကြောင်းတွေ့ရပါသည်။ ယခုအချိန်တွင်ဆောက်လုပ်ရေးလုပ်ငန်းခွင်များမရှိခြင်းကြောင့်ဖုန်မှုန့်များ ထွက်ရှိခြင်း မရှိကြောင်းတွေ့ရပါသည်။ သို့သော် သစ်သားဘန်ဂလိုများ ဆောက်လုပ်ရာတွင် သစ်မှုန်များ ထွက်သော်လည်း အနည်းငယ်များသာ ထွက်ရှိပြီး ညစ်ညမ်းမှု မရှိကြောင်းစစ်ဆေးတွေ့ရှိရပါသည်။ စားဖိုဆောင်သော ထွက်သော မီးခိုးများသည်လည်း မရှိကြောင်း ၊ ဂျန်နရေတာလျှပ်စစ်မီးကိုသာ သုံးစွဲသောကြောင့် လေထုအပေါ် သက်ရောက်မှု နည်းပါကြောင်းတွေ့ ရှိရပါသည်။

သက်ရောက်မှု လျော့ချရန်/ ကုစားရန်

1. ပတ်ဝန်းကျင်လေထု အရည်အသွေးထိန်းသိမ်းရေးအတွက် လျှပ်စစ်မီးကိုသာ သုံးစွဲရန်

2. ထင်းမီးများ သုံးစွဲခြင်းမှ ရှောင်ကြဉ်ရန်

3. တောမီးလောင်ကျွမ်းမှုများ ဖြစ်ပေါ်ပါက မီးဘေးကြိုတင်ကာကွယ်ရေး အတားအဆီး များ ဆောင်ရွက်ထားရန်

4. လေထုထဲသို့ အနံ့သက်ဆိုးများ မရောက်နိုင်အောင် စွန့်ပစ်ပစ္စည်းများကို နေ့စဉ် ကြပ်မတ် ဆောင်ရွက်ရန်၊ မီးရှို့ဖျက်ဆီးခြင်းကို အနည်းငယ်သာ ပြုလုပ်ပြီး ကုန်ကဲ့လေ့ များဖြင့် ကော့သောင်းမြို့သို့ ပြန်သယ်ကာ သတ်မှတ်နေရာများတွင်သာ စနစ်တကျ စွန့်ပစ်ရန်

5. တည်ဆောက်ရေးကာလတွင် မြေနေရာ ခုတ်ထွင်ရှင်းလင်းရာတွင် သဘာဝ အတိုင်း ပေါက်ရောက်နေသော သစ်တောသစ်ပင်များကို ခုတ်ထွင် ရှင်းလင်းခြင်းများအား တတ်နိုင်သမျှ ရှောင်ရှား ဆောင်ရွက်ရန်

(၈) ရေထုပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှု

စီမံကိန်း အကောင်ထည်ဖော် ဆောင်ရွက်ခြင်းကြောင့် ဟိုတယ်လုပ်ငန်းများမှ ထွက်ပေါ်လာသော စွန့်ပစ်ရေများကို စနစ်တကျ သန့်စင်ပြီး မစွန့်ပစ်ပါက ပင်လယ်ရေပြင်ကို ညစ်ညမ်းစေနိုင်သလို စက်သုံးဆီများကြောင့် ပင်လယ်တွင် ကျက်စားသော ရေနေသတ္တဝါများကို အန္တရာယ်ဖြစ်စေနိုင်ပါသည်။

သက်ရောက်မှု လျော့ချရန်/ကုစားရန်

1. (၁) ပတ်ဝန်းကျင်ရေထု ညစ်ညမ်းမှု မဖြစ်အောင် သန့်စင်ခန်းများအား စနစ်တကျ လုပ်ဆောင်ရန်
2. (၂)စွန့်ပစ်ရေများကို ရေပိုက်ကြီးများအသုံးပြုကာ ရေလောင်ကန်များဖြင့်ထားရှိကာသန့်စင်ပြီးမှသာ ပင်လယ်တွင်းသို့ စွန့်ပစ်ရန်
3. (၃) စက်လေ့များမှ စက်သုံးဆီများကို ပင်လယ်တွင့် ဖိတ်စင်မှုမရှိအောင် စနစ်တကျ ကိုင်တွယ်အသုံးပြုရန်
4. (၄) မီးစက်များတွင် အသုံးပြုသော စက်သုံးဆီများကို ဖိတ်စင်ခြင်း၊ ယိုဖိတ်ခြင်းမရှိအောင် သုံးစွဲရန်
5. (၅) ရေအောက်သယံဇာတများ ပင်လယ်ရေနေသတ္တဝါများ၊ ပင်လယ်ရေအောက်ရှိ သန္ဓာကျောက်ဆောင်များ၊ မပျက်ဆီးအောင် ထိန်းသိမ်းစောက်ရှောက်ကာကွယ်နိုင်မည့် အစီအမံများထားရှိရန်
6. Biofilter ၂ လုံးတပ်ဆင်ပြီး သုံးစွဲပြီးရေများကို သန့်စင်ကာ စွန့်ပစ်မည်ဖြစ်သည်။
7. ဟိုတယ်၊ စားဖိုဆောင်၊မိလ္လာကန်မှ ထွက်ရှိလာသည့် စွန့်ပစ်ရေများကို ပတ်ဝန်းကျင်ရှိ ပင်လယ်အတွင်းသို့ စွန့်ပစ်ခြင်း မပြုလုပ်ရန်၊

(၉) ဇီဝမျိုးစုံ မျိုးကွဲအပေါ်သက်ရောက်မှု

စီမံကိန်းဇရိယာအတွင်း စေတန်ကျွန်းပေါ်တွင် သဘာဝပေါက်ပင်များအနေဖြင့် ရေဗန်ဒါ၊ ကြက်ရိုး၊ ဆိတ်ချေး၊တောမယ်ဇလီ၊ တောဒညင်း၊ သပြေ၊လက်ခုတ်၊ သစ်ဖြူလန်၊ ဇင်ပြွန်း၊ နှင့်ချဲ့နွယ်ပေါင်းပင်များသာ ပေါက်ရောက်ပြီး အဖိုးတန်သစ်ပင်ကြီးများ၊ ဒီဇရေတော များ ပေါက်ရောက်မှု မရှိကြောင်း တွေ့ရှိရသည်။ တစ်ပေလုံးပါတ်နှင့်အထက် သစ်ပင် 32 ပင်ခန့် ရှိပါသည်။ လေ့လာတွေ့ရှိခက်များအရ စီမံကိန်း သက်ရောက်မှု ဇရိယာအတွင်း ဗျိုင်း၊ဂျိုး ၊စာကလေး၊ပျံလွှား၊ လိပ်ပြာ၊ ပုစဉ်း ၊အင်းဆက် ၊ ပင်လယ်ရေမွှေများ ၊ ကျောက်ခက် ကျောက်ပန်းများ၊ ငါးခုံးမ၊ငါးနီတူ၊ ငါးလိပ်ကျောက်၊ ရွှေငါး၊ ငါးခရမ်း၊ ရောင်စုံငါးကလေးများစွာ ရှိပါသည်။

မျိုးတုန်းပျောက်ကွယ်လုနီးပါးဖြစ်သော ပင်လယ်ရေ သတ္တဇန ရောင်စုံ ငါးကလေးများ စွာ ရှိသည်ကို တွေ့ ရပါသည်။

သက်ရောက်မှု လျော့ချရန်/ကုစားရန်

(၁) ပတ်ဝန်းထိခိုက်မှုမရှိအောင် စီမံခန့်ခွဲမှု အစီအစဉ်ပါ မြေထု၊ ရေထု၊ လေထု ညစ်ညမ်းမှု လျော့ချရေး ကာကွယ်ရေးဆိုင်ရာ အစီအမံများကို အပြည့်အဝ အကောင်ထည် ဖော် ဆောင်ရွက်ရန်

(၂) သစ်ပင်များကို ခုတ်ထွင်ခြင်း မပြုလုပ်ရ

(၃) မီးဘေးကြိုတင်ကာကွယ်ရေးဆိုင်ရာ အစီအမံများကို စနစ်တကျ ဆောင်ရွက်ရန်

(၄)တရားမဝင် ငါးဖမ်းလုပ်ငန်းများ မလုပ်နိုင်အောင် အတားအဆီးများ စနစ်တကျ ဆောင်ရွက်ထားရန်

(၅) မြို့နယ်အုပ်ချုပ်ရေးအဖွဲ့များ၊နယ်ခြားစောင့်တပ်များဖြင့် ပူးပေါင်းကာ တရားမဝင်ငါးဖမ်း လုပ်ငန်းများကို တားဆီးကာကွယ်ရန်

(c) ဆူညံသံနှင့်တုန်ခါမှု သက်ရောက်မှု

စီမံကိန်းသည် ဆူညံသံနှင့် တုန်ခါမှုဖြစ်ပေါ်စေသော လုပ်ငန်းမျိုးမရှိပါ။ သစ်သား ဘန်ဂလိုများ ဆောက်လုပ်ရာတွက် လွှတိုက်သံ၊ သိပ်မိုးသံများ ထွက်နိုင်သော်လည်း အနည်းငယ်မျှသာ ထွက်ရှိပြီး လူနေပတ်ဝန်းကျင်နှင့်ဝေးကွာသောကြောင့် ပတ်ဝန်းထိခိုက်မှု လုံးဝမရှိပါ။ စီမံကိန်းသည် ကော့သောင်းမြို့အနောက်မြောက်ဘက် ရေမိုင် (၃၃) အကွာတွင် တည်ရှိပါသည်။

သက်ရောက်မှု လျော့ချရန်/ ကုစားရန်

(၁) အသံထွက်သော မီးစက်များ၊ အင်ဂျင်များတွင် အသံထိန်းစနစ် (Silencer/Muffler) များ တပ်ဆင်အသုံးပြုရန်

(၂) လုပ်သားများ ကျန်းမာရေးနှင့် လုပ်ငန်းခွင်အန္တရာယ် ကင်းရှင်စေရေးအတွက် စနစ်တကျ စီမံဆောင်ရွက်ထားရန်၊ ဆေးဝါများ နှင့် သူနာပြုတစ်ယောက် ခန့်အပ်ပြီး ဆောင်ရွက်ရန်

(၃) အလုပ်သမားများအတွက် ကျန်းမာရေးနှင့်ညီညွတ်ပြီး သန့်ရှင်းသော အလုပ်သမားများ တန်းလျားများ စီမံဆောင်ရွက်ထားရှိရန်

(၄) လုပ်ငန်းခွင် အန္တရာယ်ကင်းရှင်းရေးအတွက် ပညာပေးအစီအစဉ်များ ဆောင်ရွက်ရန်

(d) လုပ်သားကျန်မာရေးနှင့် အလုပ်အကိုင် အခွင့်အလမ်း ရရှိနိုင်မှု

ဘိုဝိုးကျွန်းပေါ်တွင် ဟိုတယ်နှင့်ခရီးသွားလာရေးလုပ်ငန်းတွင် ဒေသတွင်း အလုပ်သမားများ အလုပ်အကိုင် အခွင့်အလမ်းများ ရရှိမည်ဖြစ်ပါသည်။ လုပ်ခလစာများကိုလည်း ခေတ်နှင့် လျော်ညီစွာ ခန့်အပ်ပြီး အလုပ်သမားများ နစ်နာမှု မရှိအောင် စီမံဆောင် ရွက်ထား ရမည်ဖြစ်ပါသည်။ လုပ်ငန်းခွင်သို့ရေကြောင်းဖြင့်သာ သွားရမည် ဖြစ်သောကြောင့် အလုပ်သမား၊ ရိက္ခာနှင့် ဆောက်လုပ်ရေးပစ္စည်းများ ပို့ဆောင်ရာတွင် အန္တရာယ် ရှိနိုင်ပါသည်။ သို့ပါသောကြောင့် ကုန်ကဲ့လှေ၊ ပဲ့ချိတ်လှေငယ်၊ Speed Boat များတွင် အသက်ကယ်အင်္ကျီများ ကို လုံလောက်စွာ ထားရှိရန်၊ လုပ်ငန်းခွင်တွင် လျှပ်စစ်ဓါတ်အားပိုမိုသုံးစွဲခြင်း၊ ဝါယာလျှော့ဖြစ်ခြင်း၊ ဧည့်သည်များ၏ စီးကရက်မီးကြွင်းမီးကျန်များမှ မီးလောင်နိုင်ခြင်း၊ တောမီးများမှ ကူးစက် လောင်နို င်ခြင်း၊ လေပြင်းတိုက်ခြင်း၊ မိုးကြိုးပစ်ခြင်းကြောင့် မီးလောင်နိုင်ခြင်းကြောင်း လုပ်ငန်းခွင်တွင် အန္တရာယ် ဖြစ်စေနိုင်ပါသည်။

သက်ရောက်မှု မြှင့်တင်ရန် နည်းလမ်းများ

(၁) အလုပ်ခန့်ထားရန်၊ ခန့်အပ်ရန် လိုအပ်ပါက မြို့နယ်အုပ်ချုပ်ရေး၊ ရပ်ကွက် အုပ်ချုပ်ရေးမှူးများ ချိတ်ဆက်ကာ အလုပ်သမားခန့်အပ်နိုင်ရေး စီစဉ်ဆောင်ရွက်ရန်

(၂) အလုပ်သမား ခန့်အပ်ရာတွင် ဒေသခံများကို ဦးစားပေးစနစ်ဖြင့် ခန့်အပ်နိုင်ရေး ဆောင်ရွက်သွားရန်

(၃) အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုနှင့်ဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့်အညီ အလုပ်သမား ခန့်ထားမှုဆိုင်ရာ စာချုပ်ချုပ်ဆိုခြင်းများ ပြုလုပ်ရန်

(၄) ၁၉၅၁ အလုပ်ရုံသမား အက်ဥပဒေပါ ကျန်းမာရေး၊ ဘေးရန်ကင်းရှင်းမှု၊ သက်သာ ချောင်ချိရေး၊ အလုပ်လုပ်ချိန်၊ နားချိန် များကို စနစ်တကျ ဆောင်ရွက်ထားရှိရန်

(၅) အနည်းဆုံးလုပ်ခလစားများကို သတ်မှတ်ပေးခြင်းများကို ဆောင်ရွက်ရန်

(၆) အလုပ်အကိုင်နှင့်တည်ဆဲဥပဒေများနှင့်အညီ ဆောင်ရွက်ရန်

(၇) လှေငယ်များ၊ ကုန်ကဲ့လှေများ၊ ရေယာဉ်များတွင် အသက်ကယ်အင်္ကျီများကို လုံလောက်စွာ ထားရှိပေးရန်

(၈) မီးဘေးနှင့် သဘာဝဘေးအန္တရာယ် ကြိုတင်ကာကွယ်ခြင်းများ ပြုလုပ်စီမံဆောင်ရွက်ထားရန်

(၉) အလုပ်သမားများ၊ခရီးသွားဧည့်သည်များ အန္တရာယ်ကင်းရှင်းစွာ တည်းခိုနိုင်ရန်အတွက် ဘန်ဂလိုများတွင် မီးဘေးကြိုတင် သတိပေးစနစ်များ တပ်ဆင်ခြင်း၊ ကမ်းခြေတွေ့ ကယ်ဆယ်ရေး ဝန်ထမ်းများခန့်ထားပြီး စောင့်ကြည့်စေခြင်း၊ ဧည့်သည်များ မတော်တဆ ထိခိုက်ဖျားနာပါက ကုသပေးနိုင်ပေးနိုင်ရန်အတွက် သူနာပြုနှင့် ဆေးဝါးကျွမ်းကျင်သူများအား ဝန်ထမ်းခန့်ထားပြီး ဆောင်ရွက်စေခြင်း၊ အရေးပေါ်ဆေးဝါးများ လုံလောက်စွာ ထားရှိစေခြင်း

(၁၀) ဆက်သွယ်ရေးစနစ်ကောင်းမွန်အောင် စီမံထားရှိရန်၊ အီးမေးတယ်လီဖုန်း၊ လက်ကိုင်စကား ပြောစက်များ စသည်များ

(၁၁) ဝန်ထမ်းများ သက်သာချောင်ချိရေးနှင့် သာယာပျော်ရွှင်ရေးအတွက် ရက်မှန်ကြေး၊ အချိန်ပိုကြေးနှင့် နှစ်သစ်ကူးကာလများတွင် ဝန်ထမ်းများလူူဒါန်းသုံးစွဲနိုင်ရေးအတွက် နှစ်သစ်ကူး အပိုဆုကြေးများ ထုတ်ပေးခြင်းများ ဆောင်ရွက်ပေးရန်

(၁၂) ဝန်ထမ်းများအား မြို့နယ်လူမှုဖူလုံရေးအသင်းတွင် အသင်းဝင်အဖြင့် ဝင်ရောက်ကာ နာမကျန်းဖြစ်ပါက ရသင့်သည့် အခွင့်အရေးများ အပြည့်အဝ ခံစားခွင့်ရရှိရေး ဆောင်ရွက်သွားရန်

(၁၃) မိမိကုမ္ပဏီဝန်ထမ်းများ၏ လစာဝင်ငွေ (၁) နှစ်လျှင် ကျပ် (၂၀၀၀၀၀၀) နှင့် အထက် ရရှိသောဝန်ထမ်းများ၏ ဝင်ငွေခွန်ကို သတ်မှတ်ထားသော နှုန်းထားများ အတိုင်း ပေးဆောင်နိုင် ရေးအတွက် ကုမ္ပဏီမှ တာဝန်ယူ ဆောင်ရွက်ပေးရန်

၁၀ ။ လူမှုစီးပွားတာဝန်သိ အစီအစဉ် (CSR)

လူမှုရေးဆိုင်ရာ အကျိုးပြုလုပ်ငန်းများ တာဝန်ခံဆောင်ရွက်မှုအားဖြင့် အဆိုပြုလုပ်ငန်း၏ နှစ်စဉ် အမြတ်ဝင်ငွေမှ ၂ % အား CSR ရံပုံငွေအဖြစ် ထားရှိမည် ဖြစ်ပါသည်။ အဆိုပါ အမြတ်ဝင်ငွေ ၂ %၏ ၂၀ % အား ပညာရေးအတွက်လည်းကောင်း၊ ၂၅% အား ကျန်းမာရေး အတွက်လည်းကောင်း၊ ၂၀ % အား လမ်းပန်းဆက်သွယ်ရေး အတွက်လည်းကောင်း နှင့် ကျန် ၃၅% အား လူမှုရေးနှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးလုပ်ငန်းများအတွက် သုံးစွဲမည် ဖြစ်ကြောင်း တွေ့ရှိရသည်။ အဆိုပါလုပ်ငန်းများ စနစ်တကျ အကောင်ထည်ဖော် ဆောင်ရွက်နိုင်ရန်အ တွက် မြို့နယ်အုပ်ချုပ်ရေးမှူး၊ မြို့နယ်ပညာရေးမှူး ၊ မြို့နယ်ကျန်းမာရေး မှူးများ နှင့် ဒေသ အုပ်ချုပ်ရေး၊ ရပ်မိရပ်ဖများဖြင့် အဖွဲ့ဖွဲ့ကာ ဆောင်ရွက်သားရမည်ဖြစ်ပါသည်။

၁၁။ ပတ်ဝန်းကျင်ရေးရာ စောင့်ကြည့် အဖွဲ့

ဘိုဝီး ကျွန်း ဟိုတယ်နှင့်ခရီးသွားလာရေးလုပ်ငန်းအတွက် စီမံခန့်ခွဲမှု (Environmental Management Plan) ကို အောင်မြင်စွာ အကောင်အထည်ဖော် ဆောင်ရွက်နိုင်ရန် အတွက် ပတ်ဝန်းကျင်ရေးရာ စောင့်ကြည့် ရေး အဖွဲ့ကို ဖွဲ့စည်းရန် လိုအပ်မည်ဖြစ်ပါ သည်။ စောင့်ကြည့်အဖွဲ့တွင် ဌာနဆိုင်ရာ ကိုယ်စားလှယ်များ၊ ဒေသခ ကိုယ်စားလှယ် များနှင့် စီမံကိန်း လုပ်ငန်းရှင်ကိုယ်စားလှယ်များ ပါဝင်သင့်ပါသည်။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်ကို အပြည့်အဝ အကောင်အထည်ဖော် ဆောင်ရွက်ရန် လုပ်ငန်းရှင်တွင် တာဝန်ရှိပါသည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်၏ အစိတ်အပိုင်းတစ်ရပ်ဖြစ်သော ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့် တိုင်းတာရေး အစီအစဉ် (Environmental Monitoring Programme) ကို လုပ်ငန်းရှင်က လိုက်နာဆောင်ရွက်ကာ တိုင်းတာတွေ့ရှိချက် အစီရင်ခံစာများကို ပတ်ဝန်းကျင် ရေးရာ စောင့်ကြည့်အဖွဲ့မှ အဖွဲ့ဝင် ကိုယ်စားလှယ်များ မိတ္တူပေးပို့ရမည် ဖြစ်ပါသည်။ လူမှုစီးပွား

တာဝန်သိ အစီအစဉ် (Corporate Social Responsibility) အနေဖြင့် စီမံကိန်းက ဒေသခံများအတွက် ပေးအပ်သော ကူညီထောက်ပံ့မှုများကို လေ့လာ စောင့်ကြည့်အဖွဲ့ရေး အဖွဲ့ကိုယ်စားလှယ်များမှ တဆင့် ဒေသခံများသို့ ပေးအပ်ရမည် ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ဇ ရး ရာနှင့် စပ်ဆိုင်သော အကြောင်းတစ်စ တစ်ရာ ပေါ်ပေါက်ပါက ဒေသခံများ အနေဖြင့် စောင့်ကြည့်အဖွဲ့မှ အဖွဲ့ဝင် ဒေသခံ ကိုယ်စားလှယ်များမှတစ်ဆင့် စီမံကိန်းနှင့် ဆက်သွယ် ဆောင်ရွက်နိုင် မည် ဖြစ်ပါသည်။

(က) ရည်ရွယ်ချက်

1. စီမံကိန်း၏ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်များအား လိုက်နာဆောင်ရွက်မှု အခြေအနေများကို ဒေသခံများ စဉ်ဆက် မပြတ် သိရှိနိုင်ရန်
2. ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့် တိုင်းတာရေး အစီအစဉ် တိုင်းတာတွေ့ရှိချက် အစီရင်ခံစာ များကို ဒေသခံများ သိရှိနိုင်ရန်
3. ပတ်ဝန်းကျင်ရေးရာနှင့် စပ်ဆိုင်သော အကြောင်းကိစ္စများအတွက် အပြန်အလှန် ဆက်သွယ် ဆောင်ရွက်နိုင်ရန်
4. လူမှုစီးပွား တာဝန်သိ အစီအစဉ်အရ ပေးအပ်သည့် ကူညီ ထောက်ပံ့မှုများကို စနစ်တကျ စီမံခန့်ခွဲမှုများအား စောင့်ကြည့် ထိန်းကြောင်းနိုင်ရန်

(ခ) ပတ်ဝန်းကျင်ရေးစောင့်ကြည့်ရေးအဖွဲ့ဖွဲ့စည်းပုံ

ပတ်ဝန်းကျင်ရေးရာ စောင့်ကြည့် အဖွဲ့တွင် အဓိကအားဖြင့် သက်ဆိုင်ရာ အစိုးရဌာနများ၊ စီမံကိန်းမှ တာဝန်ရှိသူများ နှင့် ဒေသခံ ကိုယ်စားလှယ်များဟူ၍ အဖွဲ့ (၃) ဖွဲ့ ပါရှိပါသည်။ ဒေသခံ ကိုယ်ခံကိုယ်စားလှယ်များကို သက်ဆိုက်ရာ ကျေးရွာ များက အများသဘောတူညီချက် အရ ရွေးကောက်ထားသော ရပ်မိရပ်ဖများဖြင့် ဖွဲ့စည်းရမည် ဖြစ်ပါသည်။ အဆိုပြု ကိုယ်စားလှယ် ပါဝင်မှုလူဦးရေး အချိုးအစားမှာ အောက်ပါအတိုင်း ဖြစ်ပါသည်။

ဇယား (၂) ပတ်ဝန်းကျင်ရေးရာ စောင့်ကြည့်အဖွဲ့ ကိုယ်စားလှယ်ဦးရေပြ ဇယား

စဉ်	ကိုယ်စားလှယ်	ဦးရေ
အစိုးရဌာနများ		
၁*	မြို့နယ် အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန (ကော့သောင်းမြို့နယ်)	၁
၂*	မြို့နယ်သစ်တောဦးစီးဌာန	၁
၃*	မြို့နယ်မြေ စာရင်း ဦးစီးဌာန	၁
၄*	မြို့နယ် ပညာရေးမှူး	၁
၅*	မြို့နယ် ကျန်းမာရေး ဦးစီးဌာန	၁

စီမံကိန်းမှ တာဝန်ရှိသူ များ		
၁	အုပ်ချုပ်မှုဒါရိုက်တာ	၁
၂	စီမံကိန်းမန်နေဂျာ	၁
၃	လူမှုဆက်ဆံရေး တာဝန်ခံ	၁
ဒေသခံကိုယ်စားလှယ်များ**		
၁*	ရပ်ကွက်အုပ်ချုပ်ရေးမှူး	၁
၂**	ရပ်မိရပ်ဖများ	၂

* အစိုးရဌာနများတွင် လက်ရှိတာဝန်ထမ်းဆောင်နေသူများ

** မိမိတို့ မြို့နယ်ရပ်ကွက်အလိုက် အများသဘောတူ ရွေးကောက်တင်မြှောက်ထားသူများ၊ မိမိတို့မြို့နယ်အလိုက် အများသဘောတူညီအလျောက် လွှဲပြောင်းခြင်း၊ ခန့်အပ်ခြင်းများ ပြုလုပ်နိုင် သည်

(ဂ) တာဝန်များ

(က) စီမံကိန်းနှင့် ဒေသခံများကြား ပတ်ဝန်းကျင်ကိစ္စများ ဆောင်ရွက်ရာတွင် ကြားနေအဖြစ် ဆောင်ရွက်ပေးရန်

(ခ) စီမံကိန်းမှ လူ့ဒါန်းသော အလှူငွေများကို ဒေသခံများသို့ ကြားမှတဆင့်လက်ခံပြီး ဆောင်ရွက်ပေးရန်

(ဂ) စီမံကိန်းမှ စောင့်ကြည့်တိုင်းတာမှုများကို ဒေသခံများအား သိရှိနိုင်ရန် စာရွက်စာတမ်းများ ဖြန့်ဝေကာ ဒေသခံများ သိရှိနိုင်အောင် ဆောင်ရွက်ရန်

(ဃ) စီမံကိန်းမှ အလုပ်သမားများ ခန့်ထားရေးဆိုင်ရာ ကိစ္စရပ် များအတွက် ဒေသခံကိုယ်စား လှယ်များ၏ အကူအညီဖြင့် ဒေသခံများ သိရှိနိုင်အောင် ဆောင်ရွက်ရန်

(င) ဒေသခ ျားဏ၏ လူမှုရေး၊ ဘာသာရေးနှင့် ယဉ်ကျေးမှုဆိုင်ရာ ဒေသဖွံ့ဖြိုးရေးလုပ်ငန်းများတွင် စီမံကိန်းမှ ပူးပေါင်း ပါဝင်ဆောင်ရွက်နိုင်ရေးအတွက် ဟိုတယ်မှ တာဝန်ရှိသူများနှင့် ပူးပေါင်း ဆောင်ရွက်ရန်

(စ) ပတ်ဝန်းကျင်ရေးရာ စောင့်ကြည့်အဖွဲ့ကို စီမံကိန်း အကောင်အထည် ဆောင်ရွက်သော တာဝန်ရှိသူများက တာဝန်ယူကာ ဖွဲ့စည်းရန်

(ဆ) ဟိုတယ်လုပ်ငန်းများ စတင်လည်ပတ်နေကြောင်း လက်ကမ်းစာစောင်များထုတ်ဝေက အများပြည်သူဒေသခံများ သိရှိအောင် ဆောင်ရွက်ပေးရန်

(ဇ) စီမံကိန်းမှ နှစ်စဉ် အမြတ်ဝင်ငွေ ခွဲဝေပြီး တစ်ပတ်အတွင် ဒေသဖွံ့ဖြိုးရေးလုပ်ငန်းများ လုပ်ကိုင်နိုင်ရန် လူမှုတာဝန်သိ အစီအစဉ်များ ဆောင်ရွက်နိုင်ရန် ပတ်ဝန်းကျင် စောင့်ကြည့် ရေးအဖွဲ့နှင့် ဆက်သွယ်ဆောင်ရွက်ရန်

(စ) စီမံကိန်းမှ တာဝန်ရှိသူများနှင့် ဒေသခံများ တွေ့ဆုံပွဲကို တစ်နှစ်လျှင် တစ်ကြိမ်ခန့် ပြုလုပ်ရန်

၁၂။ တွေ့ရှိချက်များအား ထုတ်ဖေါ်ခြင်း

ယခု အစီရင်ခံစာ အကျဉ်းချုပ်ပါ အချက်အလက်အလက်များသည် ဘိုဝီး ကျွန်းပေါ်ရှိ အပန်းဖြေ ဟိုတယ်တည်ဆောက်ခြင်းလုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင် ပတ်ဝန်းကျင်ထိခိုက်မှု ပဏာမ ဆန်းစစ်ချက်များကို အနှစ်ချုပ် ဖေါ်ပြထားခြင်းဖြစ်ပါသည်။ ယခုအစီရင်ခံစာပါ အချက်အ လက်များ သည် ၂၀၁၉ ခုနှစ် ဇူလိုင်လနှင့် မတ်လဆန်းတွင် HRD Environmental Training and Serivces Group မှ ကနဦးလေ့လာတွေ့ရှိချက်များကို တင်ပြထား ခြင်းဖြစ်ပါသည်။

၁၃။ နိဂုံး

တနင်္သာရီတိုင်းဒေသကြီး၊ ကော့သောင်းခရိုင်၊ ကော့သောင်းမြို့မှ အနောက်မြောက်ဘက် ပင်လယ်ပြင်ရေပြင်မိုင် 49.29 MILES (79.33 Km) အကွာအဝေး၊ မြောက်လတ္တီကျူ 10°22'12.35"N, နှင့်အရှေ့လောင်ဂျီကျူ 97° 56'37.44"E ၊ ကော့သောင်းမြို့နယ် ၊ စူငယ်ဘာလိုင်း ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် (2/OSS စူငယ်ဘာလိုင်းကြေးပြင်တိုင်၊ ခွင့်ပြုမိန့် ကျပြီး မြေဧရိယာ ၁၉၄.၀၀ ဧက အနက် ၁၁.၈၆ ဧက ၊ ဘိုဝီးကျွန်းပေါ်တွင် century Bright Gold Company မှတည်ဆောက်မည်ဖြစ်သော နိုင်ငံတကာအဆင့်မီ အပန်း ဖြေစခန်းနှင့်ဟိုတယ်လုပ်ငန်းအား အကောင်အထည်ဖော် ဆောင်ရွက်မည့် အခြေအနေ အပေါ် HRD Environmental Training and Serivces Group မှ ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ချက် တွေ့ရှိချက်များကို ဖော်ပြထားပါသည်။ စီမံကိန်းသည် ယခုအခါ မည်သည့် ဆောင်ရွက်ထားမှုမှ မရှိပဲ နောက်ပိုင်းတွင် သစ်သား၊ အုတ်၊ သံကူ ကွန်ကရစ်များ ဖြင့် တည်ဆောက်မည်ဖြစ်သော ဘန်ဂလိုများ၊ရေကူးကန်များ၊ အလုပ်သမား တန်းလျားများကို တည်ဆောင်သွားမည်ဖြစ်ပါသည်။ စီမံကိန်းမှ ထွက်ရှိသော စွန့်ပစ် ညစ်ညမ်းရေးများကို စနစ်တကျ သန့်စင်ပြီးမှသာ ပင်လယ်ထဲသို့ စွန့်ထုတ်မည် ဖြစ်ပါကြောင်းနှင့် အမှိုက်များ မီးရှို့ဖျက်ဆီးခြင်းနှင့် မီးရှို့ချက်ဆီးရန် မသင့်သော စွန့်ပစ်အစိုင်အခဲ အမှိုက်သရိုက် ပလပ်စတစ် ပုလင်းခွံ သံဗူးခွံများကို ကော့သောင်းမြို့သို့ ကုန်သယ်လှေဖြင့် သယ်ကာ ကော့သောင်းမြို့နယ် စည်ပင်သာယာရေး ကော်မတီမှ သတ်မှတ်ထားသော နေရာများတွင်သာ စွန့်ပစ်မည်ဖြစ်ကြောင်း တွေ့ရှိရပါသည်။ စီမံကိန်းကြောင့် လေထုညစ်ညမ်းမှု၊ မြေထုညစ်ညမ်းမှု၊ ရေထုညစ်ညမ်းမှု မရှိ ကြောင်း စစ်ဆေးတွေ့ရှိရပါသည်။ စီမံကိန်းတွင် လူမှုစီးပွား တာဝန်သိအစီအစဉ်များ၊ မီးဘေးကြိုတင်ကာကွယ်ရေး စီမံချက်များ၊ သဘာဝ ဘေးအန္တရာယ်ကာကွယ်ရေး အစီအစဉ်များ ထားရှိမည်ကိုလည်း တွေ့ရပါသည်။ စီမံကိန်းသည် လူနေပတ်ဝန်းကျင်နှင့် ဝေးကွာ လွန်း သောကြောင့် စီမံကိန်းကြောင့် ထိခိုက်ခံစားရသူများ လုံးဝမရှိကြောင်း စစ်ဆေး တွေ့ရှိရပါသည်။

1. EXECUTIVE SUMMARY

1.1 Introduction

Century Bright Gold Co., Ltd.is planning to set up an island resort in the Bo WeiIslands in Southern Myanmar.Bo Wei Island is located to the north-west of Kawthong District, Tanintharyi Region. Approximately, the distance from Kawthong Town to Bo Wei Island is 79 km in straight line. The total land area of Bo Wei Island is about 194 acres and the proposed resort project area is about (11.86) acres.The proposed project comprises of a resort included of deluxe rooms, pool villas, villa house, boat house, jacuzzy hut and floating pool.

In Myanmar, as per the comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC), Annex 1 of the EIA (Environmental Impact Assessment) Procedure dated 29th December 2015, an Initial Environmental Examination (IEE) is required for the proposed island resort (project. The project proponent,Century Bright Gold Co., Ltd has retained HRD Environmental Training and Services Co., Ltdto conduct the Initial Environmental Examination (IEE)study for the proposed project.

1.2 Project Need and Its Significance

The tourism development in Myanmar is substantial and vibrant, and the country is quickly becoming a major global destination. There are two existing island resorts and permits granted to quite a few resorts near the Mergui Archipelagoarea. This upcoming islandresort will become a pleasant alternative with its unique location and facilities that it will provide. Theproposed project will lead to following benefits.

- Tourism is a growing industry; therefore there is need for more hospitality services. Theproposed resort aims at fulfilling the need to satisfy the tourism market through provisionof quality services and accommodation.
- Improvement in local area by providing additional employment opportunities to theskilled as well as unskilled people;
- The planned development with modern infrastructure facilities would add-on to the localaesthetics

1.3. Scope of the IEE Study

This IEE study involves, detailed reconnaissance visit to the site to assess the existing environmental baseline condition of the area, subsequent assessment of potential environmentaland social impacts from the constructionactivity and during the operation phase of the proposed project in order to suggest the necessarymitigation measures, required to be taken for the protection of the environment. Apart from this, Environmental Management Plan (EMP) and Disaster Management Plan (DMP) will also be preparedin order to prevent any hazard during construction and operation phase.

1.4. Policy, Legal and Other Requirements

The IEE has been undertaken in accordance with the Myanmar Environmental Impact Assessment Procedure which was promulgated on December 29th, 2015, and provides legislation for environmental and social governance of economic development in Myanmar,

under the Environmental Conservation Law 2012 and Environmental Conservation Rules 2014 of the National Environmental Policy for Myanmar 1994.

In addition, the IEE assessment was undertaken in accordance with Myanmar's National Environmental Quality (Emission) (NEQ) Guidelines which were promulgated on December 29th, 2015. The guidelines include noise and vibration, air emissions, and effluent discharges.An overview of the approval of the IEE process (from the EIA Procedure, 2015) is shown in Figure 1.1.

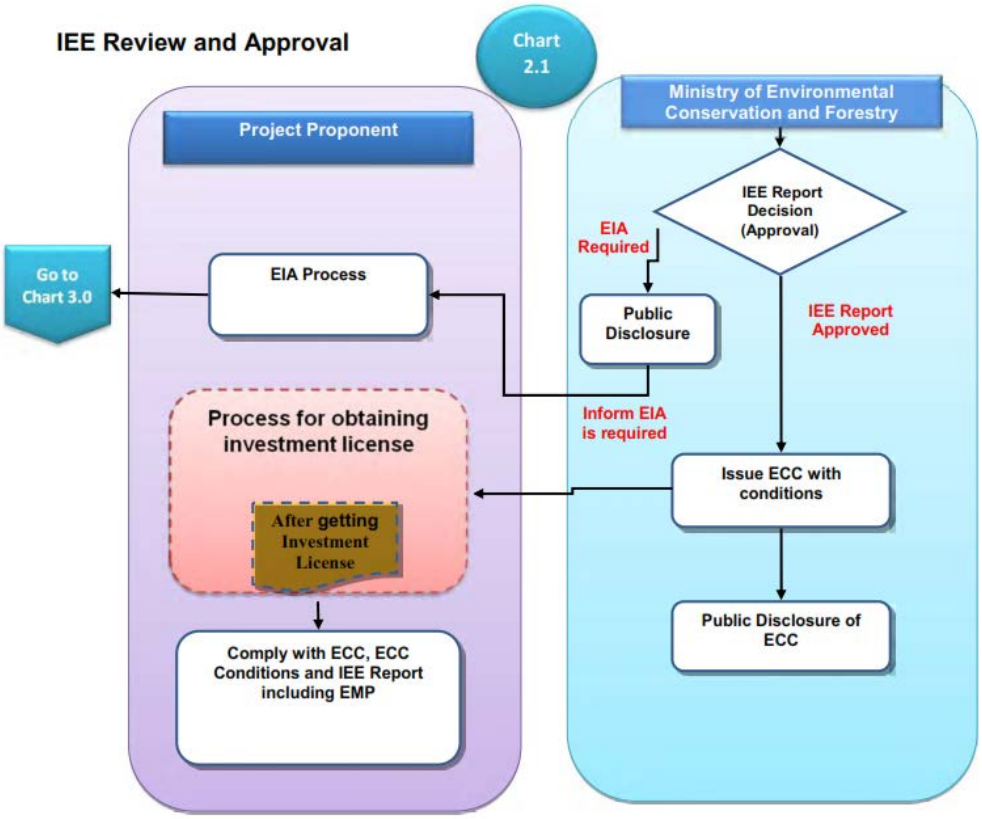


Figure 1.1 IEE Review and Approval Process

According to the above figure, IEE report has to be submitted to ECD (Nay Pyi Daw) through ECD (Tanintharyi). After the review process IEE report have been granted by ECD and will issue ECC.

1.5 Project Description

(a) Location of the Project

Bo Weiisland resort is located to the north-west of Kawthong district, Tanintharyi region, at the coordinates of 10° 22′ 9.55″ N Latitude and 97°56′34.00″ E Longitude. The location map of project area is shown in the following figure.

Location Map of the Proposed Project

(b) Land Use

The proposed project will use (11.86) acrescontainingPlotsNo.2/OSS Su Nge Bar Laing land mark area and land grants received permission to operate (30 years) for business purposes. This area is only found scattered forests area including shrubclimberand small trees plantation land without residential area.

(c) Building Construction Infrastructure

The purpose projects willinclude total numbers of 127 rooms. Room unitsarePrivate bungalow 3keys, President4 keysand Honeymoonsuite11 keys.The supporting services arerestaurant, swimming pool, fitness, climbing station and water sports activities. Addition infrastructures as will be the waste water treatment plant, the transformer, and the temporary construction camp.

The project will also involve internal development of basic infrastructure such as internal roads, power supply, water supply, sewer and storm water pipe network and waste management system. All building materials include wood and brick with reinforce concrete and steel structure. Hotel buildings are planned to be equipped with up-todate electrical and communication system and air conditioning system with environmentally friendly refrigerants.

Construction camp: The establishment of the camp (access roads, temporary office buildings, earth materials stockpiles, equipment and material stores, maintenance yard, etc.) will entail loss of trees occurring at that site.

Water supply:The plant nursery, construction camp and site works will require a supply of water. The water requirement for the all construction activities and workers except drinking water will be supported from the tube wells; two installed 4-inch diameter (Ø) pipe. There is one overhead tank existing near the staff quarter. This tank is meant for temporary storage of water during primary stage of construction. The total estimated demand for water by the resort during full operation is approximately about (280,000 gallons) of water a year. These are meant for use in washing, bathing, cooking, gardening, pools water, toilets water and other cleaning activities. Drinking water as purified water will be outsourced.It is planned to install wastewater treatment system for wastewater and grey water. The treated water will be used in gardening, vehicles washing and watering to the roads not to be dusty. The chemical used for treating pond water is liquid chlorine so as to clean up the water.

(d) Employment

It is estimated that 90 persons (skilled and unskilled) will be employed during operation of the resort. Detail statement of employee in hotel resort is shown in Chapter 4 of the report.

1.6. Biodiversity Environment

Field study is used to collect the data information of flora and fauna existing in and around the proposed project area. The area is far from about 85 Km from proposed protected area of Myeik Archipelago. ***But the area was listed as the one of the High Priority Key Biodiversity Areas (KBAs) because of the island is in geological isolation and forest (intact)***. In the proposed project area, the flora and fauna species area unique because of the geological isolation. The proposed project area is moderately significant for biodiversity as well as the important ecosystem and environmental values of marine sources. A total of (41) flora species and (40) species of fauna were recorded, Plant and animal species are not found in IUCN Red list but twofish species of Shark and Raywere observed as protected species by Fishery law is considered as conservation importance. Plant density and species abundance are moderate in and around the project area. Vegetation with trees are mainly composed of land area. According to the data, there will be an impact on biological community especially to the existing aquatic organisms and land vegetation. The extent of the impact on fauna and

flora is investigated as only in the site specific and the duration of the impact is assumed as may be long term.

1.7. Public Consultation and Participation Process

In this study, effective public consultation and participation approaches in the form of stakeholder identification, focus group discussions, public meetings and public disclosure will be conducted. Public participation will be conducted by the following procedures:

(a) Stakeholder Engagement and Identification;
(b) Household survey;
(c) Public meetings; and
(d) Public disclosure process.

(a) Stakeholder Engagement and Identification

The following communities, authorities and NGOs will be considered as key stakeholders who are directly or indirectly related to the proposed project according to the above consideration.

(a) Century Bright Gold Co., Ltd.(CBG)
(b) Local People (around the proposed project area)
(c) Village Administrative Offices (around the proposed project area)
(d) Environmental Conservation Department (Kawthoung, Tanintharyi)
(e) Head of Local Administration Office (Kawthoung);
(f) City Development Committee (Kawthoung);
(g) Department of Public Health (Kawthoung);
(h) Department of Hotels and Tourism (Kawthoung);
(i) Planning and Statistics Department (Kawthoung);
(j) Department of Settlement and Land Record (Kawthoung)
(k) Forest Department (Kawthoung)
(l) Department of Water Resources Utilization Department (Kawthoung);
(m) Department of Labour (Kawthoung);
(n) Myanmar Police Force (Kawthoung) and
(o) Local Media, NGOs and CBOs

(b) Household Surveys

Household sample survey was not conducted to evaluate primary socio-economic conditions of the project area and to understand the mood, perceptions and extent of preparedness of the people towards the proposed project. The household survey was carried out to tap the baseline socio-economic conditions of project area and to assess project perceptions and attitudes of the local people over a period of five days. To get the accurate data, primary data collection will be conducted by social specialist, social consultants, local authorities and local people.

(d) Public Meetings

The public meeting was completed in (13.5.2019)Kawthoung, during the IEE study. There were about 50 people from local communities who are directly or indirectly affected by the proposed project are attended in this meeting. The aim of this public meeting are -

(i) To announce the process and procedure of IEE;
(ii) To discuss about the possible environmental and social impacts;
(iii) To discuss the scope of anticipated impacts zone; and
(iv) To discuss about the alternative ways to avoid the possible impacts.
(i) To discuss about the identification and evaluation of possible environmental impacts and mitigation measures; and
(ii) To discuss about the alternative ways to avoid the possible impacts.

Most Public Needs and Concerns during Household Survey and Public Meeting

During public meeting for scoping proposal, the most important positive outcomes from the project expected by the local people and most of their concerns about proposed project are as follow:

Most Public Needs	Most Pubic Concerns
• Expanding and Upgrading of village road • Want to create job opportunity	• Will be Strong wind from the sea because less windy shield trees • Blockage of road to the sea • Land compensation
• Upgrading of Educational facilities • Supporting for health care facilities • Electricity • Maintenance to the seashore roads	• Ground water depletion

• CSR program for village development	

(e) Public Disclosure Process

Summary of IEE report in Myanmar Language was also distributed to all key stakeholders as public disclosure process.

Draft IEE report was distributed to all key stakeholders and will be made available for public comment for a period of 30 days in the following ways:

- By raising comments during a series of public meetings where the content of the draft IEE Report will be presented;
- By completing a comment sheet made available together with the report at the public places, and by submitting additional written comments, by email or fax, or by telephone, to the HRD Office.

All comments and issues raised during the comment period on the draft IEE report will be added to the comment and response report that will accompany the Final Report.

1.8. Environmental Management Plan (EMP)

EMP is a site specific plan developed to ensure that the project is implemented in an environmental sustainable manner where all contractors and subcontractors, including consultants, understand the potential environmental impacts arising from the proposed project and take appropriate actions to properly manage that risk. EMP also ensures the project implementation is carried out in accordance with the design by taking appropriate mitigation actions to reduce adverse environmental impacts during its life cycle. EMP for proposed hotel will include the following essential parts.

(a) Mitigations and enhancement measures for all anticipated impacts;
(b) Consideration of residual and cumulative impacts after mitigation measures;
(c) Environmental monitoring plan,
(d) Monitoring guidelines and standards,
(e) Training Program,
(f) Record Keeping and Reporting, and
(g) Audit and Corrective Action Plan.

(a) Environmental Monitoring Program

The purpose of environmental monitoring is to evaluate the effectiveness of implementation of Environmental Management Plan (EMP) by periodically monitoring the important environmental parameters within the impact area, so that any adverse effects are detected and timely action can be taken. Main objectives of environment monitoring plan include:

(a) Identify all environment changes which may cause adverse effects on environment by the project implementation;
(b) Monitor discharge sources (gas emission, waste water and solid waste) and operation of environmental protection equipments in order to ensure that these activities will comply with legislative requirements;
(c) Check monitoring process and inspect installation system and equipments in respect of pollution prevention and control;
(d) Prevent potential incidents;
(e) Propose appropriate environment protection measures based on results of environmental monitoring;
(f) Overcome and repair all weak-points based on results of environment monitoring program.

(b) Occupational Safety and Health Management Plan

Occupational safety and health management plan for the proposed hotel will include the following:

(a) Potential Safety and Health Impacts on Workers
(b) Emergency and First-aid Procedures
(c) Medical Precautionary Measures
(d) Maintenance and Troubleshooting Precautions
(e) House Keeping
(f) Safety awareness
(g) Safety training

(c) Emergency Response Plan (ERP)

An emergency is an unplanned event when a project operation loses control, or could lose control, of a situation that may result in risks to human health, property, or the environment,

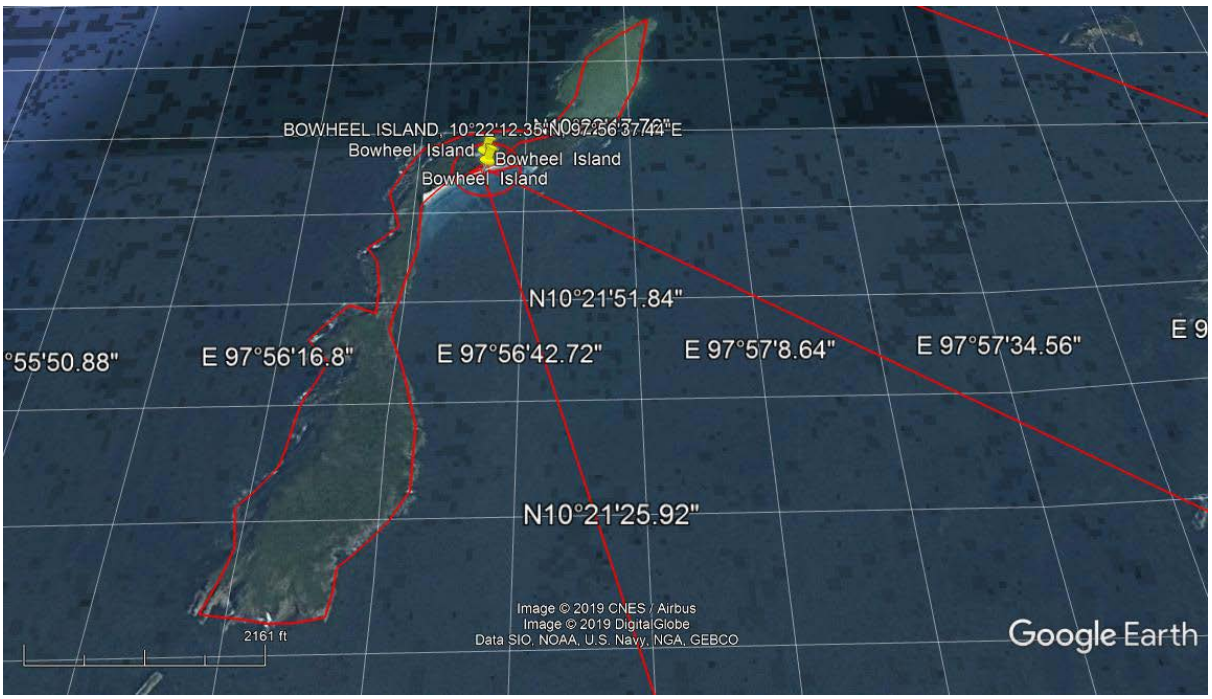
either within the facility or in the local community. Emergency incident response plan for proposed hotel is proposed to mitigate harms on humans and environment in the project area and its vicinity in case of incident. This plan provides the management structure, key responsibilities, emergency assignments and general procedures to follow during and immediately after an emergency. Moreover, it is necessary to establish ERP to address the immediate requirements for a major disaster or emergency in which normal operations are interrupted and special measures must be taken to:

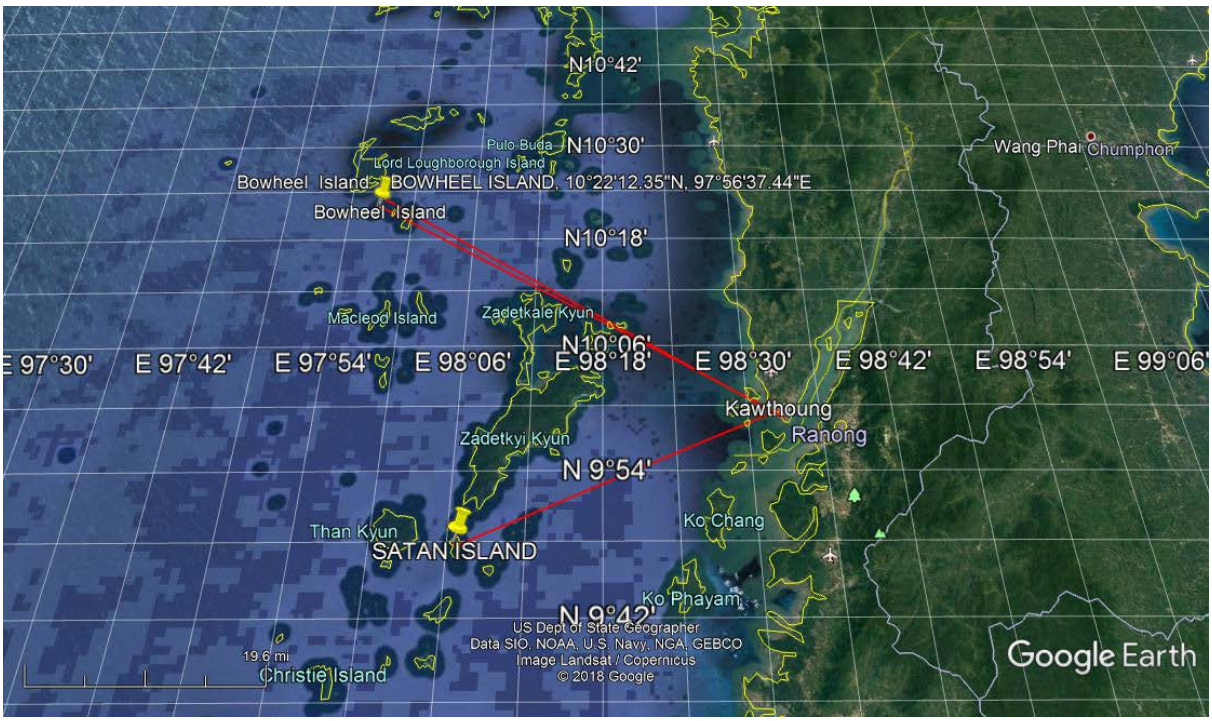
(a) Save and protect the lives of employees;
(b) Manage immediate communications and information regarding emergency operations and work site safety;
(c) Provide essential services and operations;
(d) Provide and analyze information to support decision-making and action plans; and
(e) Manage resources effectively in an emergency operation.

(d) Natural Disaster Management Plan

Disaster means a catastrophe, mishap,calamity or grave occurrence in any area,arising from natural or man-made cause, or by accident or negligence which result in substantial loss of life or human suffering or damage to,or degradation of, environment, and is of such nature or magnitude as to be beyond the coping capacity of the community of the affected area. Disaster Management implies continuous and integrated process of planning, organising,coordinating and implementing measures which are necessary as expedient for

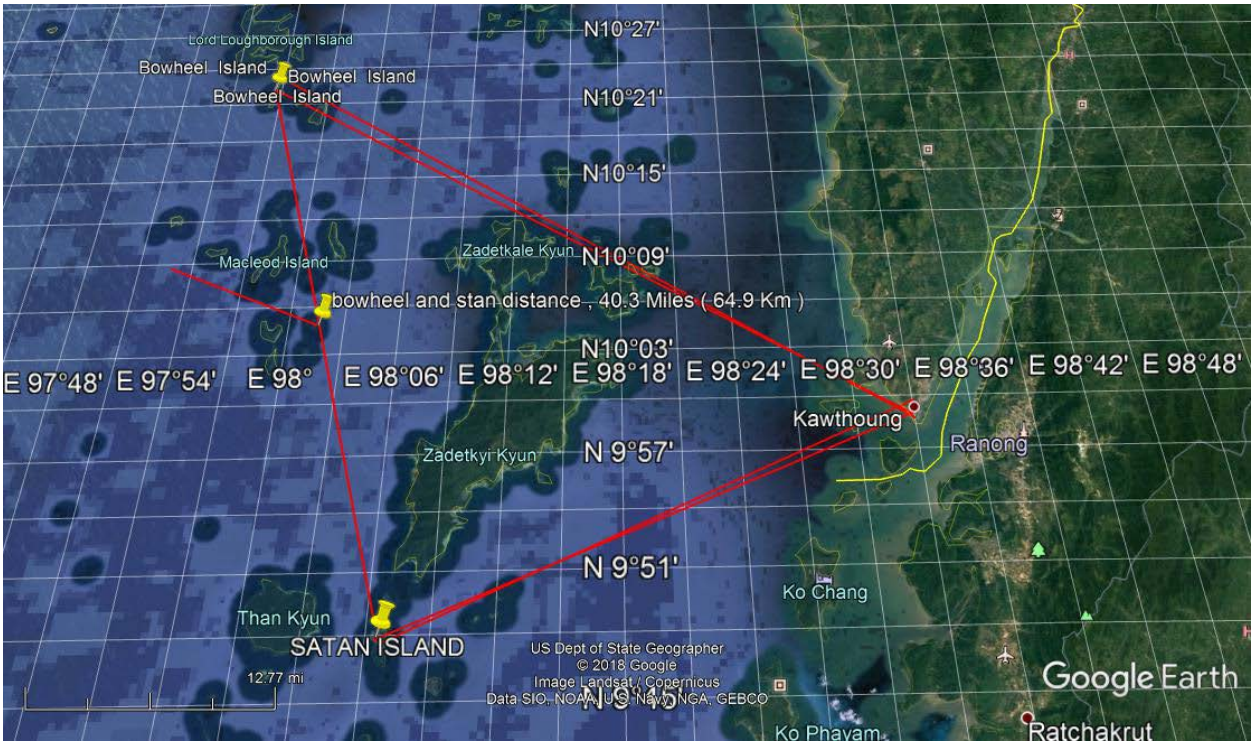
- Preventionofdangerorthreat toanydisaster.
- Mitigationorreductionofriskofanydisasterorits severityor consequences.
- Capacity building.
- Preparednesstodeal withanydisaster.
- Promptresponsetoanythreateningdisastersituation ordisaster.
- Assessingthe severityofmagnitudeofeffect ofeverydisaster.
- Evacuationrescue&relief.
- Rehabilitation andreconstruction





BOWEI ISLAND

BOWEI ILSAND IS 49.29 MILES (79.33 Km) AWAY FROM KAWTHAUNG



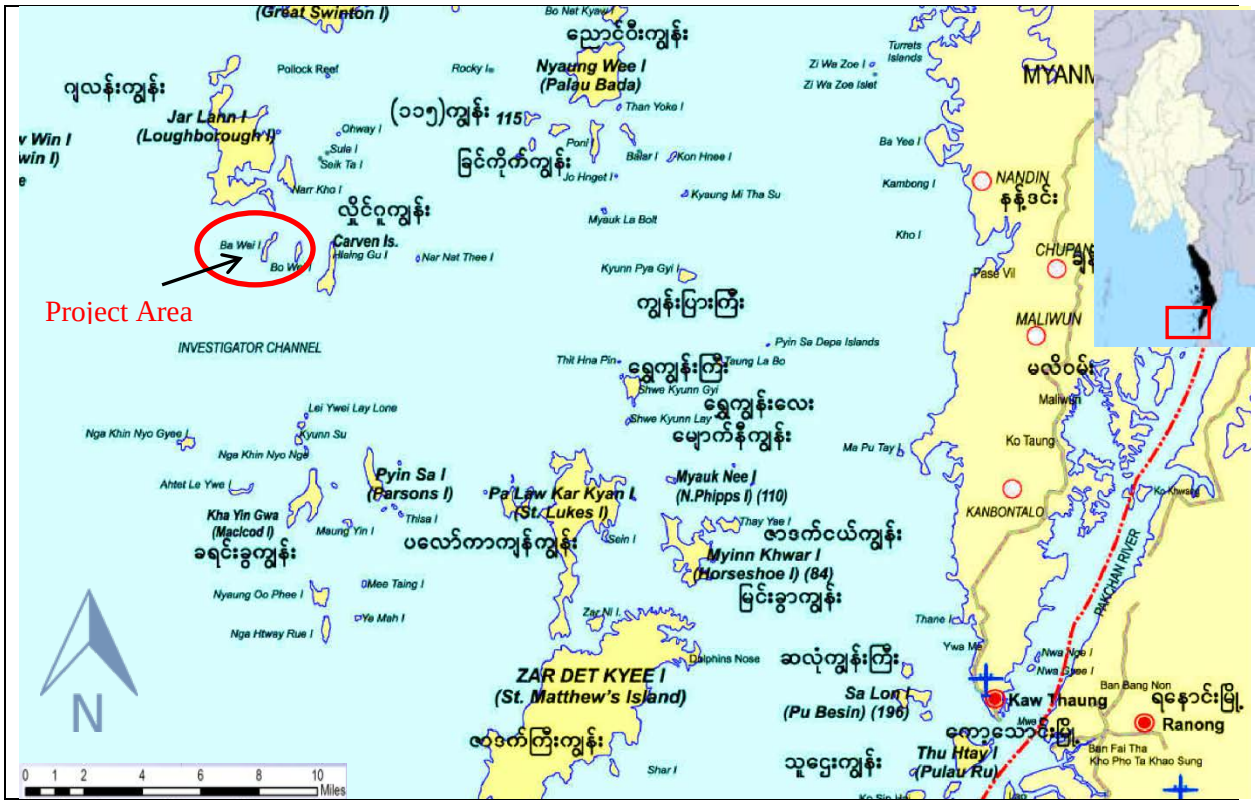
40.3 Miles (64.9 Km), Satan and Bowei
BOWEI ISLAND DISTANCE IS (40.30 Miles) 64.86 Km.

2. INTRODUCTION

2.1. Purpose and Background

Century Bright Gold Co., Ltd. has proposed to build island resort located in Bo Wei Kyun to the north-west of Kawthong district, Thanitharyi Region.

On behalf of MONREC, the Environmental Conservation Department (ECD) which is one of the six departments under the MONREC, responsible for implementing National Environmental Policy, strategy, framework, planning and action plan for the integration of environmental consideration into the national sustainable development processes. Century Bright Gold Co., Ltd. has been engaged byHRD Environmental Training and Services Co., Ltd to prepare the IEE and to provide assistance in related activities. This is an Initial Environmental Examination (IEE) report for construction of anisland resortand its related facilities proposed by Century Bright Gold Co., Ltd named Bo Wei Island Resort. This IEE report is prepared to assess the potential impacts of the proposed project and to formulate, implement and monitor the environmental protection measures in the phases of its construction, operation and decommissioning in order to reduce the environmental impacts or have to minimum impacts to the environment and to increase its operating efficiency.



Location of Proposed Project

2.2. Detail Information of the Project Proponent

The following are the detailed information about the project proponent.

Company Name	Century Bright Gold Company Limited
Project Type	Hotel resort
Project location	Bo Wei Island, Kawthoung Township, Thanitharyi Region
Company Address	**Contact Phone No- 09-977999919, 09969444900, 095351002** **Contact Person- :, U Ye Myat Tun** **Company Address: :3rd Floor , Co-Operative Business Center,Corner of Sayarsan Rd & New University Avenue Rd, Bahan Township, yangon** **Land Use : 11.86 Acre** Type of Investment : Local Investment (100 %)
Company Type	Public Company Limited

2.3. The Aim of the Proposed Project

The developer statements publicly that the proposed project will need in Myanmar due to the following reasons:

(a) To satisfy the tourism market through provision of quality services and accommodation.
(b) To improve national foreign currency income
(c) To improve in local area by providing additional employment opportunities to theskilled as well as unskilled people
(d) To improve the educational, health and social status of local residents and obtain safe and better life., and
(e) To get benefits for both customers and supplier together with increasing employment opportunities for local people as well as resulting in government revenues.

2.4. Aim and Objectives of the Report

The objectives of the IEE report for Century Bright Gold Co. Ltd are to;

(i) Assess the project's potential positive and negative, direct and indirect impacts to physical, biological, socioeconomic, and physical cultural resources in the vicinity of the project area,
(ii) Identify the stakeholders, hold consultation meeting with project affected people and consider their concerns in the implementation of the project,
(iii) Present mitigation measures to help reduce and/or mitigate, and/or compensate for the negative environmental impacts from the proposed project,
(iv) Describe the monitoring measures and reporting procedures to ensure the operations of the project meet with proposed mitigation measures, and identify the responsible person or team to proceed the proposed mitigation and monitoring measures.

2.5. Study Team

Serial No.	Full Name	Education	Responsibility
1	Dr.Aung Lay Tin	BE,ME,Ph.D (Mining,YTU)	Management and Others,

			Air and Noise, Pollution Control
2	Mr.Kyaw Soe	BE(Metallurgy),YTU,2002 M.Sc Beihang University (China),2006 Ph.D Beihang University (China),2011	Management and Others
3	Dr. Kyaw Zay Moe	Ph.D (Batany)	Ecological Consultant, Biodiversity
	Dr. Ko Myint	Ph.D (Batany)	Ecological Consultant , Biodiversity
4	Daw Swe Mar Kyaw	A.G.T.I (EP),Pyay, B.Sc (Phys;),2003, Dip.EIA/EMS,MS (EAM)	Socio-Economy
5	Daw Thazin Htwe	BE(IT),Thanlyni,2009 Dip.EIA/EMS,MS (EAM)	Socio-Economy
6			
7	Daw Khin Than Sin Aye	BE(Civil),Magaway TU,2014 ,ME (CIVIL),YTU	Ground water and Hydrology; Construction
8	Daw Thin Naing Aye	BE(Civil),Hmawbi,2013 ME (CIVIL),YTU	Ground water and Hydrology;
9	Daw Nilar lwin	BE(Civil),Hmawbi,2013 ME (CIVIL),YTU	Ground water and Hydrology;
10	Yuzana Moe Myint	Bsc(Forest), 2014, Dip. in EIA & EMS	Biodiversity
11	Nanda Nwe	BE(CEIT),Hmawbi, Dip.EIA/EMS,MS (EAM)	Socio-Economy;
12	Phyo Maung Maung	BE(Mining),WYTU,2012	Socio-Economy
13	U San Oo	Bsc(geology),Magway,2007, M.Eng(Gadjah mada University, Indonesia,2012	Geology and Soil
14	Mg Aung Ze Yar Wint	Bsc(Forest), 2015, Dip. in EIA & EMS	Pollution Control
15	Mg Tint Naing Zaw	Bsc(Forest), 2015, Dip. in EIA & EMS	Lawer
16	Mg Si Thu		Facilitator
17	Dr.Myo Min Htun	Ph.D (Metallurgy)	Waste Management, Hazard

2.6. Impact Assessment Scope

This IEE report identifies the potential environmental and social impacts that could be associated with the proposed project activities including those of an indirect and cumulative nature. The study area for IEE covers all within 1.5km radius (3km diameter) which covers all of the project operational areas (hotel resort), including where supporting activities (jetty, public areas and amenities.) take place.

2.7. Data Collections

The project related data, site layout plans and design parameter are will be provided by Century Bright Gold Co., Ltd (CBG). Secondary data on demographic distribution in the area will be collected from Head of Local Administration Office (Kawthoung) and data on public health will be collected from Public Health Department (Kawthoung). Primary data for public concerns, socio-economic and health profiles will be conducted by household survey.

2.8. Structure of the Report

The IEE for proposed project is structured as follows:

Section 1: **Executive Summary –** Summary of the IEEreport

Section 2: **Introduction –** provides the introduction and background of the proposed project, introduces the Proponent,objectives and scope;

Section 3: **Policy, Legal and Institutional Framework–** provides details of applicable Environmental legislation;National regulations are reviewed and summarized.

Section 4: **Description of the Project and Alternatives. –** provides details of the proposed project including design features, proposed infrastructure,project inputs and outputs and alternatives considered;

.

Section 5:**Description of the Surrounding Environment–** provides a summary of knowledge about the existing physical, biological, social and cultural Environment in the study area that the project may influence;

Section 6: **Impact Assessment and Mitigation Measures –** describes the impact assessmentmethodology and the PP process, summarises the potential Environmental and social impacts associated with the proposed project;

Section 7: **Cumulative Impacts –** describes general and specific mitigation measures to reduce, or avoid residual and cumulative impacts to environmentaland social receptors associated with the proposed project;

Section 8: **Environmental Management Plan (EMP) –** describes the EMP draws together the possible mitigation measures;group them logically into components with common themes; define the specific actions required and timetable for implementation; identifies training needs, institutional roles and responsibilities for implementation; develops a monitoring programme and estimates the costs of the measures.

Section 9: **Public Consultation and Disclosure Process –** describes the objectives of public consultation and results of consultations in an IEE to be followed during the Impact Assessment phases;

Section 10: **Conclusion–** summarizes conclusions that are made based on the assessment of the IEE Study.

3.0. POLICY, LEGAL AND OTHER REQUIREMENTS

This chapter sets out the relevant legal and policy context in Myanmar and documents the environmental and social standards with which the project has to comply with, as well as the international standards that the project will follow.

National Requirements

The IEE has been undertaken in accordance with the Myanmar Environmental Impact Assessment Procedure which was promulgated on December 29th, 2015, and provides legislation for environmental and social governance of economic development in Myanmar, under the Environmental Conservation Law 2012 and Environmental Conservation Rules 2014 of the National Environmental Policy for Myanmar 1994.

In addition, the IEE assessment was undertaken in accordance with Myanmar's National Environmental Quality (Emission) (NEQ) Guidelines which were promulgated on December 29th, 2015. The guidelines include noise and vibration, air emissions, and effluent discharges.

An overview of the approval of the IEE process (from the EIA Procedure, 2015) is shown in Figure below.

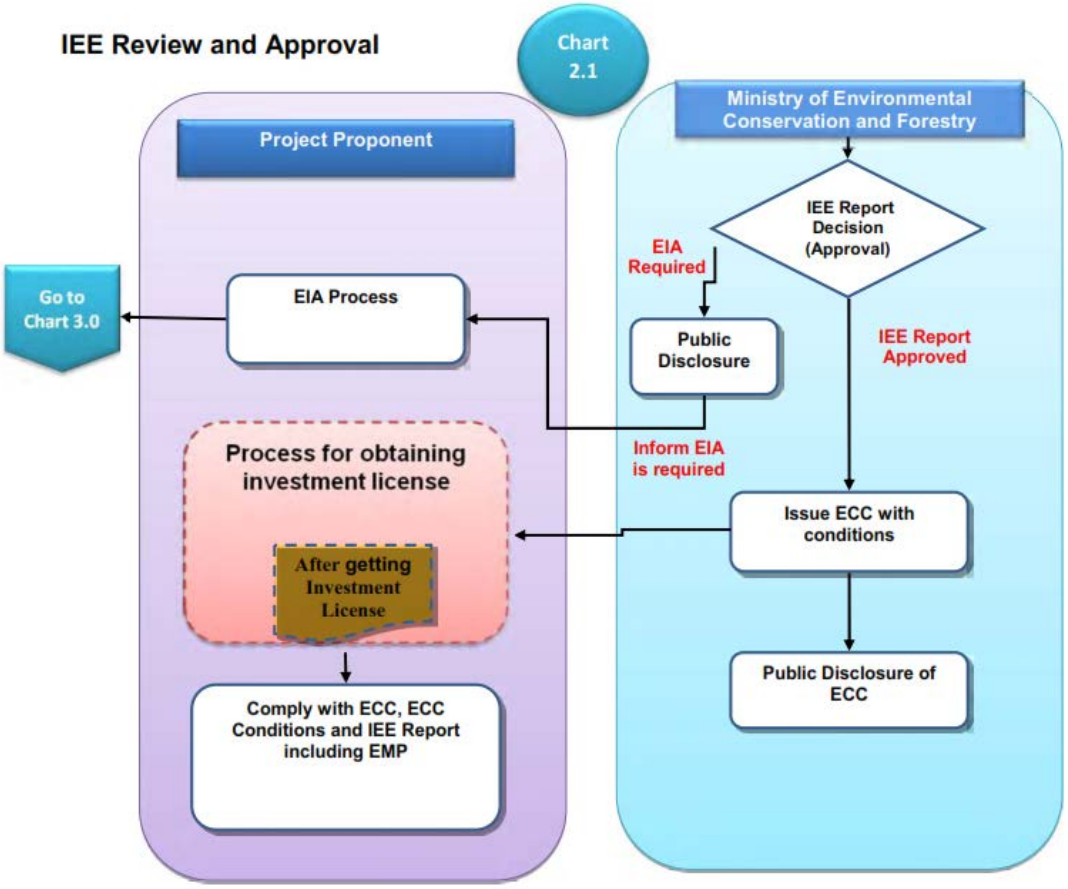


Figure 3.1- IEE Review and Approval Process

3.1. Proponent's Environmental, Social and Health Policies

The main policy and commitment of Century Bright Gold Co., Ltd. (CBG)will be identified in the following points:

- the protection of public safety, the health and safety of the workforce and the local communities;
- the protection of the environment and the conservation of biodiversity and ecosystems;
- the compliance with Myanmar laws, regulations and industrial standards regarding the environment, health, safety and hygiene at work in all of our operations;
- seek and achieve continuous improvement in our processes, consistent with our strategic objectives and priorities, by adopting the most advanced systems for environmental protection and energy efficiency; and
- creating a culture in which CBG employees, Contractors and Visitors share these commitments and understand that working safely is a condition of employment.

Sustainability Policy

CBG's sustainability model is "To operate in a sustainable manner means to create value for stakeholders, and to use resources so that the needs of future generations will not be compromised, respecting people, the environment and the society as a whole." ----- adheres to a sustainability policy, which is composed of the following principles:

- *Stakeholder relations* – "Engaging stakeholders and involving them in company's business are both prerequisites for sustainability and for the construction of reciprocal value."
- *Human Rights* – "The respect of Human Rights represents the basis for an inclusive growth of societies, of the territories and, consequently, of the companies that work there."
- *Relations with communities and contribution to local development* – "Dialogue, the respect of local communities, the evaluation of impacts are all preconditions for an effective cooperation, targeted at creating territorial value."
- *Climate strategy* – "To satisfy the world's energy demand, by containing, at the same time, emissions of gases that have an impact on climatic change, is one of the greatest challenges of modern society."

3.2. Laws and Regulations Related to the Proposed Project

Myanmar has promulgated several laws and regulations concerning protection of the Environment. The following table describes laws and regulations directly or indirectly associated with the proposed project.

Table 3.1. Relevant Environmental Laws and Regulations in Myanmar

Laws and Regulations	Year	Purposes
Constitution of the Republic of the Union of Myanmar (Articles 24,45,349,359)	2008	To conserve the natural environment, To prevent and upgrade the rights and lives of the workers
Environmental Conservation Law (Law No.7(o), 14,15,24,25,29)	2012	To enable to implement the Myanmar National Environmental Policy; To enable to lay down the basic principles and give guidance for systematic integration of the matters of environmental conservation in the sustainable development process;
Environmental Conservation Rules (Rule 55, 69 (a), (b))	2014	To implement correctly according to the environmental management plan
IEE Procedures (Article 102 to 110, 113, 115, 117)	2015	To develop the environmental impacts and to draw the environmental management plan;
National Environmental Quality (Emission) Guidelines (Section 2.1.9)	2015	These national Environmental Quality (Emission) Guidelines (hereafter referred to as Guidelines) provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.
The Protection of rights of National Race Law, (Law No. 5)	2015	Consists of four bills, as submitted to the legislature; Buddhist Women's Special Marriage Bill, Religious Conversion Bill, Monogamy Bill and Population Control Bill.
Myanmar Investment Law (Law No. 50(d), 51, 73)	2016	To develop responsible investment businesses which do not cause harm to the natural environment and the society for the benefit of the Union and its citizens
Labour Organization Law, (Law No. 1,7 to 11)	2011	This Law was enacted, 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

The Settlement of Labour Dispute Law, (Law No. 38, 39, 40, 51)	2012	The Pyidaungsu Hluttaw hereby had enacted this Law for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace.
Employment and Skill Development Law, (Law No. 5, 14, 30(a,b))	2013	To facilitate employment which is appropriate to the age and ability of the job seeker To help workers obtain employment and to provide stability of employment and skills development for employees To help employers obtain appropriate employees
The Leave and Holiday Act, 1951 (Law Amended July, 2014)	2014	To allow worker for leave and holiday allowances, religious or social activities with earn allowance, and benefits for Health allowances. Concerned workers: Daily wage workers/ temporary workers/permanent workers.
Minimum Wages Law (Law No. 12, 13 (a to g)	2013	This Law was enacted 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,
Payment of Wages Act (Law No. 3,4, 5, 14, 8 with 7,10)	2016	(a) Pay in local currency or foreign currency recognized by the Central Bank of Myanmar. This may be in cash, check or deposit into the bank account of Employee. (b) Moreover, pay can be in the means of… (1) Totally in cash OR half the cash and half in things set according to the local price to those employees working in trade, manufacturing and service sectors. (2) Totally in cash OR half the cash and half in things set as local price according to local traditions or common agreement to those working in agriculture and livestock sectors. But, this must be for the sake of the employees and their families. And, it also must be reasonable/fair. (3) An employee shall receive the payment for 60 days when he/she is in Alternative Civil Service.
The Myanmar Insurance Law (Law No. 15, 16)	1993	(a) to overcome financial difficulties by effecting mutual agreement of insurance against social and economic losses which the people may encounter, due to common perils; (b) to promote the habit of savings individually by effecting life assurance, thus contributing to the accumulation of resources of the State; (c) 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.
The Social Security Law	2012	The employers and workers shall co-ordinate with the Social Security Board or insurance agency in respect of

(Law No. 11(a), 15(a), 18(b), 48, 49, 75)		keeping plans for safety and health in order to prevent employment injury, contracting disease and decease owing to occupation and in addition to safety and educational work of the workers and accident at the establishment.
Workman Compensation Act	1951	To protect personal injury caused to a workman by accident arising out of and in the course of his employment and to compensate in accordance with the provisions of Workman Compensation Act
Myanmar Fire Force Law, (Law No. 25)	2015	To take precautionary and preventive measure and loss of state own property, private property, cultural heritage and the lives and property of public due to fire and other natural disasters To organize fire brigade systemically and to train the fire brigade To prevent from fire and to conduct release work when fire disaster, natural disaster, epidemic disease or any kind of certain danger occurs To educate, organize an inside extensively so as to achieve public corporation -To participate if in need for national security, peace for the citizens and law and order
National Food Law,	1997	a)Recommendation on imported and exported food b)Post market surveillance (risk assessment) c)HACCO along with general practice for food inspectors and manufactures d)Food safety training for restaurants, street, vendors, etc.
Public Health Law (Law No. 3, 5)	1972	To promote and safeguard public health and to take necessary measures in respect of environmental health.
The Myanmar Tourism Law, (Section 6 ,7 ,8,9 and 10)	1990	A person desirous of operating any of the following businesses of tourism industry for international tourists or foreign visitors shall apply for a license to the Directorate in the prescribed form: - a) Tourist Enterprise; b) Hotel Business; c)Lodging-House Business; d)Tourist Transport Business; e) Tour Guide Business; f) Businesses, prescribed from time to time as a Tourism Industry by the commission The Directorate may prescribe the types of business to be operated under a license for domestic tourists among the businesses contained in Section 6.
Myanmar Hotel and Tourism Law, (Section 6 ,7 and 8)	1993	A Government Department, Government Organization, an organization in joint-venture with the Government, Municipality, Co-operative Society, otherorganization or person desirous of operating a hotel business or lodging-housebusiness shall, before commencing implementation of the project proposal apply forprior permission to the Ministry in the manner prescribed**.**

Private Industrial Enterprise Law	1990	To narrow down the gap between rural development and urban development by the development and improvement of industrial enterprises; to avoid or reduce the use of technical know-how which cause environmental pollution; to cause the use of energy in the most economical manner.
Forest Law	1992	To implement forest policy and environmental conservation policy, to promote public cooperation in implementing these policies, to develop the economy of the State, to prevent destruction of forest and biodiversity, to carry out conservation of natural forests and establishment of forest plantations and to contribute towards the fuel requirement of the country.
Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law	1994	To protect wildlife, wild plants and conserve natural areas, to contribute towards works of natural scientific research, and to establish zoological gardens and botanical gardens.
Protection and Preservation of Cultural Heritage Regions Laws (Law No. 15, 16)	1998	To implement the protection and preservation policy with respect to perpetuation of cultural heritage that has existed for many years; to protect and preserve the cultural heritage regions and the cultural heritage.
Prevention and Control of Communicable Diseases Law (Law No. 3, 4, 9, 11)	1995	To prevent the outbreak of Communicable Diseases, by implementing following project activities: - (a) immunization of children by injection or orally; (b) immunization of those who have attained majority, by injection or orally, when necessary; (c) carrying out health educative activities relating to Communicable Disease.
The Control of Smoking and Consumption of Tobacco Product Law (Law No. 9)	2006	To convince the public that health can be adversely affected due to smoking and consumption of tobacco product and to cause refraining from the use of the same; To protect from the danger which affects public health adversely by creating tobacco smoke-free environment; To obtain a healthy living style of the public including child and youth by preventing the habit of smoking and consumption of tobacco product;
Conservation of Water Resources and Rivers Law (Law No. 8, 11(a), 13, 19, 24(b), 30)	2006	To conserve and protect the water resources and rivers system for beneficial utilization by the public; to prevent environmental impact.
Myanmar Port Authority Law	2015	"Any person who by himself or another so casts or throws any ballast or rubbish or any such other thing or so

		discharges any oil or water mixed with oil, or the master of any vessel from which the same is so cast, thrown or discharged, shall be punishable with fine not exceeding fifty thousand kyats, and shall pay any reasonable expenses which may be incurred in removing the same".
Agricultural Land Law	2012	To protect the rights of the people who are working on the farm.
The Protection and Preservation of Antique Objects Law (Law No. 12,15 20)	2015	To implement the policy of protection and preservation for the perpetuation of antique objects; To protect and preserve antique objects so as not to deteriorate due to natural disaster or man-made destruction; To uplift hereditary pride and to cause dynamism of patriotic spirit by protection and preservation of antique objectives; To have public awareness of the high value of antique objectives; To carry out in respect of protection and preservation of antique monuments in conformity with the International Convention and Regional Agreement ratified by the State.
The Protection and Preservation of Ancient Monuments Law (Law No. 12,15 20)	2015	To implement the policy of protection and preservation for the perpetuation of ancient monuments; To protect and preserve ancient monuments so as not to deteriorate due to natural disaster or man-made destruction; To uplift hereditary pride and to cause dynamism of patriotic spirit by protecting and preserving ancient monuments; To have public awareness of the high value of ancient monuments; To protect and preserve ancient monuments from destruction; To search and maintain ancient monuments; To carry out in respect of protection and preservation of ancient monuments in conformity with the International Convention and Regional Agreement ratified by the State.
the Prevention of Hazard from Chemical and Related Substances Rules (Law No. 8,15,16,17, 20, 22, 23,	2013	Performing the sticking pictogram for being least the health impacts and accident injuries in the occupational area according to the prescribed standards and norms of the Globally Harmonized System GHS); Making the necessary arrangements to be safety of the occupational area and issuing orders and directives for preventing and decreasing the accident; Laying down the proliferation plans on knowledge, and safety of chemical and related substances to

27)		administrators, license holders, public and workers; Cooperating with local and foreign governmental departments, organizations and non-governmental organizations in respect of safety management for chemicals hazard.
The Freshwater Fisheries Law (Law No. 36,40,41)	1991	To further develop the fisheries; To prevent the extinction of fish; To safeguard and prevent the destruction of freshwater fisheries waters; To obtain duties and fees payable to the State; To manage the fisheries and to take action in accordance with the Law.
(The PyidaungsuHluttaw Law No.14, 2017) Myanmar Territorial Sea and Maritime Zones Law(Law No.8 (g),(h),(i))	2017	To have security, rule of law and tranquility for the interests of the State in the territorial sea,contiguous zone, exclusive economic zone and continental shelf; To protect and conserve, and excavate natural resourcessystematically for longtermin the territorial sea and maritime zones of the State and to do marine scientificresearches; To protect and conserve from the pollutions on the sea, airspace and impact on marine environment through the territorial sea and maritime zonesof the State.

3.3 International Agreements and Conventions

In addition to the domestic laws listed above, Myanmar is also a signatory to the followinginternational conventions, and these may have relevance to the proposed survey activities. Refer to the following Table.

Table 3.2. International Agreements and Conventions Relevant to the Proposed Project

International Agreements and Conventions	Status	Purposes
Vienna Convention for the Protection of the Ozone Layer, 1985	1998	Aims at the protection of the ozone layer, including requirements for limiting the production and use of ozone depleting substances.
Montreal Protocol on Substances that Deplete the Ozone Layer, 1989	1993	Aims at the protection of the ozone layer, including requirements for limiting the production and use of ozone depleting substances.
Basel Convention, 1989	2015	The Convention regulates the trans boundary movements of hazardous wastes and provides obligations to its parties to ensure that such wastes are managed and disposed of in an environmentally sound manner.
United Nations Framework	1995 and	Provide a framework for intergovernmental efforts to tackle climate change. Recognises that the climate

Convention on Climate Change (UNFCCC), New York, 1992 and Kyoto Protocol 1997	2005	system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases.
Convention on Biological Diversity, Rio de Janeiro, 1992	1994	Aims to promote national policies for the conservation of wild flora, fauna and habitat that needs to be included in planning policies. The three main goals are: (1) the conservation of the biological diversity; (2) the sustainable use of its components; (3) fair and equitable sharing of the benefits.
Asia Least Cost Greenhouse Gas Abatement Strategy (1998 ALGAS)	1998	Develop national and regional capacity for preparation of GHG inventories. Assist in identifying GHG abatement options and preparation of a portfolio of abatement projects for each country.
United Nations Agenda 21	1997	Formed by the National Commission for Environmental Affairs (NCEA) in Myanmar. Provides a framework of programmes and actions for achieving sustainable development in the country. Building on the National Environment Policy of Myanmar, takes into account principles contained in the Global Agenda 21. Myanmar Agenda 21 also aims at strengthening and promoting systematic environmental management in the country.
Relevant ILO Conventions in force in Myanmar • C1 Hours of Work (Industry) • C14 Weekly Rest (Industry) • C17 Workmen's Compensation (Accidents) • C19 Equality of Treatment (Accident Compensation) • C26 Minimum Wage Fixing Machinery • C29 Forced Labour Convention • C42 Workmen's Compensation (Occupational Diseases) Revised 1934 • C52 Holidays with Pay • C87 Freedom of Association and Protection of the Right to Organize		Sets out legal instruments drawn up by the ILO's constituents (governments, employers and workers) and setting out basic principlesand rights for workers.

3.4 National and International Guidelines for Proposed Project

National Guidelines and Internal standard guidelines are referred for Environmental Management Plan of the proposed project.

1. Environmental Impact Assessment Procedure (2015)
2. National Environmental Quality (Emission) Guidelines (NEQG) (2015)
3. World Health Organization Guidelines (WHO)
4. National Ambient Air Quality Standard (NAAQS), USEPA
5. IFC Guidelines for Waste Management Facilities, 2007
6. IFC Guidelines for Water and Sanitation, 2007
7. IFC, Environmental Health and Safety Guideline for Tourism and Hospitality Development

3.5 National Environmental Quality (Emissions) Guideline for Proposed Project

Tourism and Hospitality Development

This guideline 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 3.3 - Effluent Levels forTourism and Hospitality Development

Parameter	Unit	GuidelineValue
5-day Biochemical oxygendemand	mg/l	50
Chemical oxygendemand	mg/l	250
Oil andgrease	mg/l	10
pH	S.U.[a]	6-9
Total coliformbacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

[a]Standardunit

Air Quality

General guideline values for air emissions are described in current NEQG and the project shall apply theses guideline values for air quality parameters such as SO_2, NO_2, particulate matters (PM_{10} and $PM_{2.5}$).

Noise

Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive pointof reception. Noise impacts should not exceed the levels shown below, or resultin a maximum increase in background levels of three decibe lsat the nearest receptorlocation off-site.

InNEQG, the noise level is setas shown in Table below and noise prevention and mitigation measures should be taken by all projects where the predicted or measured noise impacts from aprojectfacility oroperation exceed the applicable noise level guideline at the most sensitive point of reception. Noise impact should not exceed the levels shown below, or result ina maximum increase in background levels of three decibel satthen earest offsite receptor location.

Table3.4-Noise Levelset in NEQG

Receptor	OneHourL_{Aeq}(dBA)	
	Daytime(7:00-22:00) (10:00-22:00forpublicholidays)	NightTime(22:00-7:00) (22:00-10:00forpublicholidays)
Residential,institutional, educational	55	45
Industrial,commercial	70	70

Source:NEQG(December 2015)

3.6. Statement of Commitments

We, Century Bright Gold Co., Ltd commit to comply with the followings:

a) Comply with the commitments of the environmental and socio-economic development revealed in the Initial Environmental Examination report.

b) Acknowledge and comply the laws, regulations and guidelines associated with the project, included in the report.

c) Give priorities for the occupational health and safety of the workers.

d) Utilize the exact amount of fund as stated in proposed expenditure for cooperate social responsibility funds.

e) Take responsibility for all of the works and absence of the contractors, sub-contractors, officers and representatives of the company in operating the processes.

f) Take responsibility to support after discussion for the impacted people to ensure for their stable livelihood not lower than before the project; and resettlement and rehabilitate the impacted local people, government organizations and other related people and organizations.

g) We, Century Bright Gold Co., Ltd. commit to follow the environmental commitments, mitigation measures, management plans illustrated in the IEE report. We also commit to follow the Environmental Conservation Laws 2012, the Environmental Conservation Rules 2015 that stated in IEE.

(Signature)

Name -

Position -

Date -

Commitment of Third-Party Organization

The IEE report was written by HRD Environmental Training and ServicesCo., Ltd. and IEEs in this report were designed by the following criteria;

(a) The designed IEE complied with the National Constitution, Environmental Conservation Law, EIA Procedures, and National Environmental Quality Guideline.

(b) These environmental impact protection procedures are designed of incident avoiding, mitigation and replacing for the project proponent who commits to follow the environmental impact protection procedure.

(c) This Initial Environmental Examination report is systematically designed not only for environmental impact protection procedures and occupational safety and health but also emergency management planning and social welfare programs.

(d) All facts including in this report are systematically surveyed without bias. As a third party, we commit and take full responsibility for all facts in this report.

Dr. ----------
Principal of Environmental and Social Consultant
HRD Environmental Training and Services Co., Ltd.

4. DESCRIPTION OF PROJECT AND ALTERNATIVES

4.1. Project Background

The Bo Weiisland resort project is a modification of the original concept for the development of the beachfront at in the Bo WeiKyun Island in Southern Myanmar. It intends to create a high-end local and tourism resort that is environmentally friendly and which will directly contribute to the economic development of the region.

4.2 Location of the Project

Bo Weiisland resort is located to the north-west of Kawthong district, Tanintharyi region, at the coordinates of 10° 22′ 9.55″ N Latitude and 97°56′34.00″ E Longitude. Bo Wei Island is around 50nautical miles north-west off themainland fromKawthoung. The location map of project area is shown in the following figure.

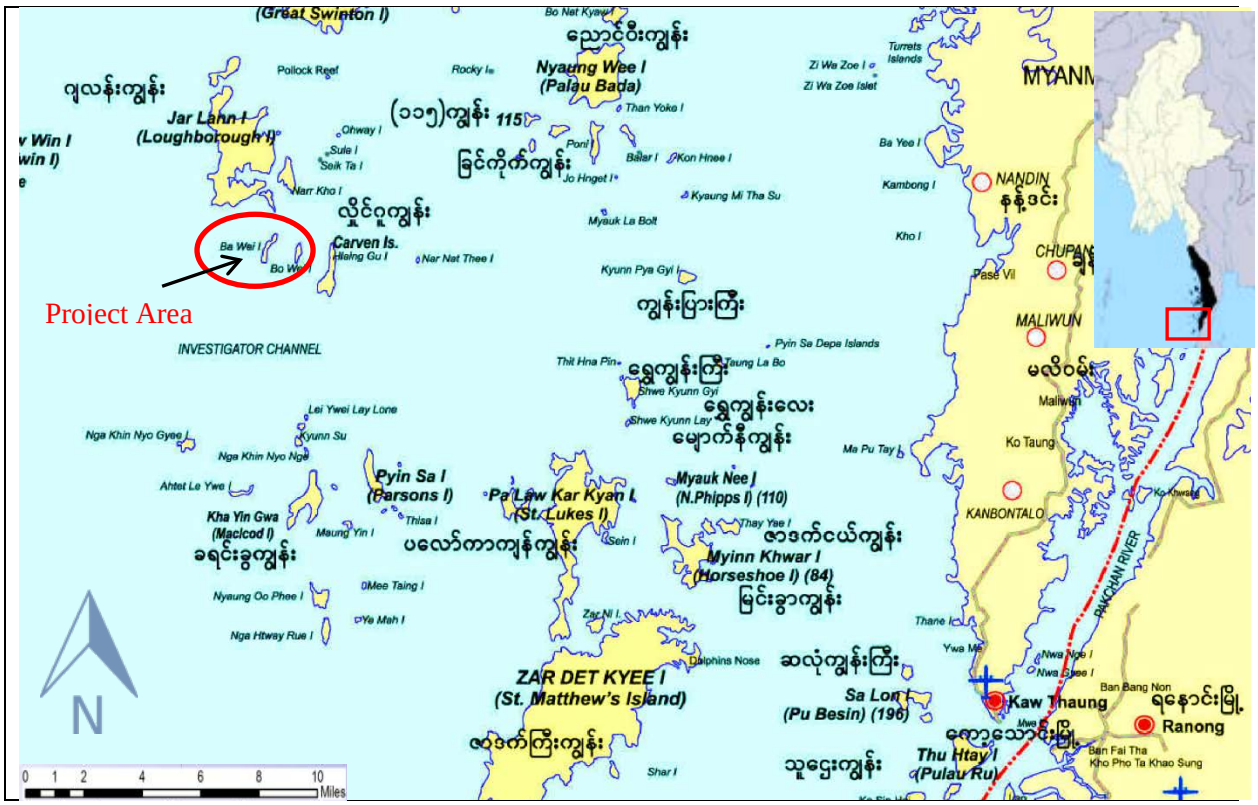


Figure 4.1- Location of Proposed Project

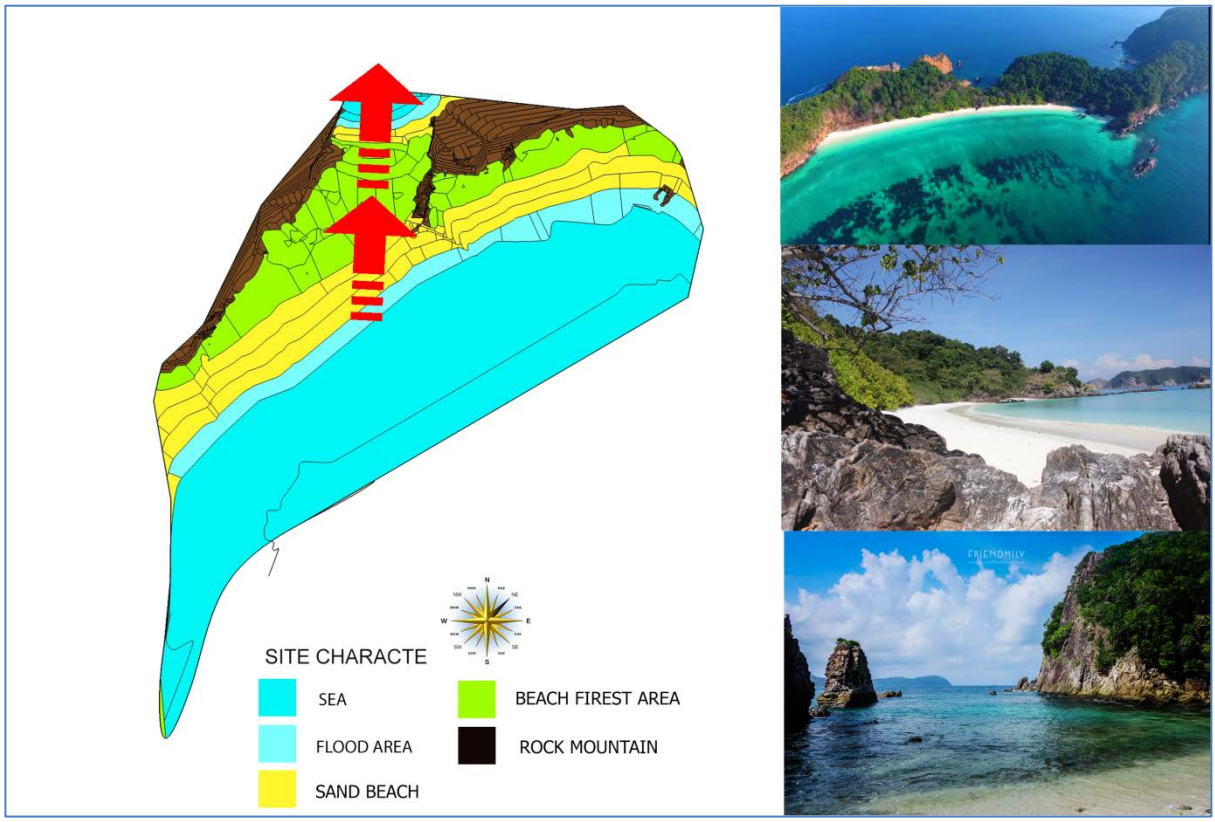
4.3. Land Use

The proposed project will use (11.86) acres containing Plots No.2/OSS Su Nge Bar Laing land mark area and land grants received permission to operate (30 years) for business

purposes. This area is only found scattered forests area including shrubclimberand small trees plantation land without residential area.

4.4. Site Character

Existing condition: topography has original and pure environment with no human habitation except day-trip tourists who take occasionally visit.



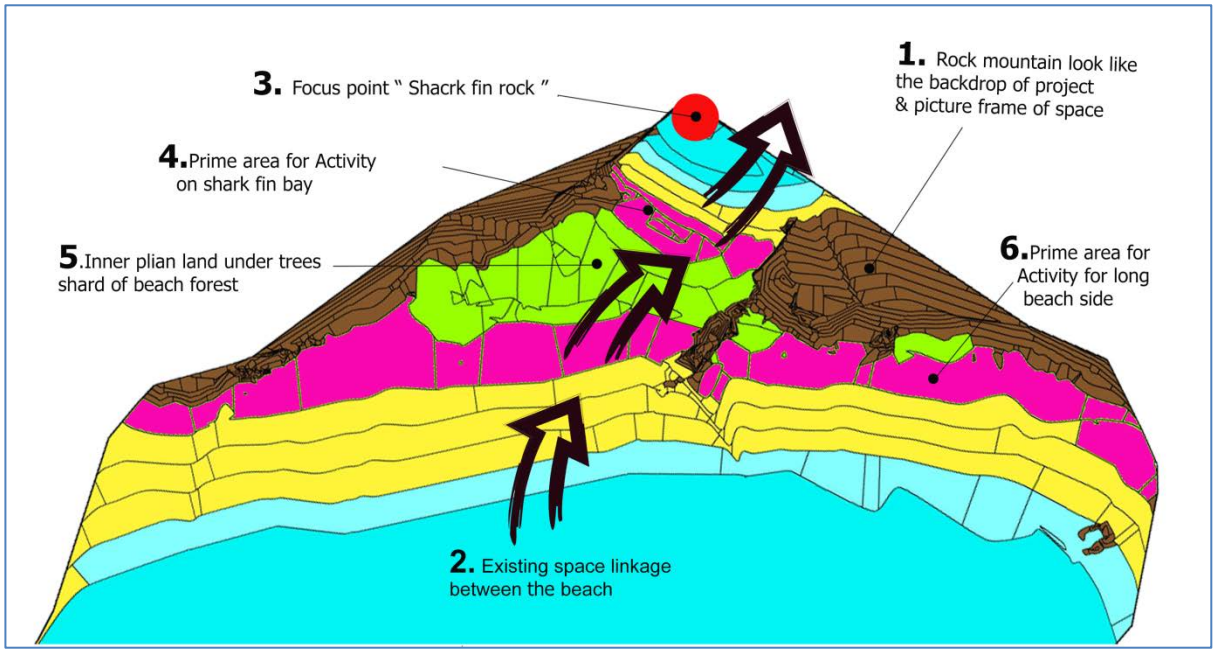


Figure 4,2– Character and Potential of Proposed Project Site

There is stone hills space where low land connects two beaches like “Isthmus”. South beach has continuously 400 meters long while north beach has small bay with steep seashore and special rocks that is well-known by tourists as “Shark Fin bay”.

4.5. Site Layout

CBG intend to build level 5 stars passive exclusive re-creationresort construction activities on the 11.86 acres site. The layout of the building footprints of the site is shown at Figures 4.1& 4.2. Also indicated is the proposed master plan for the construction works. It can easily be noted that the island is stone hills space where low land connects two beaches like “Isthmus”. Some parts of islands with approximately 4 acres are the main lobby and president suit will occupy exiting space linkage between the beaches, privatebungalow and honeymoon villaswill take up on long beach side. The purpose projects construction activities including total numbers of 127 rooms. Room units are Private bungalow 3keys, President4 keys and Honeymoon suite11 keys.

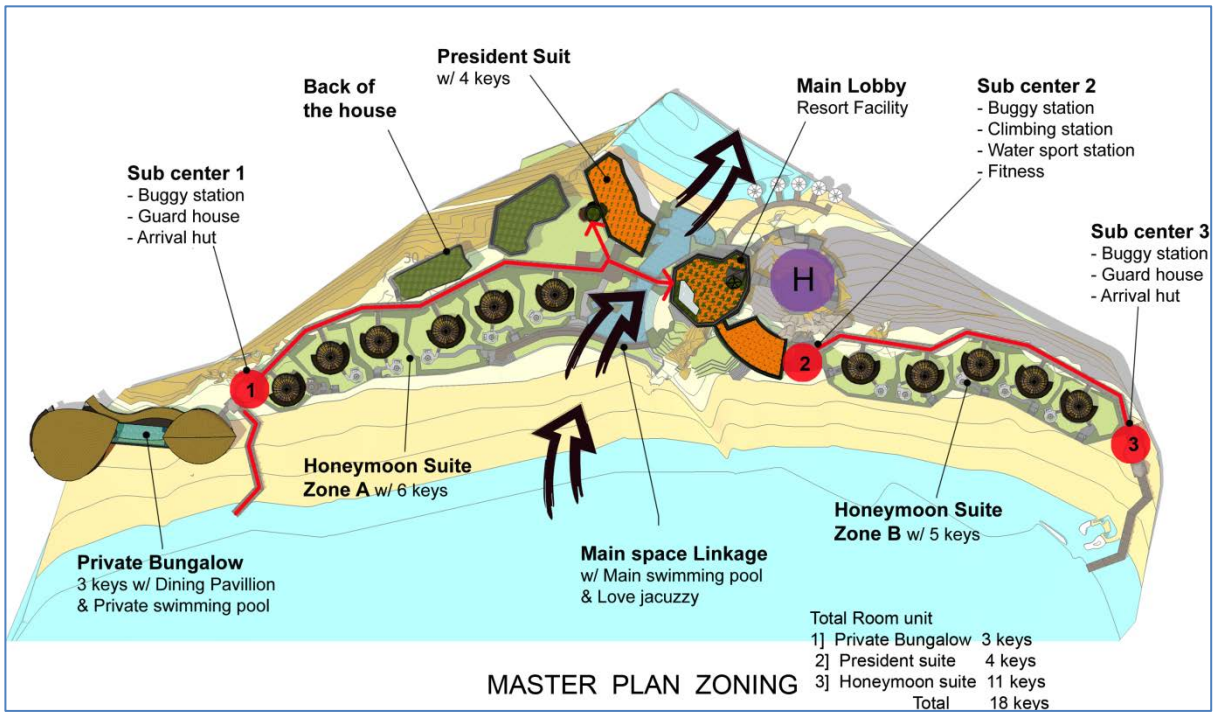


Figure 4.3- Master Plan Zoning

Figure 4.4- Master Plan of Proposed Project

4.6. Construction Schedule

The total construction period for the proposed development is approximately 1year i.e. the starting of the project will be start date is subject to government approval process.

4.6.1. Site Preparation Activities

Plant rescue and nursery: Initial activities on the site will entail identifying and establishing the plant nursery to which will be removed selected plants and seedlings taken from the areas to be covered by buildings. This will be done by a landscape contractor in charge of a team engaged in the selection and removal of desirable plant material. This will be done more or less simultaneously with the general clearance of the underbrush on the building areas such that all large trees are left and the buildings and adjacent access areas can be pegged out. To the greatest extent possible, building footprints will be laid out and oriented so as to minimize the removal and loss of trees. The area of removal will also take into account the need for clear space around each building for the passage of construction equipment.

Construction camp: This site will allow use of the existing underpass to access the site and minimize highway traffic disruptions caused by movement of construction works equipment. The establishment of the camp (access roads, temporary office buildings, earth materials stockpiles, equipment and material stores, maintenance yard, etc.) will entail loss of trees occurring at that site (approx. 1 acre).

Water supply:The plant nursery, construction camp and site works will require a supply of water. The water requirement for the all construction activities and workers except drinking water will be supported from the existing tube wells; two installed 4-inch diameter (Ø) pipe. There is one overhead tank existing near the staff quarter. This tank is meant for temporary storage of water during primary stage of construction.

4.6.2 Resort FacilitiesInfrastructure

The construction phase has planned according to master plan. The proposed Island Resort will include the following main infrastructures;

- Main lobby
- Fitness Sauna
- President Suite
- Honeymoon Suite

- Private Bungalow
- Deluxe & Back of House

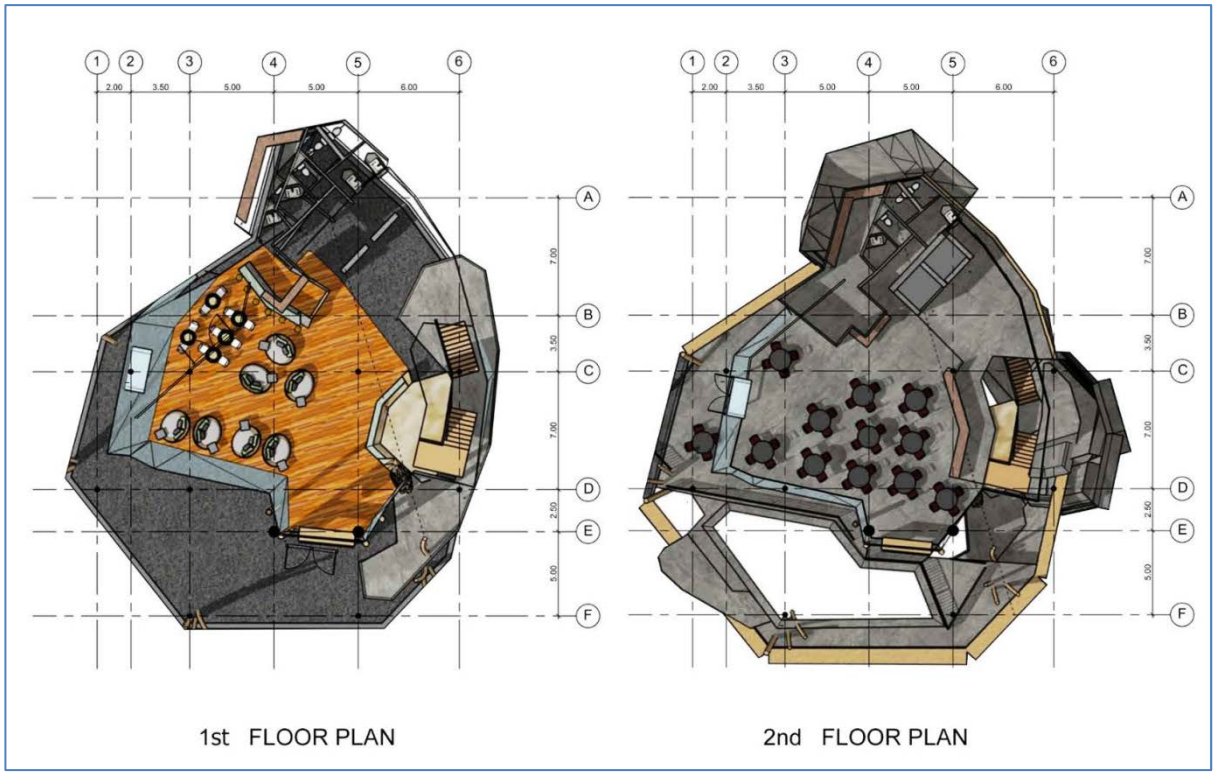
The guidelines and publications provided by the internationally accepted eco-friendly and sustainable ways of design, construction and operation of resorts and buildings. The modular components that will be used for the resort buildingswill aim at minimum consumption of plastic, glass and steel materials to be sustainable and eco-friendly. The design is in such a way that uses a lot of open and empty spaces to aid ventilation and air supply will be prominent. The roof is covered by imitation thatch made from recycled plastic. The construction is by assembling these modular components at site reducing the effect of construction.

(a) Main Lobby

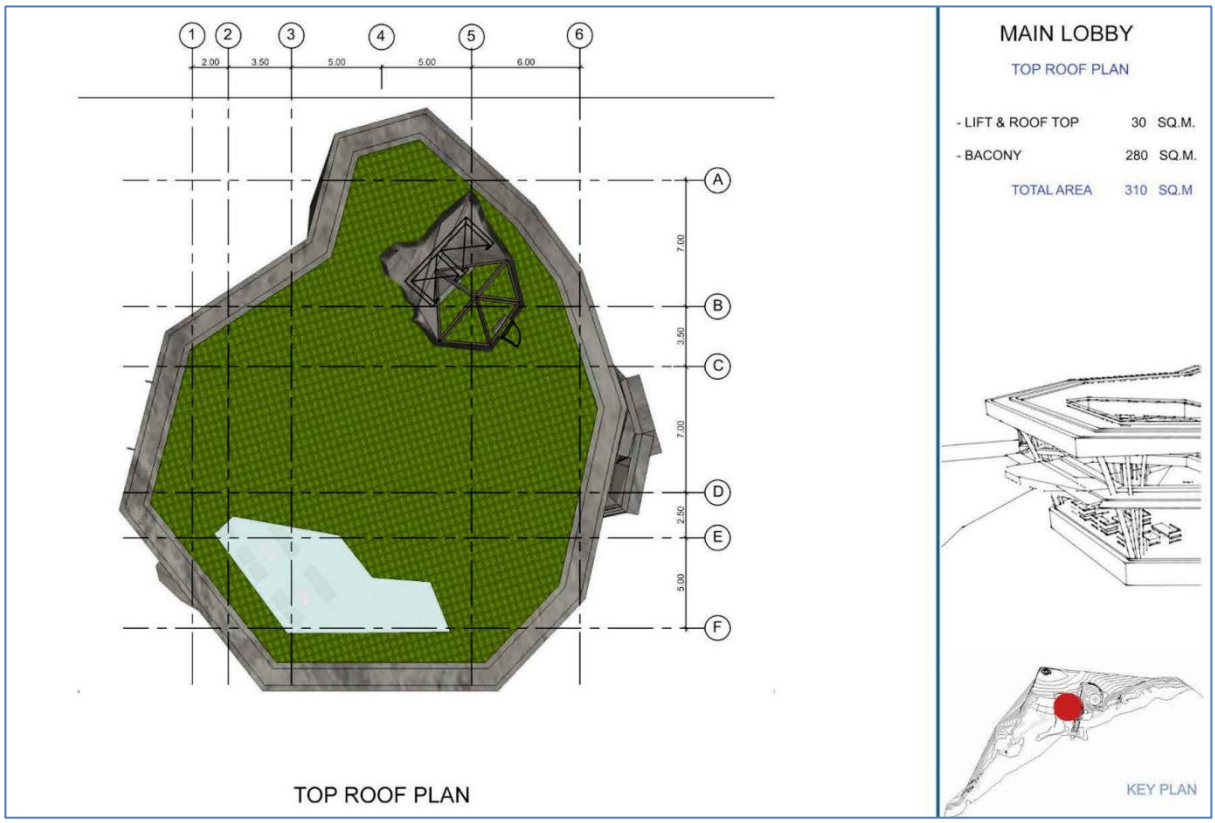
Main lobby is two stories arrival building consists ofreception,bar, lobby and restaurant facility. The total building area is 941sq.m.

Main Lobby area in square meter			Total area
1st floor	Bar&lobby Toilet & WC Lift lobby Reception Terrace	145 15 20 20 130	330
2nd Floor	Restaurant Toilet & WC Lift lobby Kitchen Terrace	206 15 20 30 30	301
Top roof	Lift&roof top Balcony	30 280	310

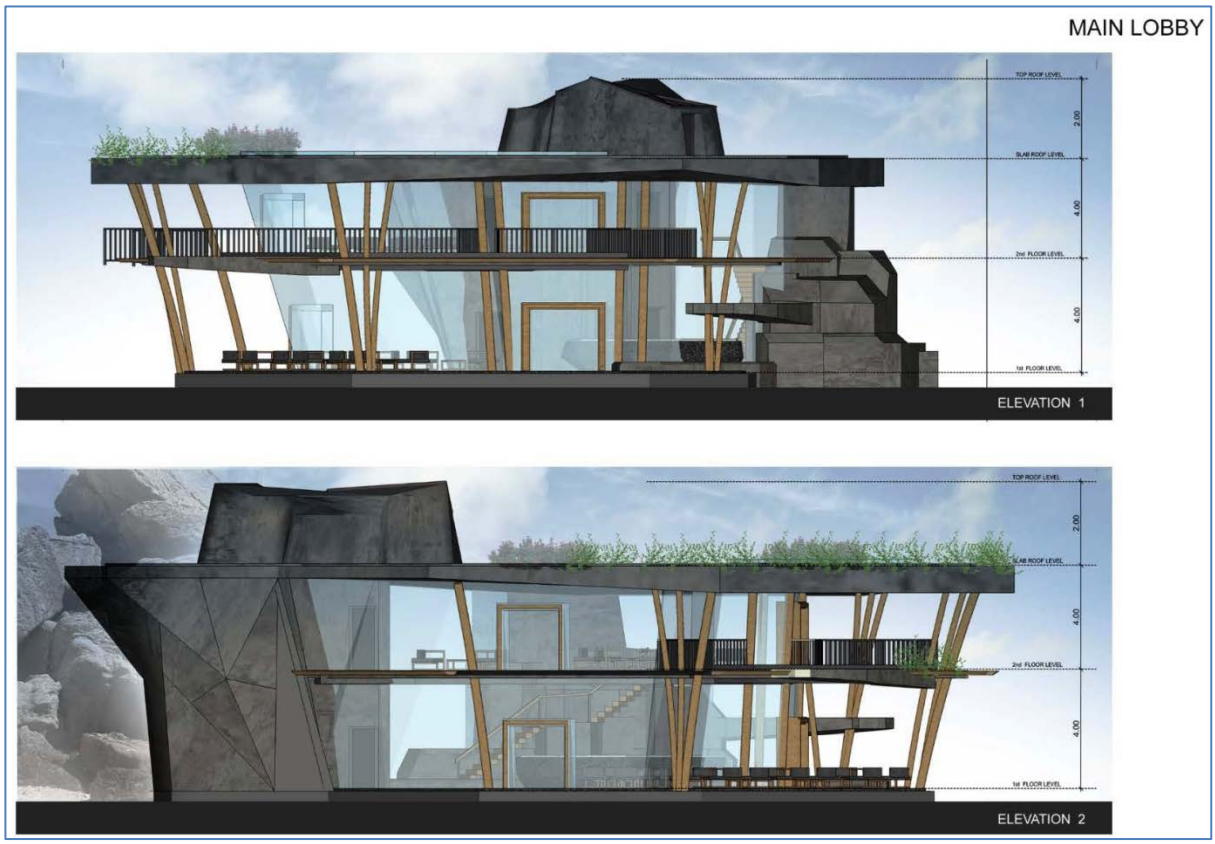
Main Lobby Perspective



1st& 2ndFloor Plan



Top Roof Plan



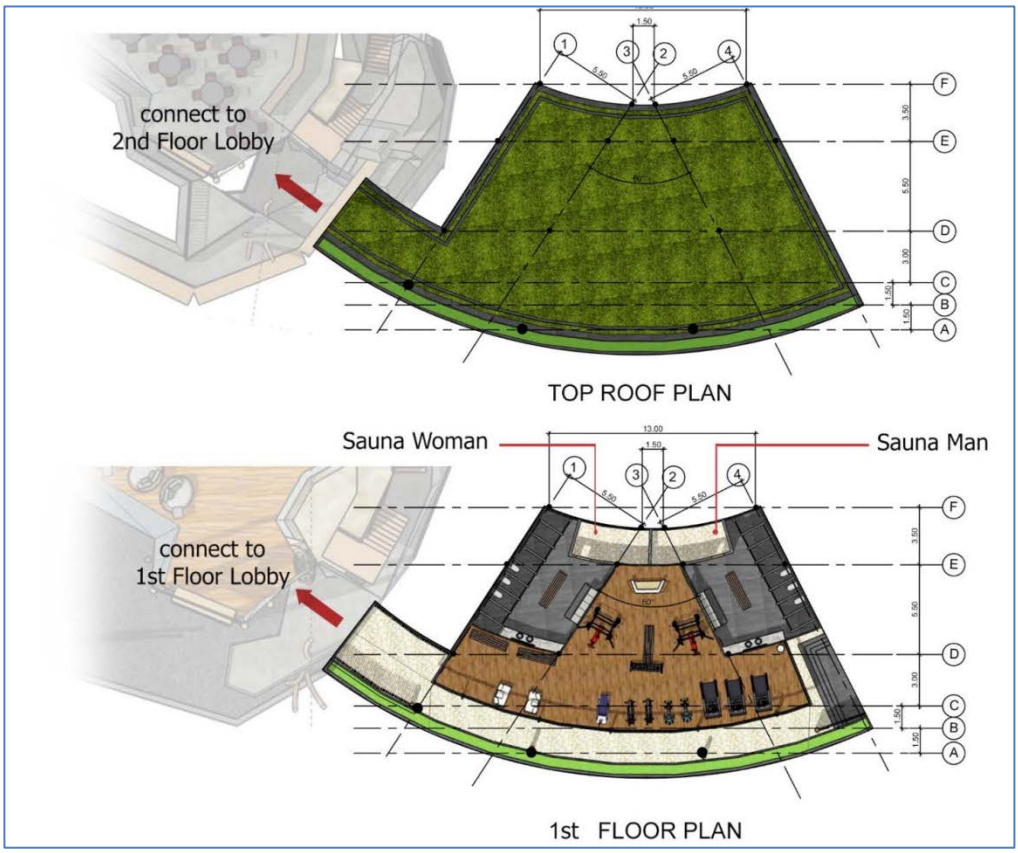
Main Lobby Elevation

(b) Fitness Sauna

Fitness Sauna is connected to Main lobby. The total building area is 222 sq.m.

Fitness Sauna area in square meter		
Fitness Sauna	Fitness Hall	145
	WC /Man	16
	WC /Woman	16
	Locker/Changing	45
Total area		222sq.m

Fitness SaunaPerspective



Tree HousePlan

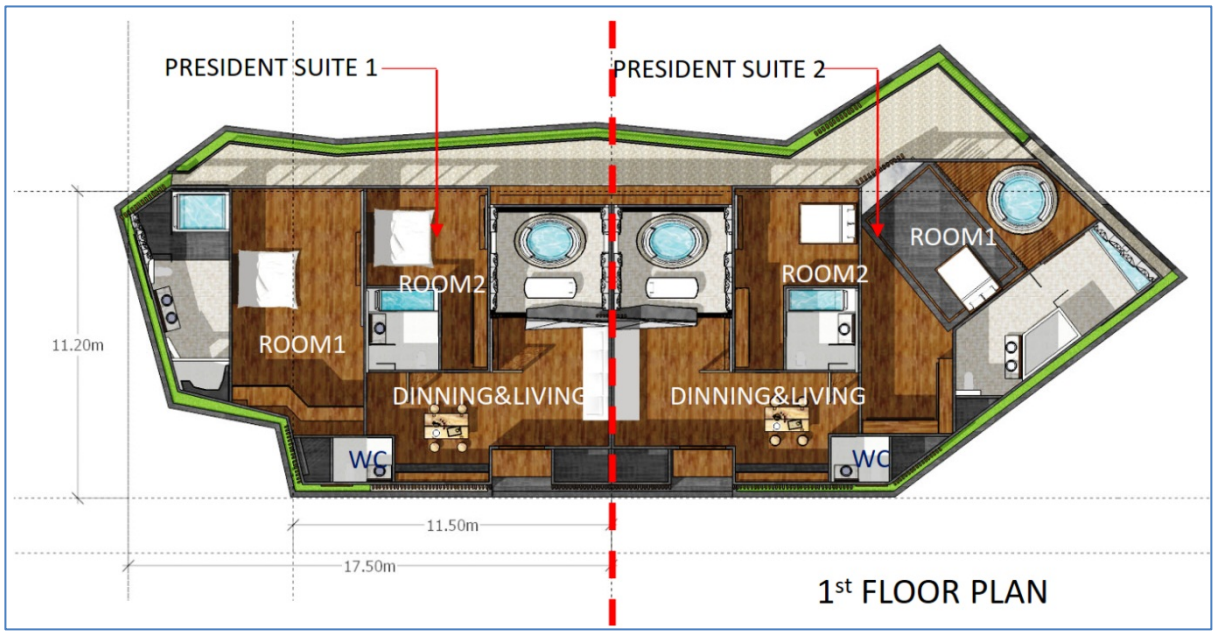
Fitness SaunaElevation

(c) President Suite

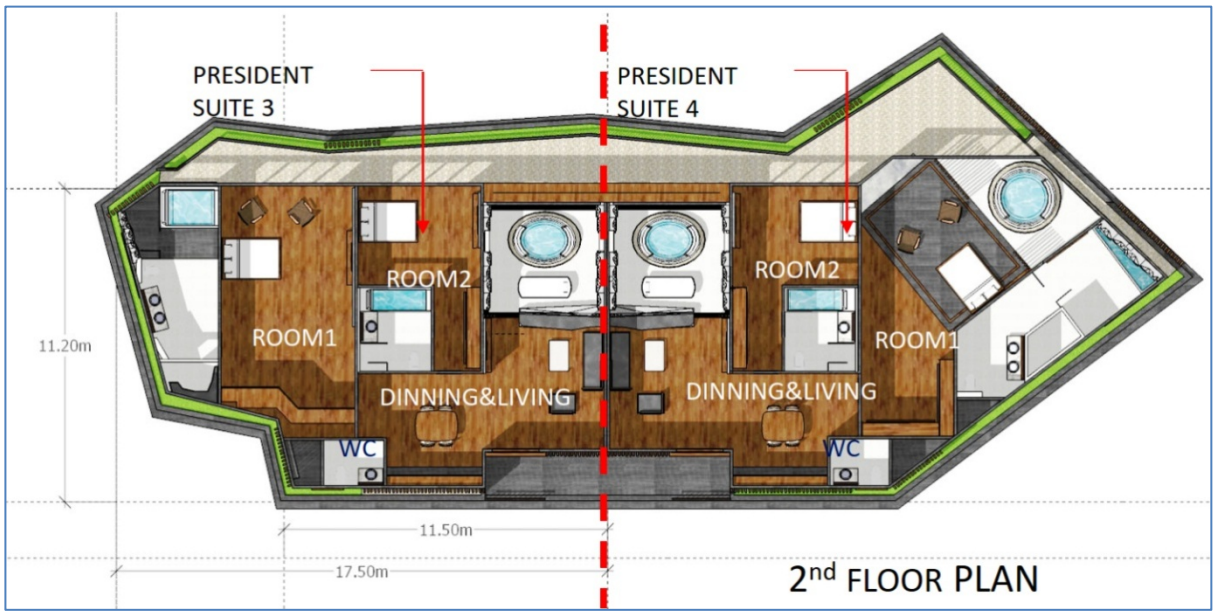
President Suite located in front of main lobby and between the beaches. Two stories building, total areas are 422 sq.m and create interest by outdoor wooden terrace in "beach view" concept.

President Suite area in square meter			Total area
1st floor	Corridor Room area Balcony Stair Storage room	4 315 60 27 16	422
2nd Floor	Corridor Room area Balcony Stair	20 315 60 27	422
Top roof	Stair&roof top Balcony	22 253	275

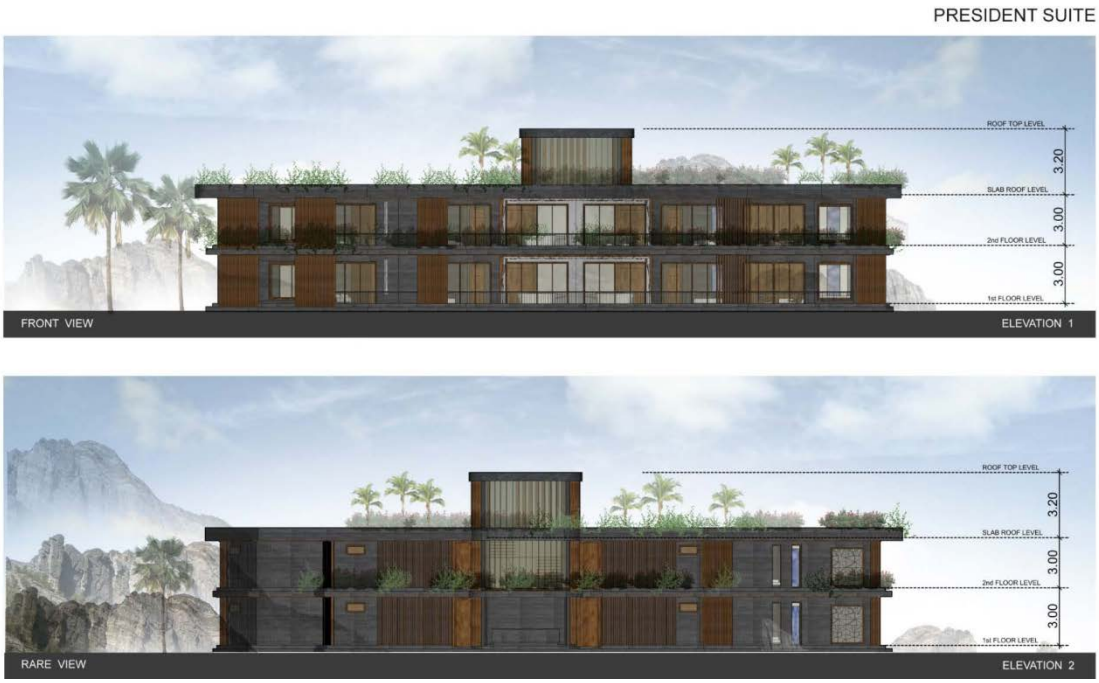
President SuitePerspective



1st Floor Plan of Resident Suite



2nd Floor Plan of Resident Suite



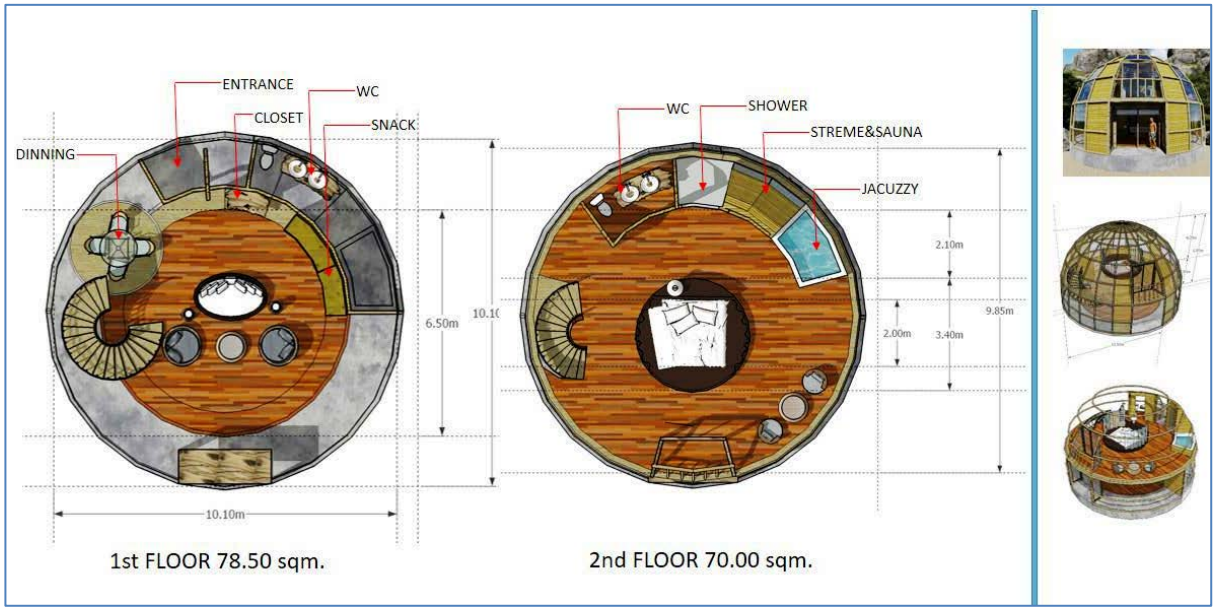
Resident Suite Elevation

(d) Honeymoon Suite

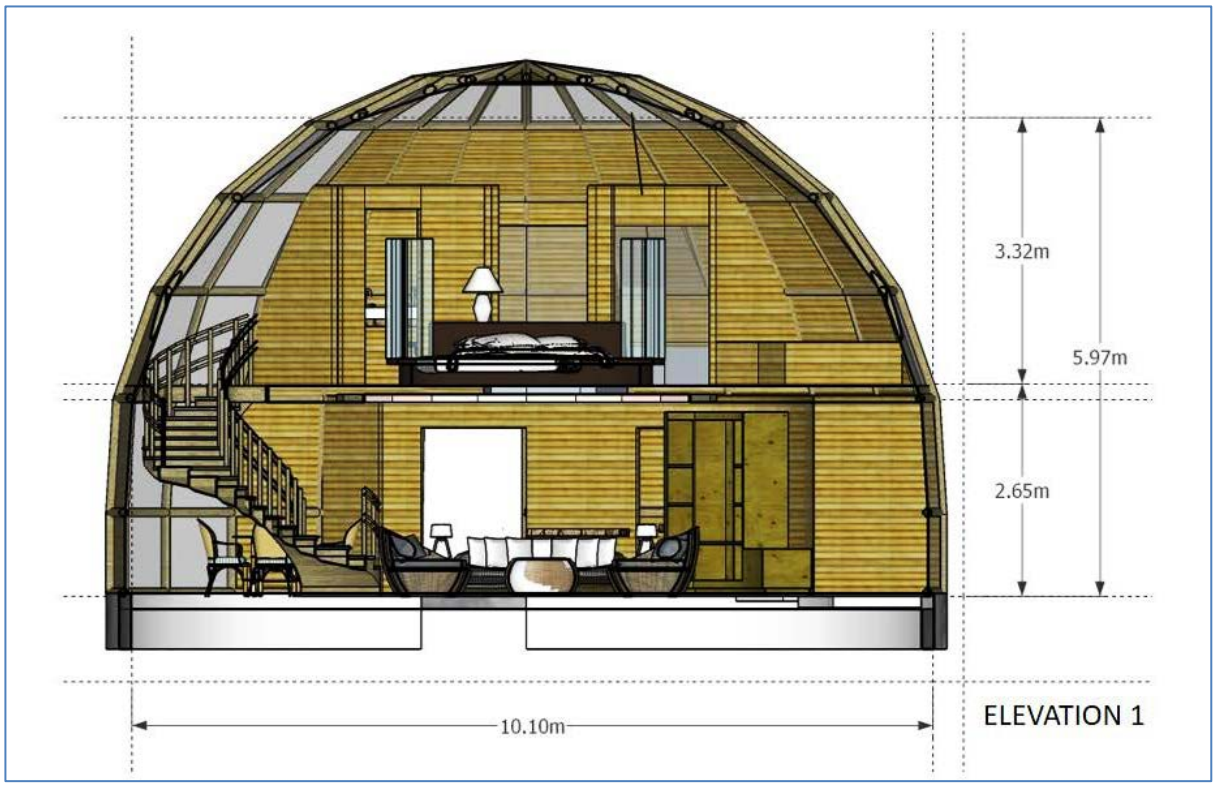
Honeymoon suite or villalocated on long beach side of island.Itincludes two storiesand creates interest by living honeymoon visitors.

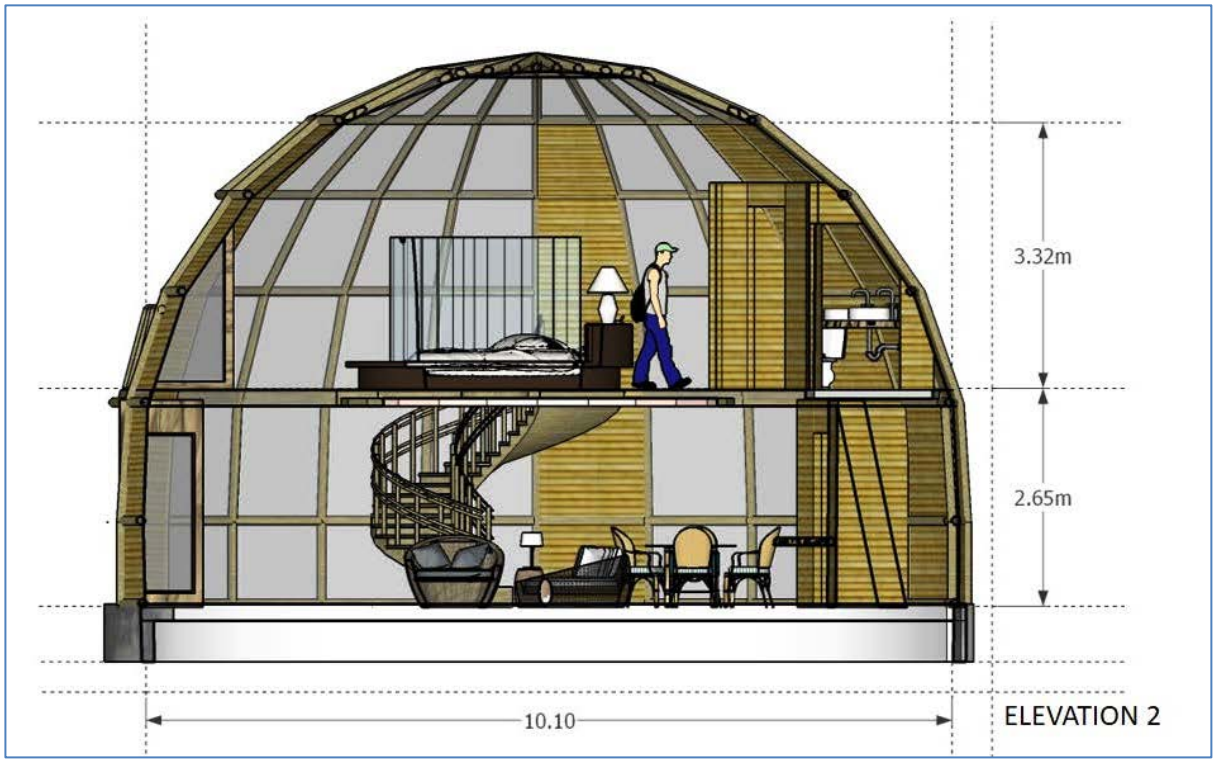
Honeymoon Suite area (square meter / unit)	
1st floor	78.5
2nd floor	70

Honeymoon SuitePerspective



Honeymoon SuitePlan



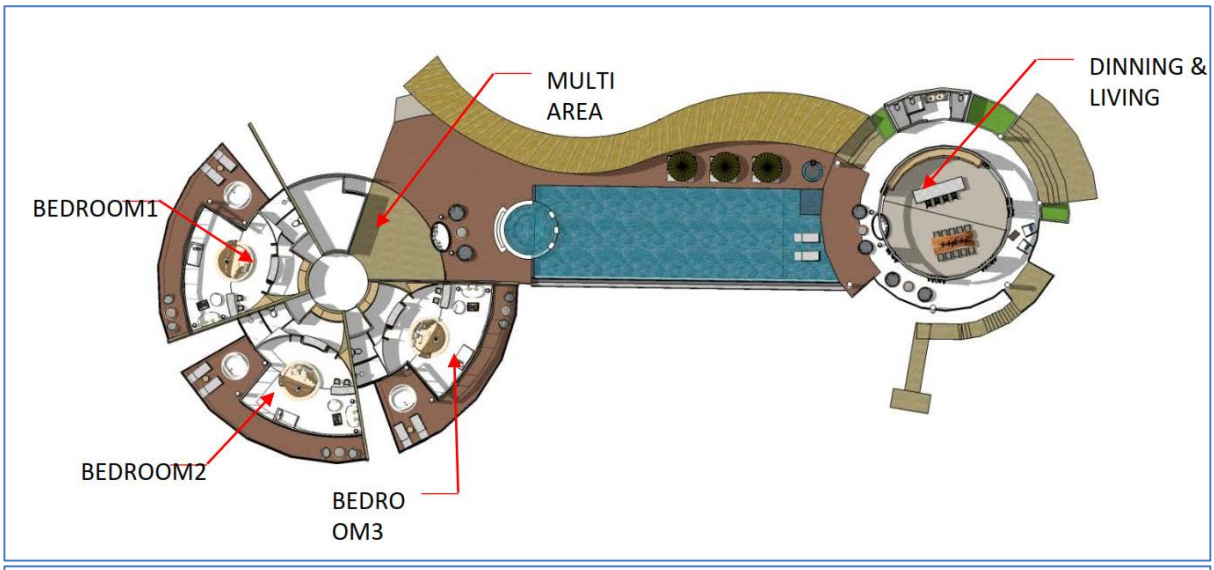


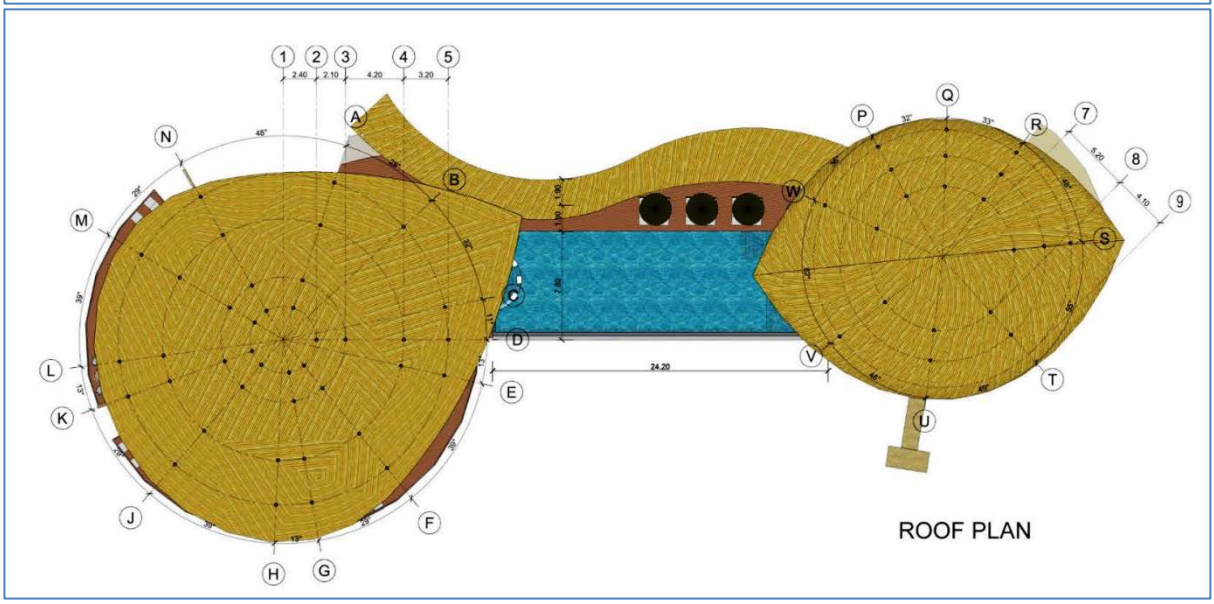
Planand Elevation of Hill Tent

(e) Private Bungalow

Private Bungalow is a president villa located left end of long beach sand dune Background the building is cliff rock and forest. It looks the characteristics of the combine bungalow as a concept in the design of a twin villasconnect with swimming pool.

Private Bungalow area in square meter			Total area
Building 1	Bed room Multi Area Dinning&Living	79 70 73	 222sq.m
Building 2	Dinning Living WC	73 168 12.8	 253.8 sq.m





Private BungalowPlan

Private Bungalow Perspective

Private Bungalow Elevation

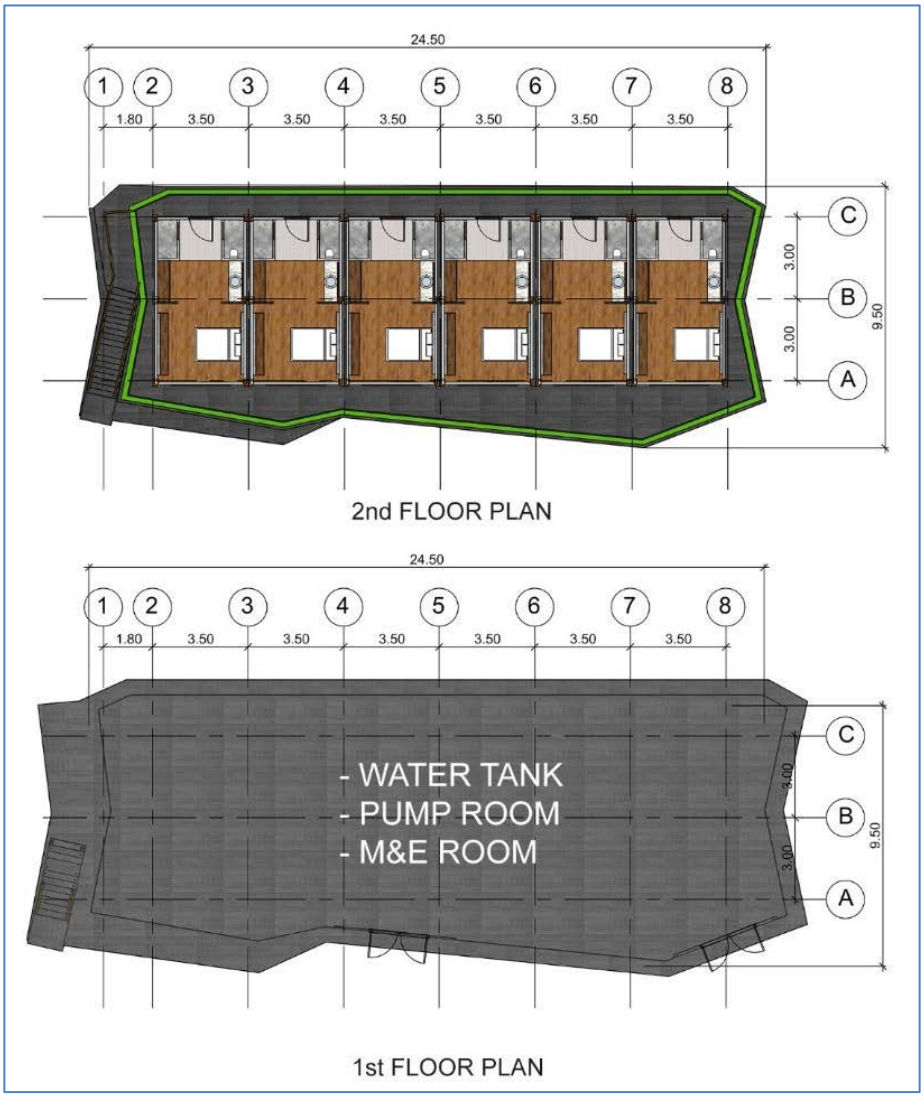
(f) Deluxe & Back of House

Deluxe & Back of Houseare located left position of main space linkage between the two beaches. Thoseareplanned to bepump room, M&E and staff rooms and canteen.

.

Deluxe & Back of Housearea (square meter)			Total area
Deluxe 1st floor	Stair Pump room	65 205	270
2ndfloor	Corridor Room area Balcony Stair	16 60 195 100	217
Back of House 1st floor	Corridor Room area Balcony WC & Stair	26 300 140 34	500
Back of House 2nd floor	Corridor Room area Balcony WC & Stair	26 264 140 70	500

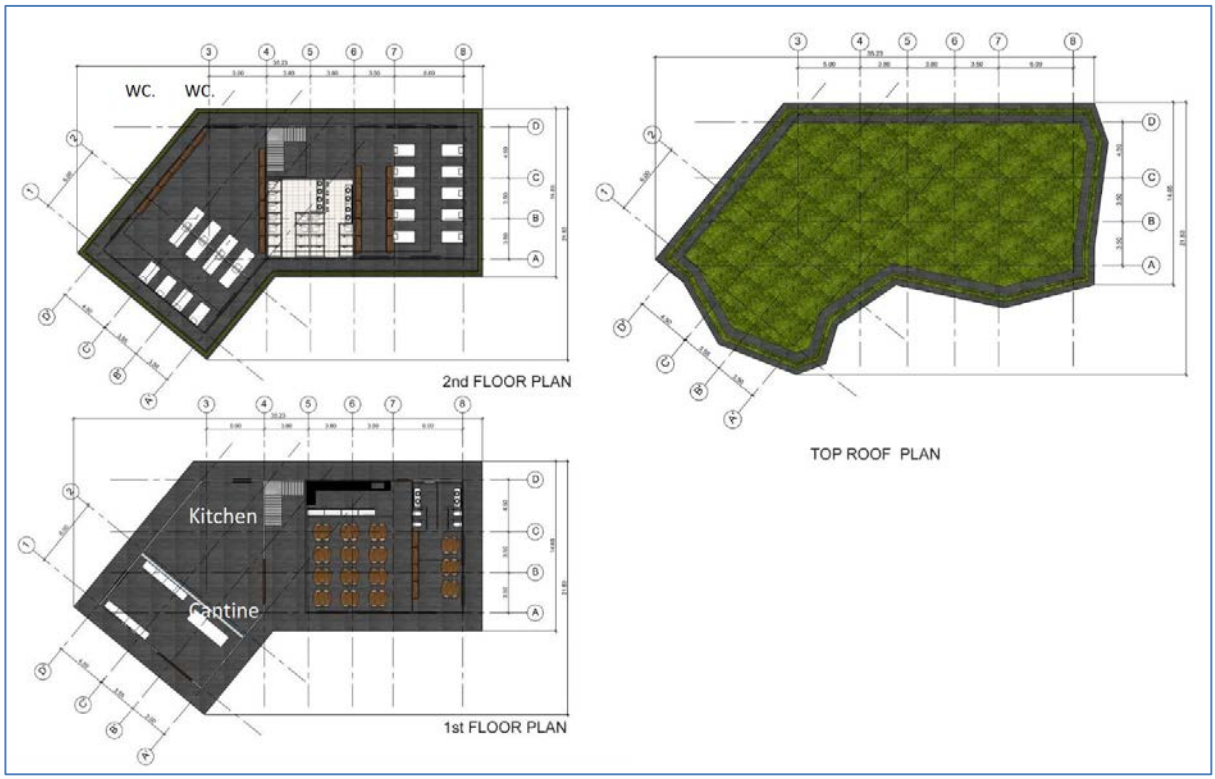
Deluxe & Back of House Perspective



1st& 2ndFloor Plan of Deluxe

Top Roof Plan of Deluxe

Deluxe Elevation



Back of HousePlan

Back of HouseElevation

4.7. Employment

It is estimated that 90 persons (skilled and unskilled) will be employed during construction of the resort. Employee statement of hotel resort is shown in following Table.

Table 4.1- Employee Statement of Hotel Resort

Sr. No.	Designation	Noof Employee
1	Manager	1
2	Accountant	1
3	MarketingOfficer	1
4	Admin /HROfficer	1
5	Technician(Engineering)(M&E)	1
6	Cashier	4
7	Office Staff	5
8	Technician(Assistant)(M&E)	12
9	HousekeepingSupervisor	3

10	SecurityHead	1
11	Receptionist	6
12	LandscapingExpert	1
13	HousekeepingStaff	12
14	BellMan	15
15	Security	15
16	LandscapingWages	5
17	DrivingRange Attendants	6
	Total	90 staff

4.8. Water Supply and Demand

There are the same water supply sources for operation phase as the construction phase. The water requirement will be planning of from the existing tube wells; two installed 4-inch diameter (Ø) pipe. The total estimated demand for water by the resort during full operation is approximately about (300,000 gallons) of water a year. These are meant for use in washing, bathing, cooking, gardening, toilets water and other cleaning activities. Drinking water as purified water will be outsourced. There is a plan to construct a big ground level tank. This ground level tank is meant for guest only. It is planned to install wastewater treatment system for wastewater and grey water. The treated water will be used in gardening, vehicles washing and watering to the roads not to be dusty. The chemical used for treating pond water is liquid chlorine so as to clean up the water.

4.9. Transportation

Operation of the resort will require the transport of guests to and from the airport, primarily in relation to Kawtaung. This will involve scores of speed boat movements in addition to the traffic caused by hotel staff, suppliers, and local visitors.

4.10. Power Requirement and Supply

The estimated power load for the proposed project is approximately200 KVA. The source of power for the resort will be will be supplied by 2 No. Diesel Generators of capacity 300KVA (including one DG set standby)on the islands considering energy consumption associated

with lighting,heating, ventilation, air conditioning (HVAC) systems, cooking and refrigeration equipment.Some critical loads such as emergency lighting, headed equipment of ELV systems etc. shall be additionally backed up using UPS system. The vessels and speed boats also will consume fossil fuels for their operation.The estimated maximum consumption of fossil fuels in the proposed project is approximately92,000 Gallons per year. The resort is planning to have solar power to reduce the fuel consumption.

4.11. Wastewater Treatment System

The total wastewater generated from the project site will be 300 m3/day.Two different types of liquid wastes are expected, used water (grey water) and sewer (black water) form toilets. The used water may include wastewater from laundry with detergents and wastewater from the kitchen with oil and grease. This wastewater generated will be treated in an on-site sewage treatment plant based on Biofiltration process upto tertiary level having total design capacity of 375 m3/day.Raw sewage from various sources is subjected to following treatment to obtain the treated water quality.

The raw sewage will be received at the inlet of the bar screen to trap any floating particles and debris.

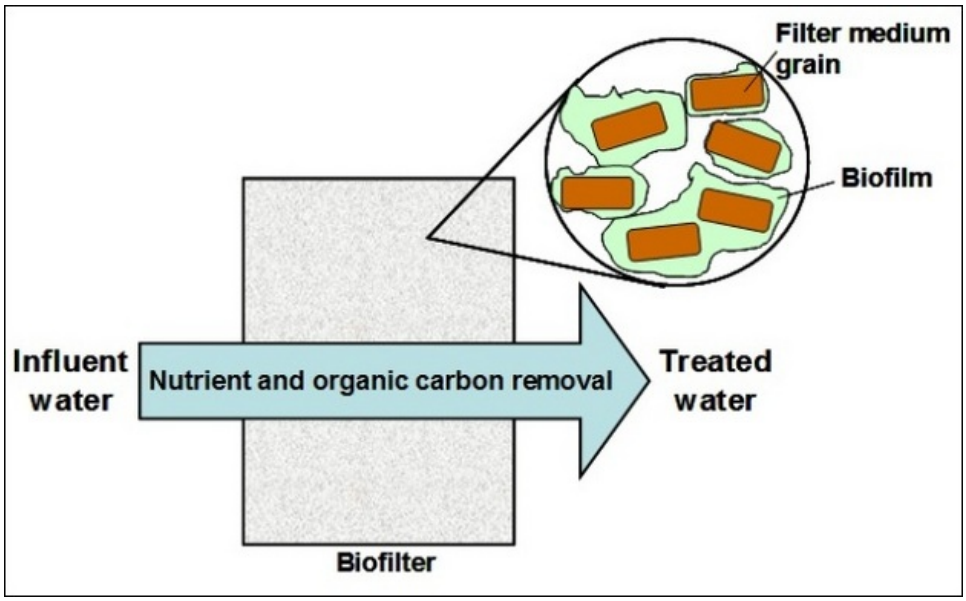
A belt type oil skimmer and grease trap will be provided to remove the floating oil and grease. The oil free effluent overflows to the collection cum equalization tank. The sewage generation is not uniform and is subjected to fluctuation. Hence to maintain a constant flow and to homogenize the sewage quality a suitable retention time is provided in the Equalization tank. Air mixing is also provided toenhance the above process. Aeration tank is designed for average daily flow of 10 hrs retention. Afine screen is placed in between to trap any sharp objects or small particles.

A biofilter is a bed of media on which microorganisms attach and grow to form a biological layer called biofilm. Biofiltration is thus usually referred to as a fixed–film process.Generally, the biofilm is formed by a community of different microorganisms (bacteria, fungi, yeast, etc.), macro-organisms (protozoa, worms, insect's larvae, etc.) and extracellular polymeric substances (EPS) The aspect of the biofilm is usually slimy and muddy.

Water to be treated can be applied intermittently or continuously over the media, via upflow or downflow. Typically, a biofilter has two or three phases, depending on the feeding strategy (percolating or submerged biofilter):

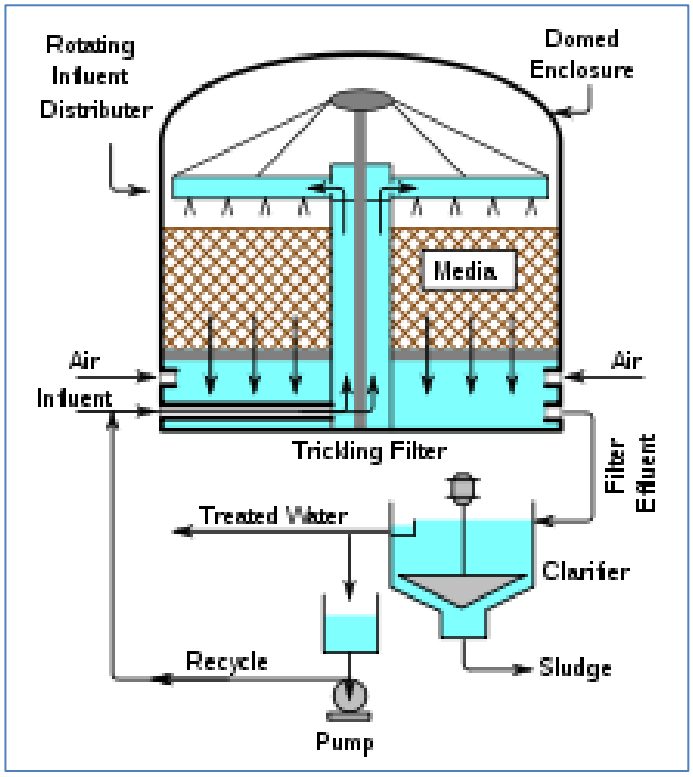
- a solid phase (media);
- a liquid phase (water);
- a gaseous phase (air).

Organic matter and other water components diffuse into the biofilm where the treatment occurs, mostly by biodegradation. Biofiltration processes are usually aerobic, which means that microorganisms require oxygen for their metabolism. Oxygen can be supplied to the biofilm, either concurrently or countercurrently with water flow. Aeration occurs passively by the natural flow of air through the process (three phase biofilter) or by forced air supplied by blowers.



The arrow indicates the direction of water flow. Biofilters contain filter medium grains (e.g., sand, granular activated carbon) that are covered with biofilms. The biofilm activities break down nutrients (e.g., nitrogen and phosphorous-containing compounds) and organic carbon as well as capture other unwanted contaminants in the influent water.In wastewater treatment, nutrient removal is an essential outcome to protect the natural environment from eutrophication and unwanted contamination. Nutrient removal is achieved primarily by biological means; the most common is through the use of activated sludge, which is a mixture of flocs. Flocs are equivalent to biofilms formed in suspension, rather than attached to surfaces, where cells of various species are glued together by EPS, forming a suspended

biofilm having a complex microbial community. This community of cells then breaks down a wide variety of organic compounds as well as nitrogen and phosphorous compounds. Similarly, surface-attached biofilms are used in some wastewater treatment plants in the form of trickling filters.



A Typical Complete Trickling Filter System for Treating Wastewaters

The advantage of utilizing biofilms in water and wastewater treatments is attributed to the 'stickiness' of the biofilm matrix. The complex and heterogeneous EPS matrix often captures and immobilizes organic and inorganic contaminants that need to be removed, such as pathogens, heavy metals, and nanoparticles. The generation of biomass reduces the incoming BOD and COD to greater than 95%.

4.12. Alternatives Analysis

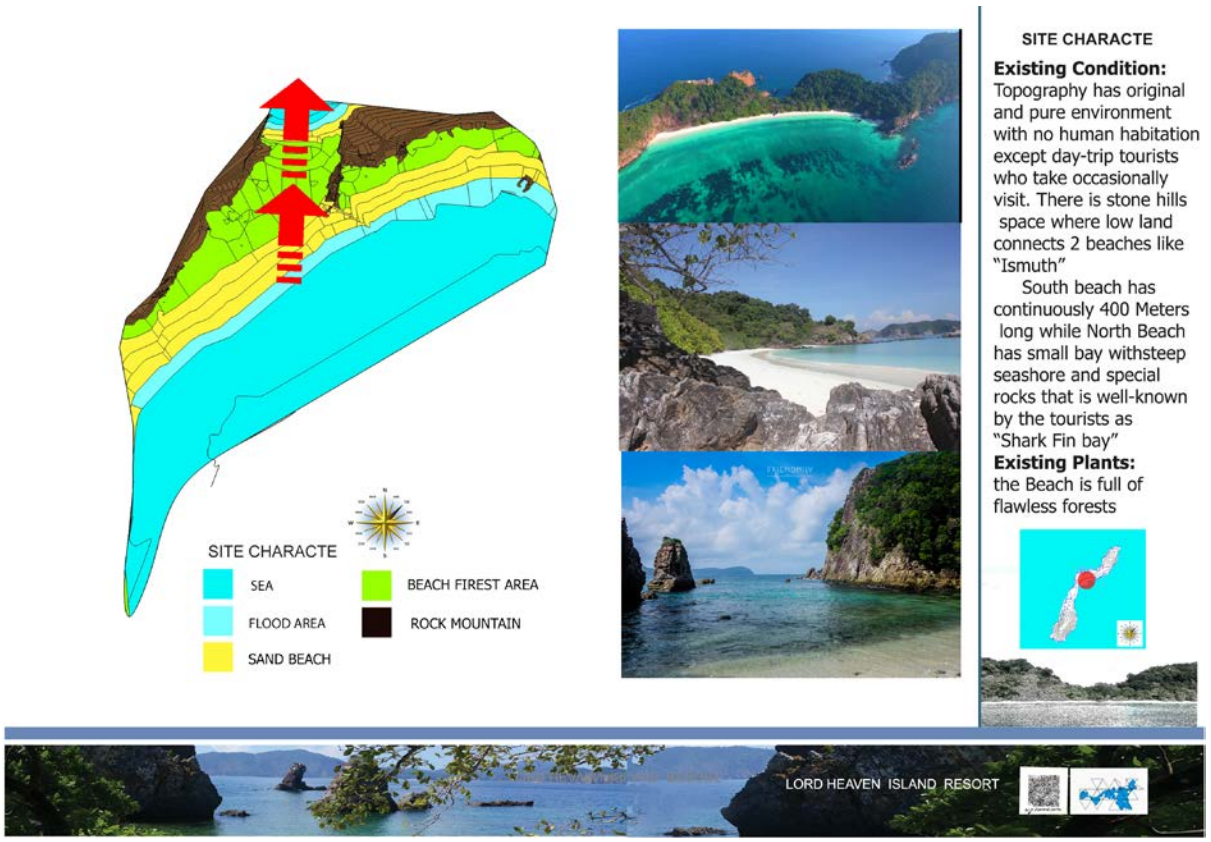
An analysis of reasonable alternatives for meeting the project objectives may lead to designs that are more environmentally, socio-culturally or economically sound. It is also the requirement of IEE procedure in Myanmar.

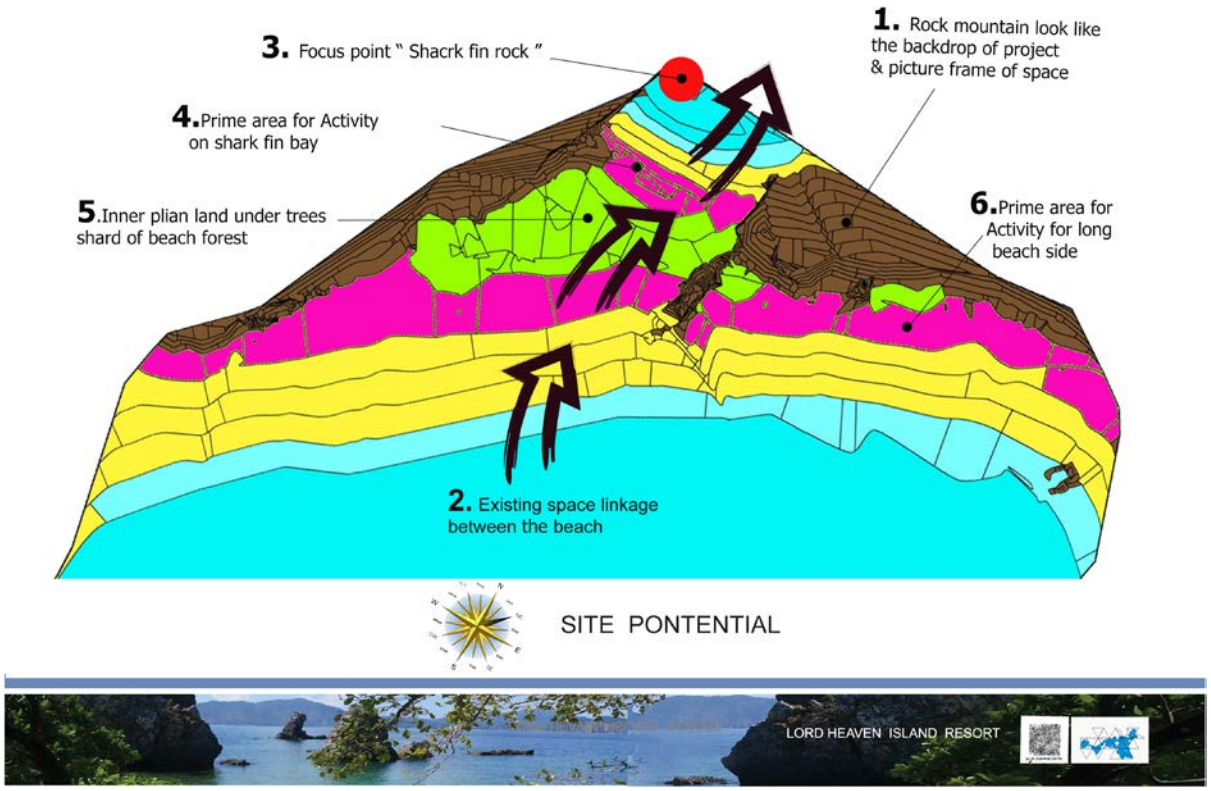
4.12.1. "NO-GO" Alternative

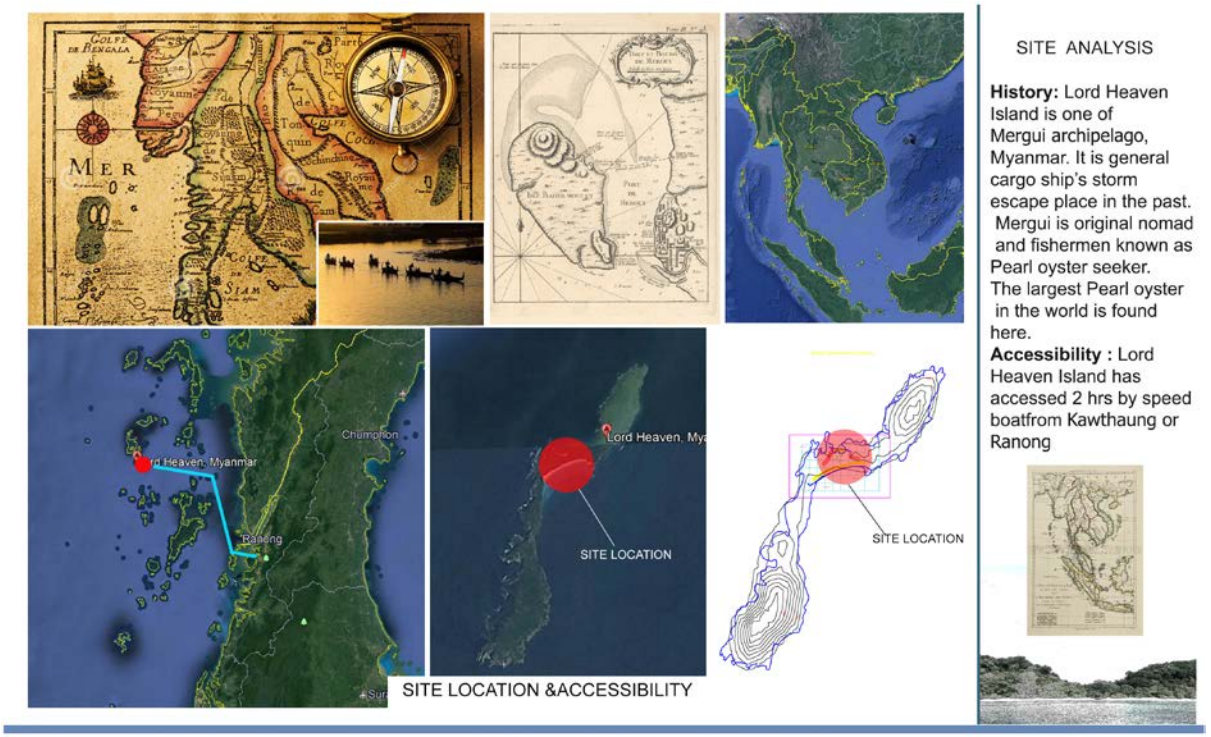
The proposed project does not proceed (the "no-go" alternative), the adverse impacts identified in this report would be avoided. The main adverse impacts are if the proposed project does not proceed, According to the IEE study, all of the impacts can be mitigated proper mitigation measures as proposed in this report. Moreover, the project proponent said he will close the project at any time if there will have any impact on the natural environment and local people. So, no-go alternative is not acceptable for current conditions of the nearest villages, local economy and local GDP.

4.12.2. Project Alternatives

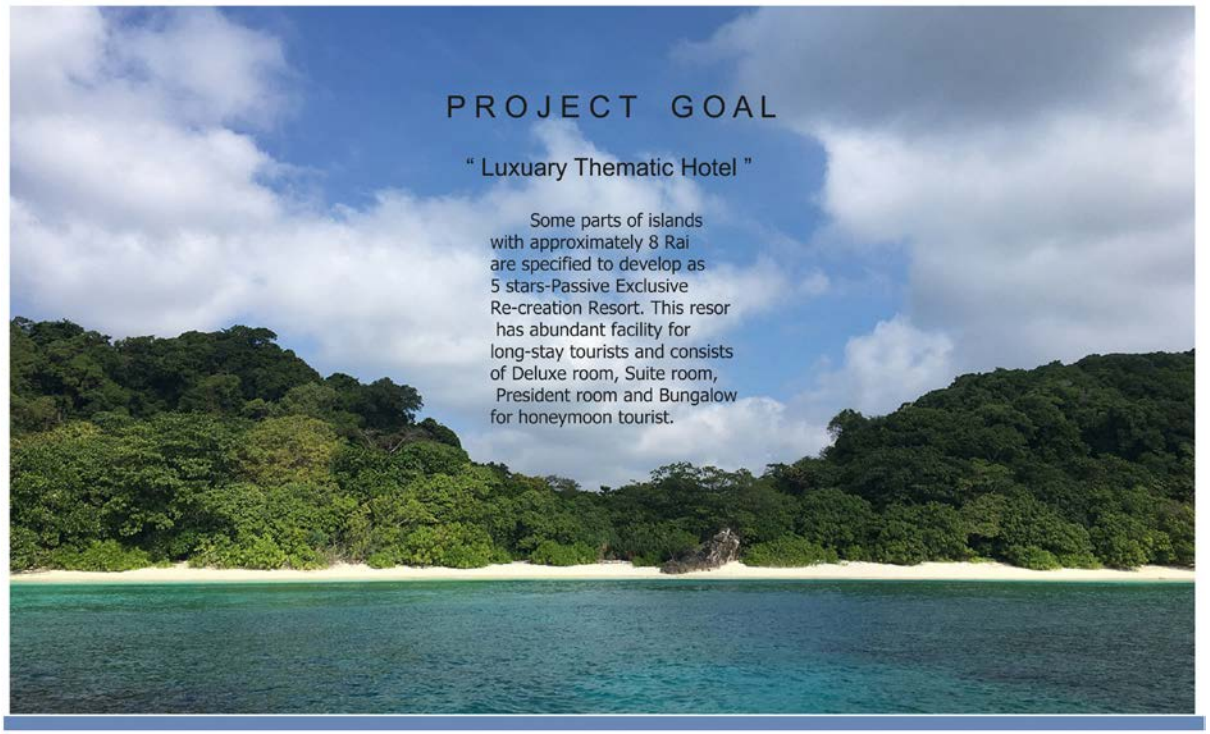
Not so much an alternative to the proposed land use but rather as an adjunct to the resort development is the designation and development of the Bo Wei Island Resort. This area has a designated beautiful island beach but with the cooperation of the local fishermen and the provision of alternative means of livelihood as reserve keepers and tour guides the few fisher folk may be induced to adopt a more sustainable mode of living.


SITE CHARACTE
SEA
BEACH FIREST AREA
FLOOD AREA
ROCK MOUNTAIN
SAND BEACH
SITE CHARACTE
Existing Condition:
Topography has original and pure environment with no human habitation except day-trip tourists who take occasionally visit. There is stone hills space where low land connects 2 beaches like "Ismuth"
South beach has continuously 400 Meters long while North Beach has small bay withsteep seashore and special rocks that is well-known by the tourists as "Shark Fin bay"
Existing Plants:
the Beach is full of flawless forests
LORD HEAVEN ISLAND RESORT


3. Focus point " Shacrk fin rock "
1. Rock mountain look like the backdrop of project & picture frame of space
4. Prime area for Activity on shark fin bay
5. Inner plian land under trees shard of beach forest
6. Prime area for Activity for long beach side
2. Existing space linkage between the beach
SITE PONTENTIAL
LORD HEAVEN ISLAND RESORT

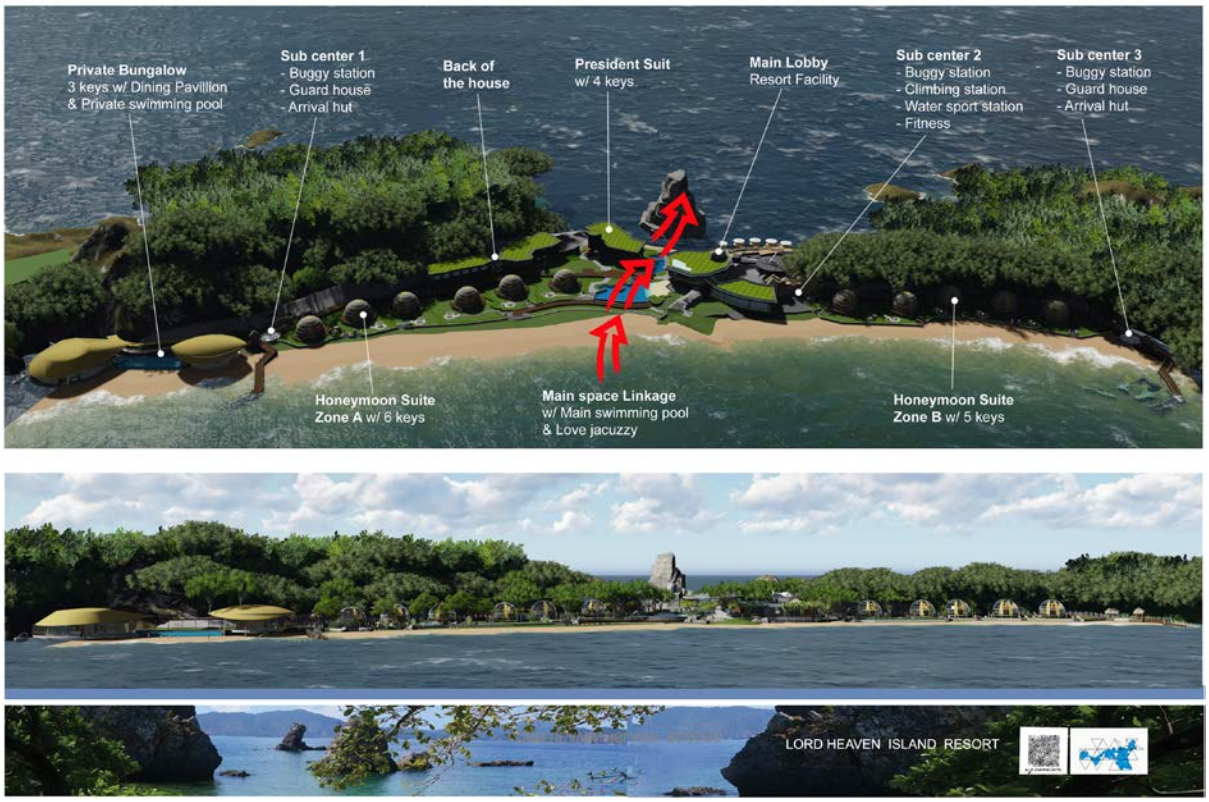

SITE ANALYSIS
History: Lord Heaven Island is one of Mergui archipelago, Myanmar. It is general cargo ship's storm escape place in the past. Mergui is original nomad and fishermen known as Pearl oyster seeker. The largest Pearl oyster in the world is found here.
Accessibility : Lord Heaven Island has accessed 2 hrs by speed boatfrom Kawthaung or Ranong
Chumphon
Ranong
SITE LOCATION
SITE LOCATION
SITE LOCATION &ACCESSIBILITY


LORD HEAVEN ISLAND RESORT


PROJECT GOAL
" Luxuary Thematic Hotel "
Some parts of islands with approximately 8 Rai are specified to develop as 5 stars-Passive Exclusive Re-creation Resort. This resor has abundant facility for long-stay tourists and consists of Deluxe room, Suite room, President room and Bungalow for honeymoon tourist.


LORD HEAVEN ISLAND RESORT


The pendant pavillion
LORD HEAVEN ISLAND RESORT


Private Bungalow
3 keys w/ Dining Pavillion
& Private swimming pool
Sub center 1
- Buggy station
- Guard house
- Arrival hut
Back of
the house
President Suit
w/ 4 keys
Main Lobby
Resort Facility
Sub center 2
- Buggy station
- Climbing station
- Water sport station
- Fitness
Sub center 3
- Buggy station
- Guard house
- Arrival hut
Honeymoon Suite
Zone A w/ 6 keys
Main space Linkage
w/ Main swimming pool
& Love jacuzzy
Honeymoon Suite
Zone B w/ 5 keys
LORD HEAVEN ISLAND RESORT

Proposed design

The Pearl pavillion Honeymoon suite

Proposed Design

5.0. DESCRIPTION OF SURROUNDING ENVIRONMENT

5.1.Topography

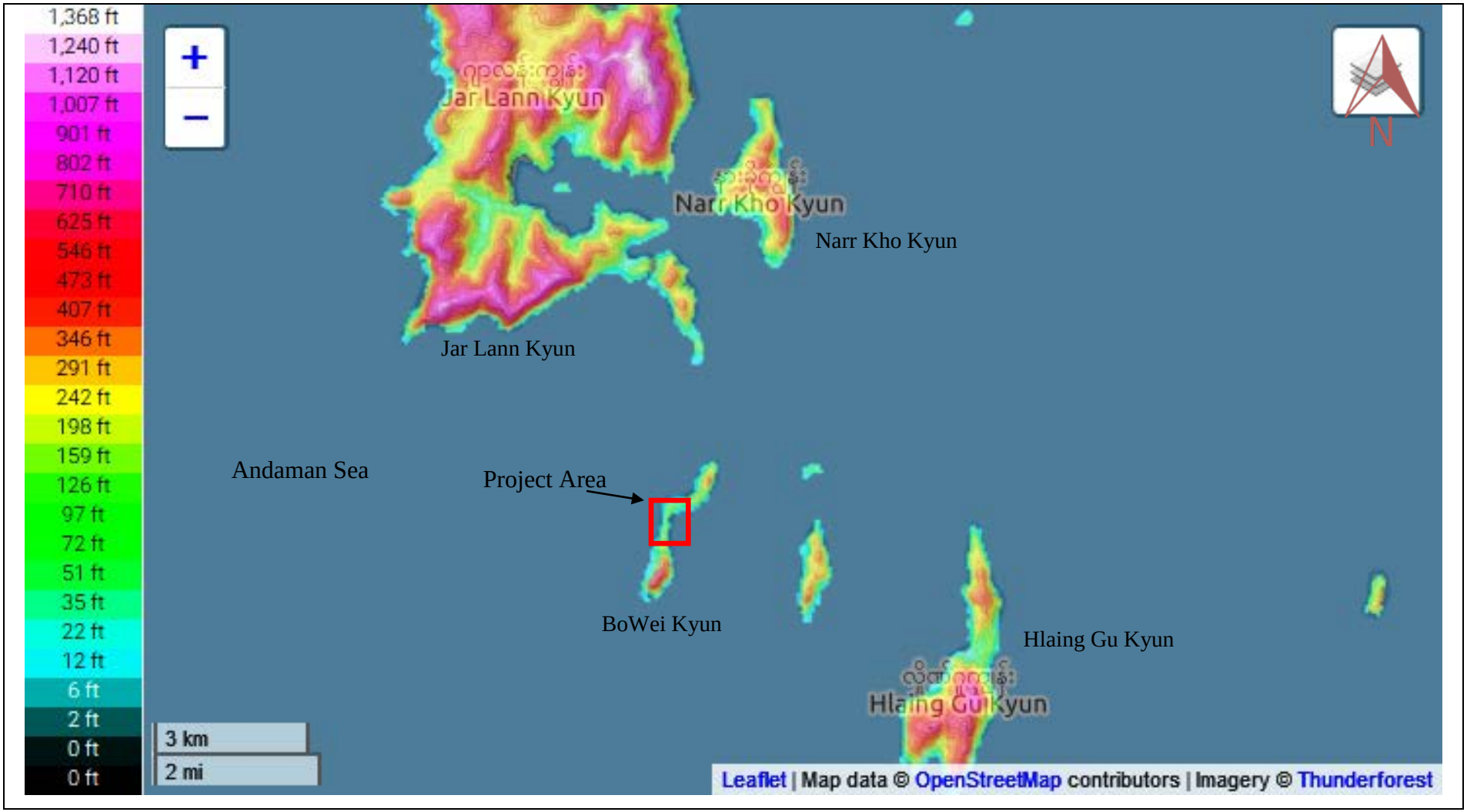
The topography of Tanintharyi coast is greatly influenced by tectonic movement and volcanic activity resulting from the docking of the Indian tectonic plate with the Eurasian plate in the early Miocene. The twisting of the Eurasian plate as the Indian plate dragged its margins northwards formed many rocky shorelines and the rocky headlands and capes jutting out into the sea. The region's granitic islands began as intrusions of hot magma that rose through weak spots in the Earth's crust hundreds of million years ago, working their way through thick layers of sedimentary rock laid down at least 100 million years earlier still.

Bo Wei or Lord Heaven Island is an island at the southern end of the Mergui Archipelago, Myanmar. It is a scattered cluster of islands extending to the S and SSE of Jar Lann Island and Narr Kho Island. This densely wooded island has two main peaks, each with a height of around 164 metres (538 feet). The island has a roughly long flat or “C” shape with a length of about 4.0 kilometres. Off its eastern shore rises a 4-metre-high (15.0-foot) rock surrounded by a reef. Bo Wei Kyun lies 4.5 kilometres of the southern end of Narr Kho Island.

The Bo Wei Island has two points that are above 75 metre in altitude.This island topography is mostly flat and two points that are above 50 metre in altitude. The locations selected for villas are flat and within 5 metre altitude.

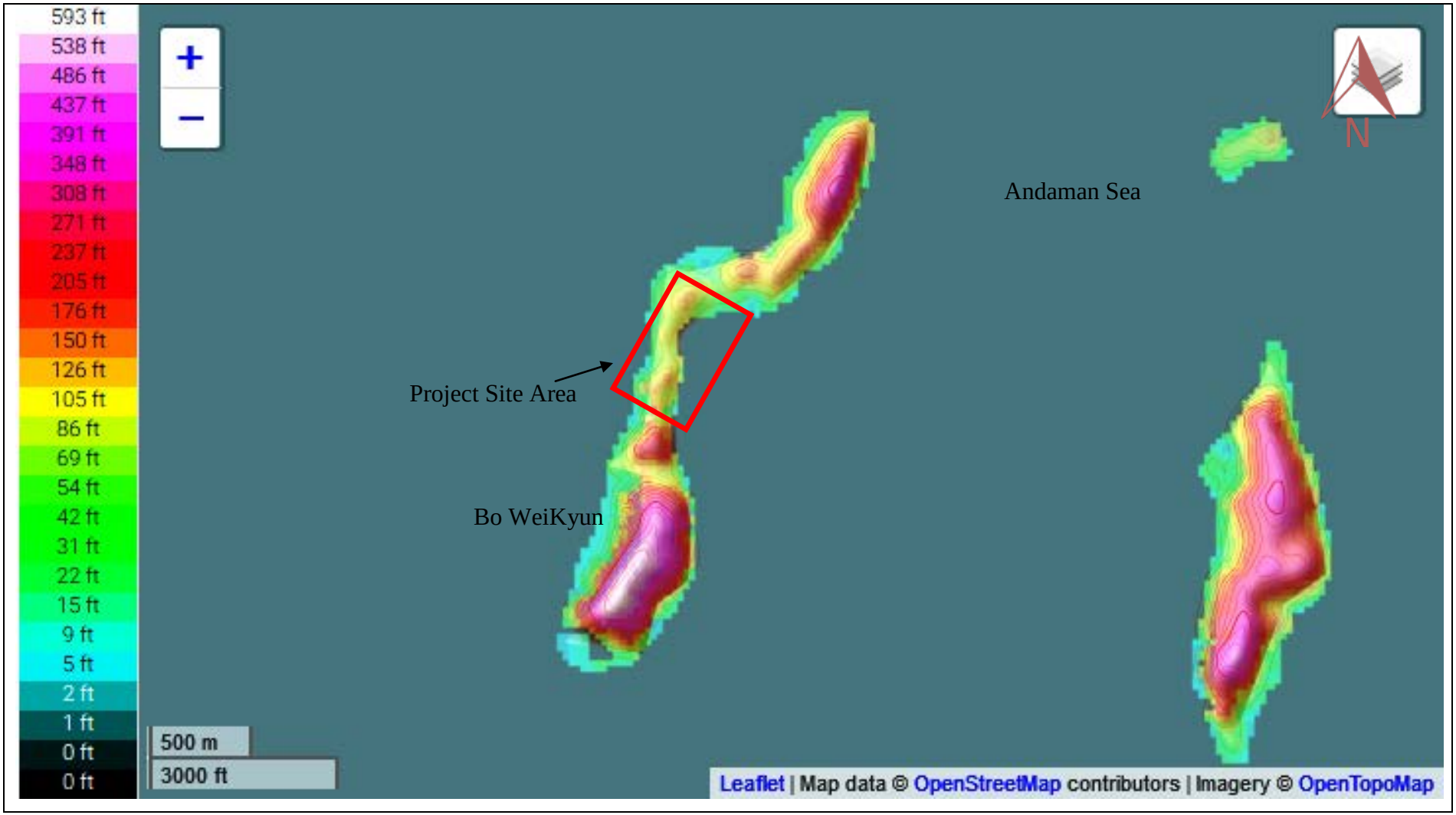
The project site is relatively flat with a low-lying flat area close to sea level in east and rising to a height of 5 m (17 ft) in the central section of the site. From the northeast the land rises gently towards the east. Here the elevation at the coastline is in the order of 1.5 to 2 m (5-7 ft) (Figure 5.2).

The project site itself is relatively flat and has distinct drainage features on the slopes. Storm runoff from the slopes is intercepted by the east-west running and therefore should prevent any significant storm runoff from flowing onto the site.The resort development does not require change in the topography of the islands.



Source: http://en-us.topographic-map.com

Figure 5.1-Digital Elevation Map of Project Area



Source: http://en-us.topographic-map.com

Figure 5.2. Site Topography

5.2. General Geology

The investigated area lies on the southern part of Shan-Taninthayi massif and northern continuation of Taninthayi ranges, It is covered with Late Paleozoic rocks. The western part of the study area, which is in Taungnyo Range, are Carboniferous rock units (Taungnyo Series) arranged and systematically described (Leicester, 1930). Further up to the northwestern part, also in Mottama Range, Late Permian rocks (Martaban Beds, Pascoe, 1959) and Mesozoic granitic rocks are exposed.Along the Tanintharyi area, quaternary deposit of gray and gray swampy soil and red brown forest soil types are present. Soil Map of Tanintharyi region is shown in Figure 5.3. The project site is underlain by limestones belonging to the coastal formation, whichare found at depths below ground level. The soil at the surfaceof the project site consists of a layer of reddish-brown silty clay and coarse to finecalcareous sand that is up to 6 meters deep. This soil type covers the entire site and overlays four different other soil types, the arealdistribution of which is shown in Figure 5.3. The soil type near the costal in the islands are sandy clay and these consist of dense calcareous sand,sand gravels, compact to dense medium to fine sands, soft peaty clays and compact sands.

The inner part of the islands the soil type is Coastal Group of rock formations consists of a variety of limestones deposited in shallow coastal environments comprised of reef deposits, limestone muds, and gravels, colluvium and rubbly reworked materials. Further to the south the Coastal Group limestones are overlain by limestones belonging to the Montpelier Formation.

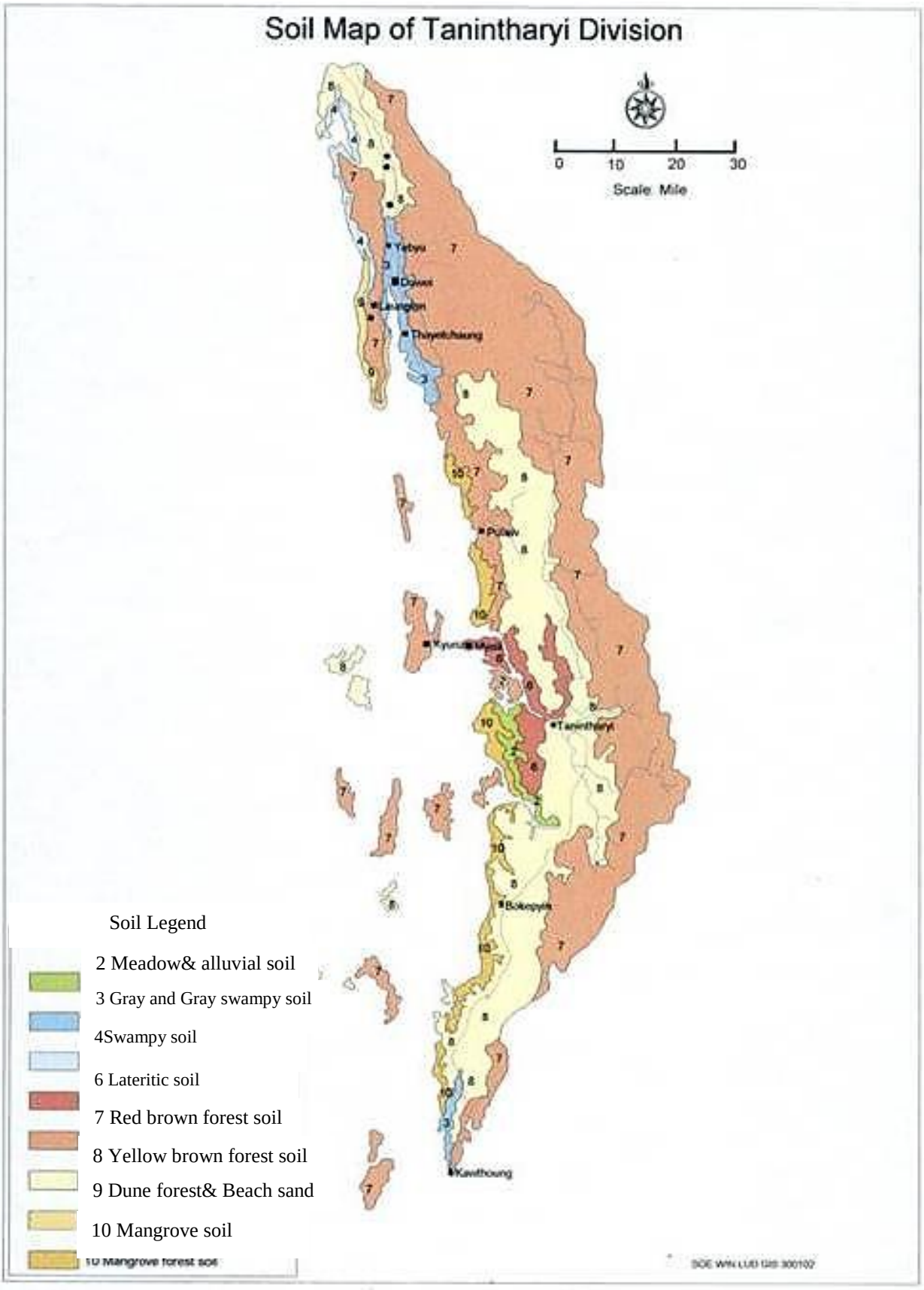


Figure 5.3. Soil Map of Tanintharyi Region

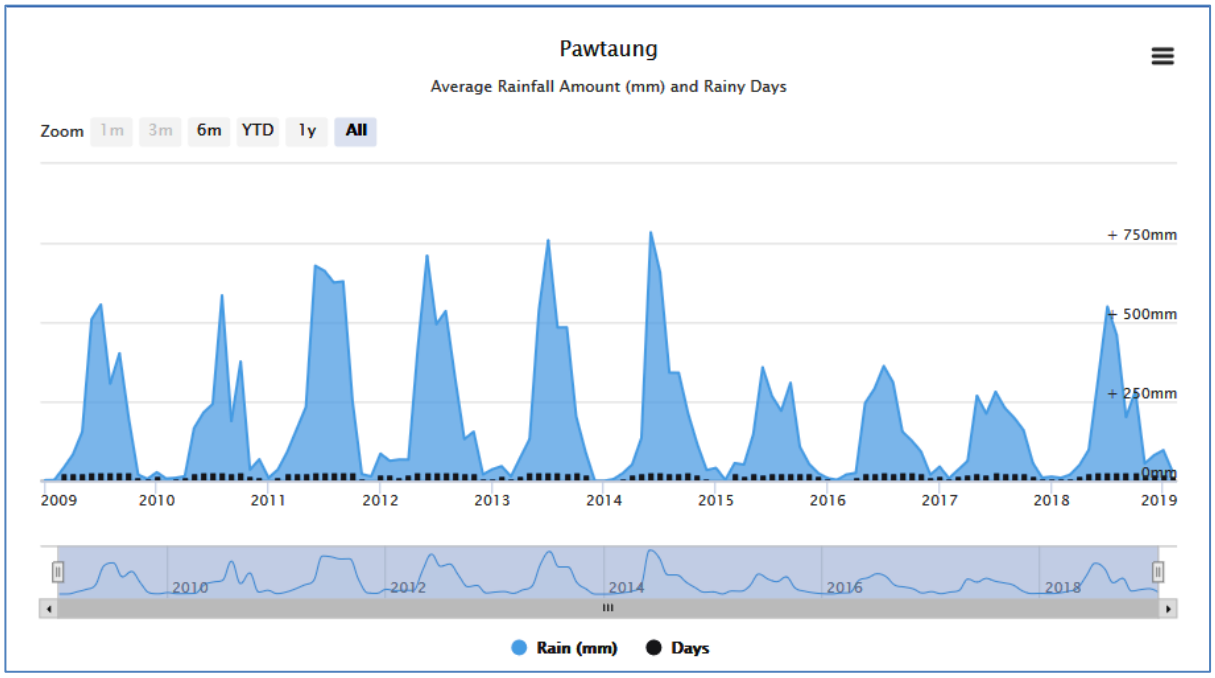
5.3Climate and Meteorology

Tanintharyi region has a tropical climate. The region has only slight changes in temperature. The climate of Kawthoung is tropical (Am as per Köppen climate classification) with significant rainfall during most months of the year and a short dry season. The average annual temperature is 26.9 °C and the rainfall here averages 3681 mm. The driest month is February, with 21 mm of rain. Most precipitation falls in August, with an average of 664 mm. April is the warmest month of the year. The temperature in April averages 28.4 °C. In December, the average temperature is 25.9 °C. It is the lowest average temperature of the whole year. Some important meteorological data which are collected from Meteorological Station (Myeik) are as follow:

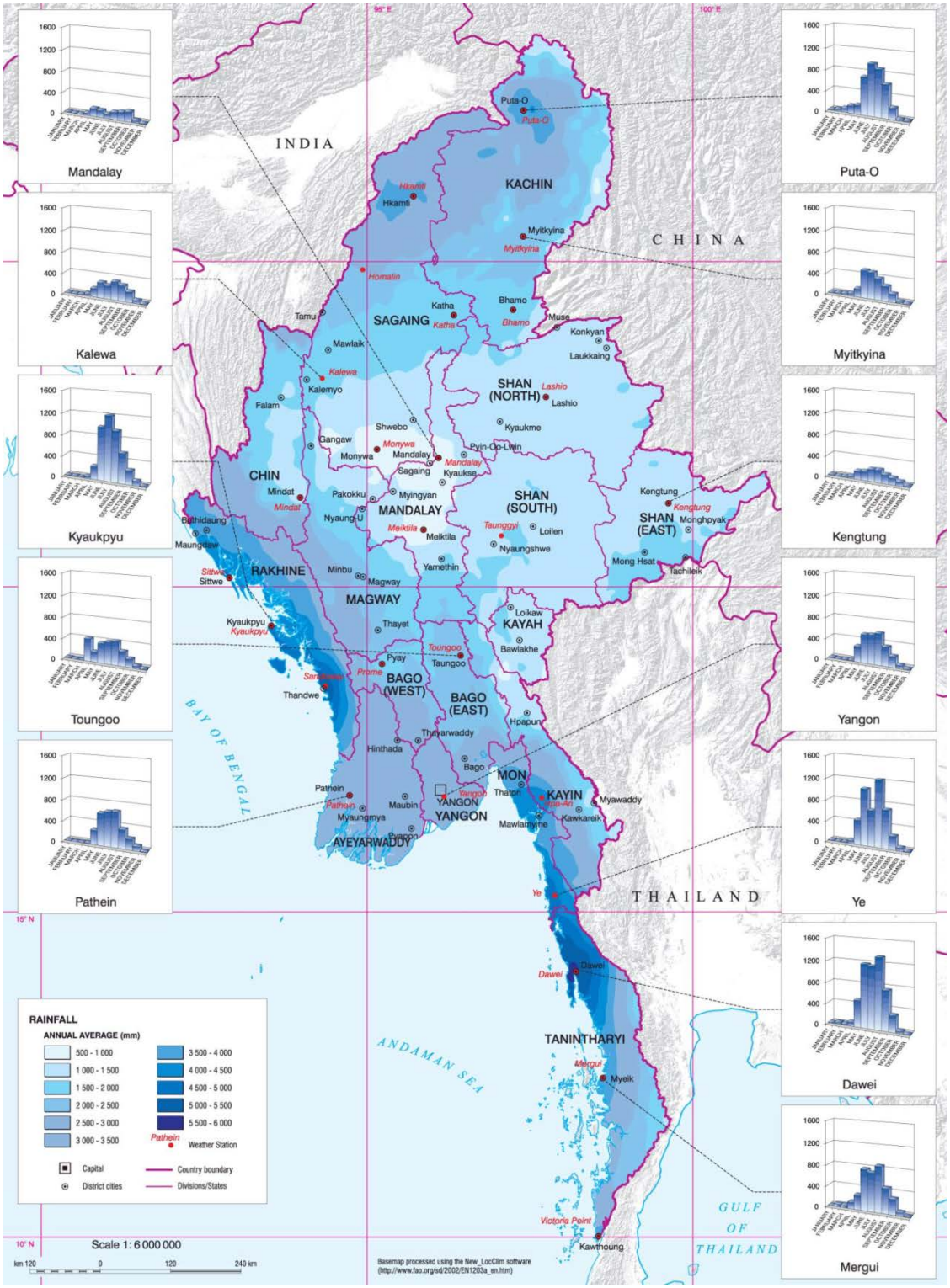
5.3.1 Rainfall

The project area is warm and wet season. Yearly rainfall and temperature are as follow:

No.	Year	Rainfall		Temperature	
		Raining Days	Total Rainfall	Summer Maximum	Winter Minimum
1	2012	183	169.58	35.5	23.0
2	2013	182	185.39	35.5	15.5
3	2014	161	177.28	38.2	16.0
4	2015	146	158.23	38.7	17.5
5	2016	167	182.04	40.5	17.0
6	2017	178	176.95	38.8	16.5



Average Rainfall and Rainy Day over Project Area



[Source: http://dwms.fao.org/atlases/myanmar/atlas_en.htm]

Figure 5.4: Rainfall Map of Myanmar with Monthly Distribution Patterns

5.3.2 Wind

Winds approach the project area primarily from the east and northeast. Long-term wind data obtained from the station of Myeik(Department of Meteorology and Hydrology Myanmar). During the pre-monsoon months of onset date to June, the wind blew Southeast, South and Southwest direction over the country. In the Southwest monsoon months of July and August, the wind blew South and Southwest direction and in the post monsoon months of September to withdrawal date, the wind blew from North and Northeast direction over the country. For the wind speed, the coastal areas have stronger wind than the inland areas and also stronger wind prevailed monsoon season than the pre and post monsoon. Figures5.5 to 5.7 show the results for the wind direction and speed representing the regions of Kawtaung during the study period 2001-2010 (10yrs). The data indicates that greater than 4 mph of the wind speed are more frequently from the southwest in pre-monsoon season and monsoon season. In post monsoon season southwest, southeast and northeast sectors are greater than 4 mph of wind speed.

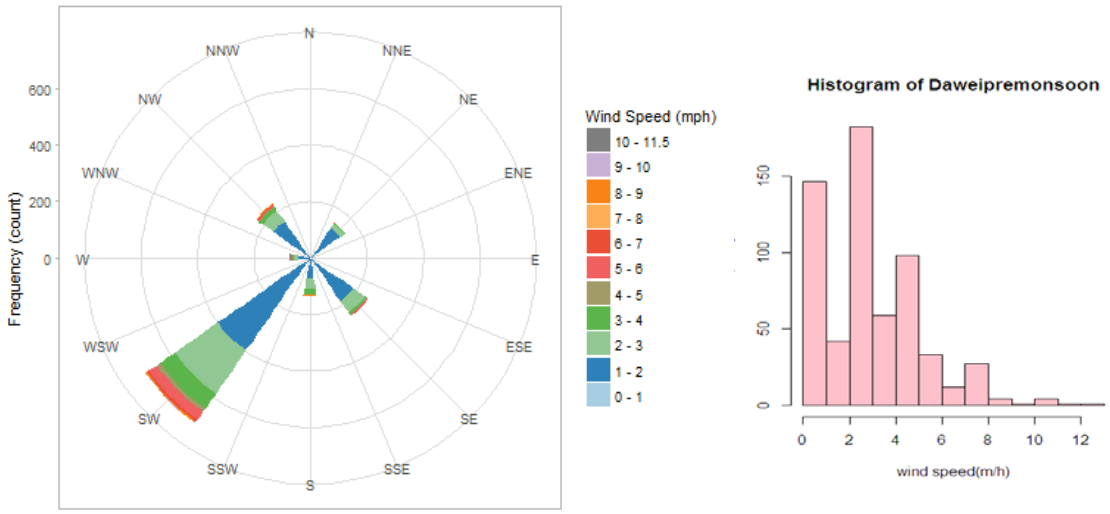


Figure5.5: Wind Rose and Frequency of Wind Speed for Pre-monsoon Season

(Source: Myanmar Climate Report, No. 9/2017)

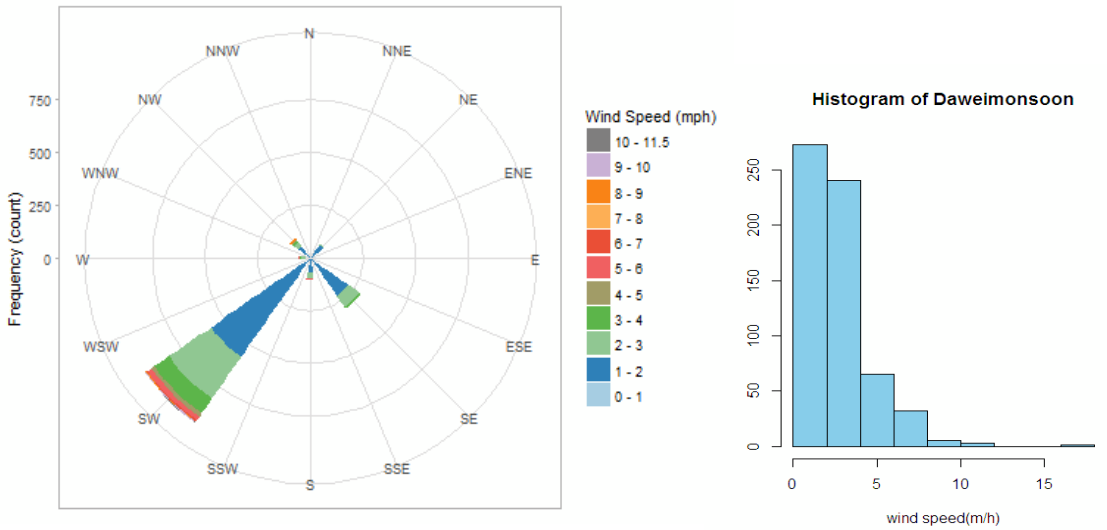
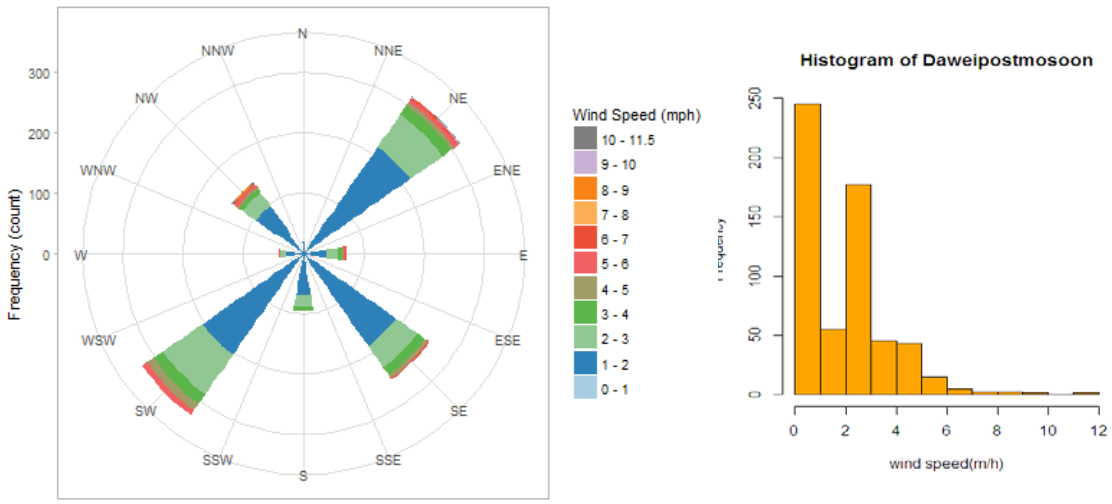


Figure 5.6:Wind Rose and Frequency of Wind Speed for Monsoon Season

(Source: Myanmar Climate Report, No. 9/2017)



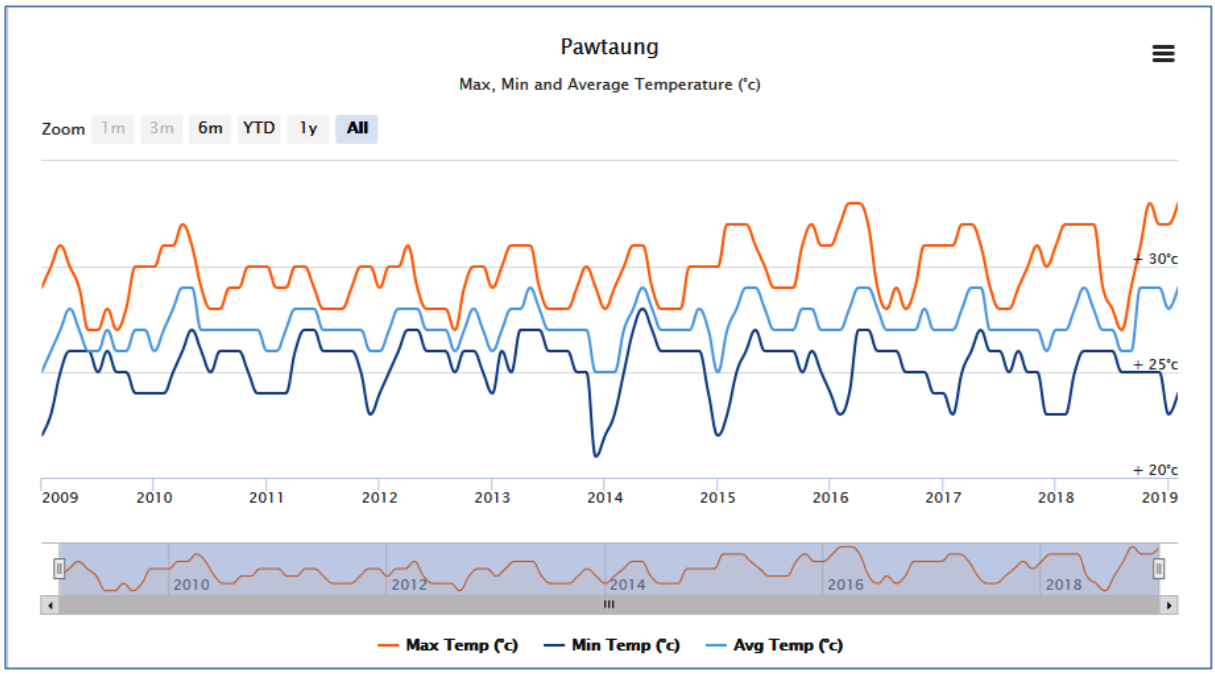
(Source: Myanmar Climate Report, No. 9/2017)

Figure 5.7: Wind Rose and Frequency of Wind Speed for Post Monsoon Season

5.3.3 Temperature Trends

It was very clear from temperature trend analysis that the maximum temperature showed increasing trends and decreasing trend for minimum temperature over all parts of the years in the project site.

The deviation for T_{max} was calculated following the formula: $T_{maxn} - T_{max}$, andthe deviation for T_{min} was calculated by $T_{minn} - T_{min}$, where "n" represents eachyear and "normal" is the T_{max} or T_{min} normals calculated for the period 2009-2018



Source: www.worldweatheronline.com/kawtaung-weather-averages/tenasserim/mm.aspx

Maximum and Minimum Temperature Deviation Trend over Kawtaung

5.4 Oceanography

The project area is including Myeik archipelago, lies in the Andaman Sea off the coast of southern Tanintharyi,consists of some large offshore islands, and the near-shore areas between these and the coastline are marshy and partly covered with mangrove forests.

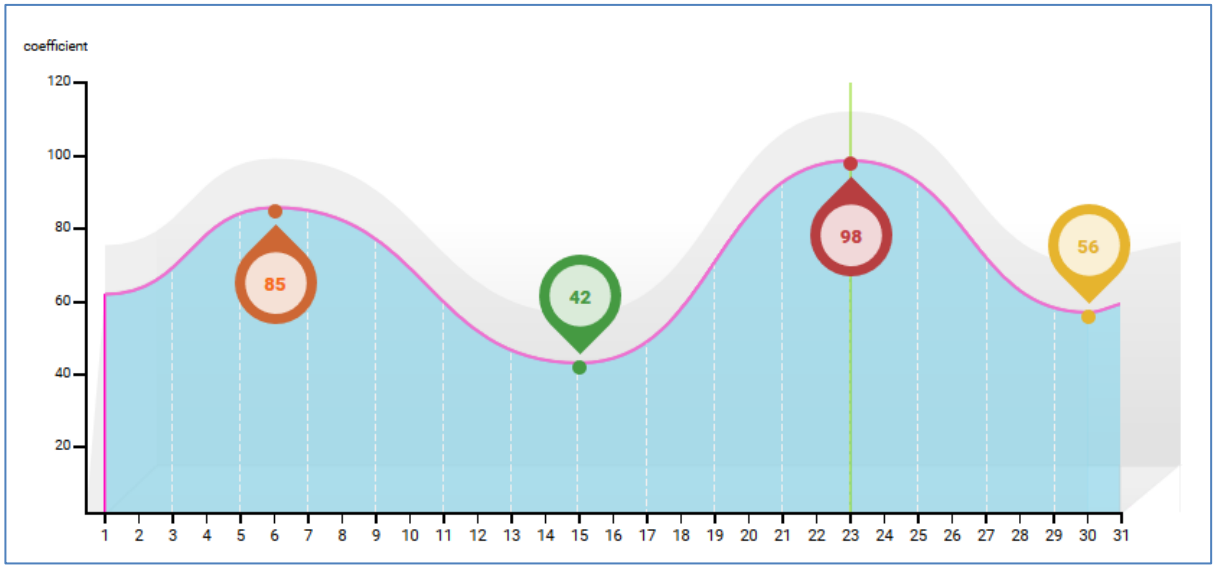
5.4.1 Waves

Wave climates at the project site are consistent with the local wind conditions. Predominant waves are from the easterly and westerly directions.Current wave conditions of Project area is *significantheight*, about 14% of waves will be higher than the significant wave height (about 1 in every 7 waves). The average wave height is 0.1m.The project seashore has a smooth beach slope and is very little potential to wave impacts. The waves on the shore can be slightly affected by the orientation of the coastline and the seabed of the beaches, although in most cases they are usually equivalent.

5.4.2 Tides

Tidal variation at Kawthoung is relatively low. The tide at the project site will only depend on the situation of the moon (especially in full moon day).

The following graph shows the *progression of the tidal coefficient* in the month of *December of 2018*.These values give us a rough idea of the tidal amplitude in Kawthoung, forecast in December. Large coefficients indicate important high and low tides; major currents and movements usually take place on the sea bed. But bear in mind that this tidal amplitude may be greatly affected by the weather



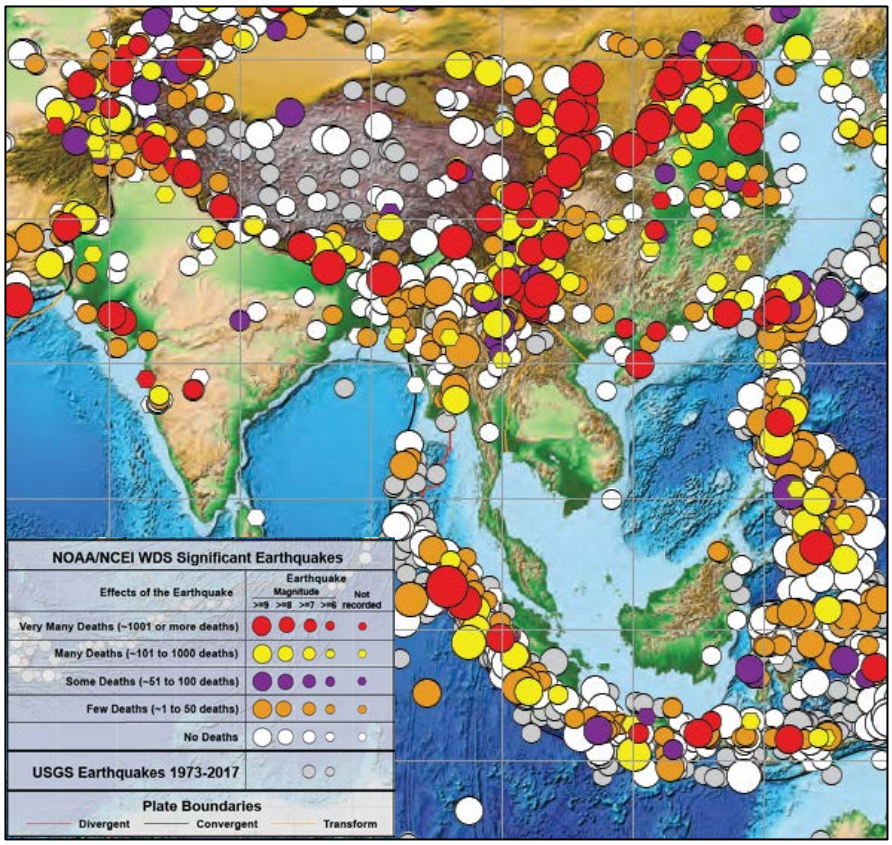
Progression of the Tidal Coefficient in Kawthoung Area

5.5 Seismicity

Myanmar is an earthquake-prone country because it lies in a one of the world major earthquake belt, Alpide Belt, which extends from northern Mediterranean through Iran, Himalaya region and Myanmar. Most of the earthquake in central and delta region of Myanmar have resulted from movement of Sagaing Fault which extends from the northwest of Katha, through Sagaing, along the eastern flank of Pegu Yoma and finally into the western Gulf of Martaban for a distance of about 600 miles. Structurally, Hpa-pon fault and Three - pagoda fault are situated at the northern and southern part of the area and their trend in nealy NW - SE direction. Earthquake intensity in the area can be seen in Figure 5.8.

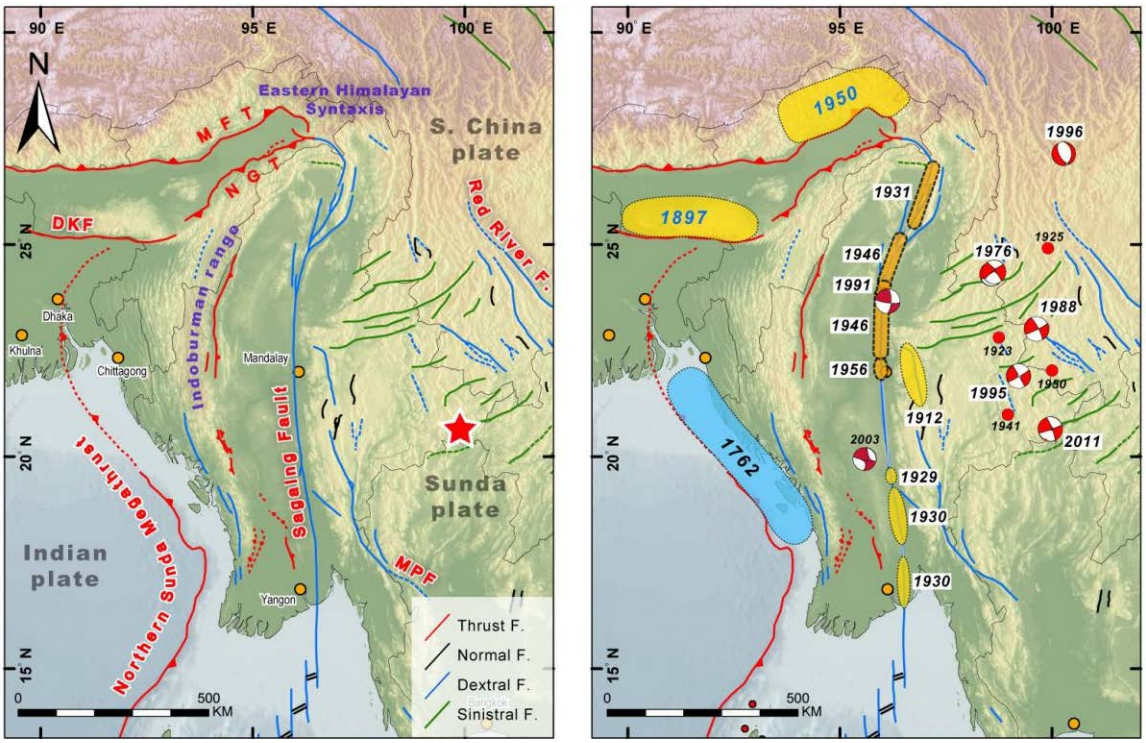
The approach is mainly empirical and historical in the sense that it makes use of past seismic events and history to make educated guesses about region wide intensities in the future.Recent earthquakes include one in April 2016 near Mawtaik on the India and Sunda (Eurasia) plates at 6.9 magnitudes on the Richter scale, as well as a magnitude 6.8 earthquake that occurred on the Sagaing fault in Myanmar on November 11, 2012. The Sagaing fault is a major fault in Southeast Asia between the India and Sunda (Eurasia) plates. This strike-slip fault (side-to side motion) is part of a broad zone of deformation that includes the India Asia collision zone to the north and extension of the Andaman Sea to the south. The November 11 earthquake and its four aftershocks (with magnitudes ranging from M-5 to M-5.8) occurred north of the city of Mandalay, along a stretch of the Sagaing fault. A map of earthquakes in the SE Asian region is shown in Figure 5.8 and a historical earthquake map of Myanmar is shown in Figure 5.9**.**

As per map the proposed project is located within the Zone II (Moderate zone) of earthquake hazard, as shown in prbabilistic seismic hazard Assessment Map (PSHA Map) of Myanmar showing expected peak ground acceleration (PGA) values with 100% probability in 500 years.



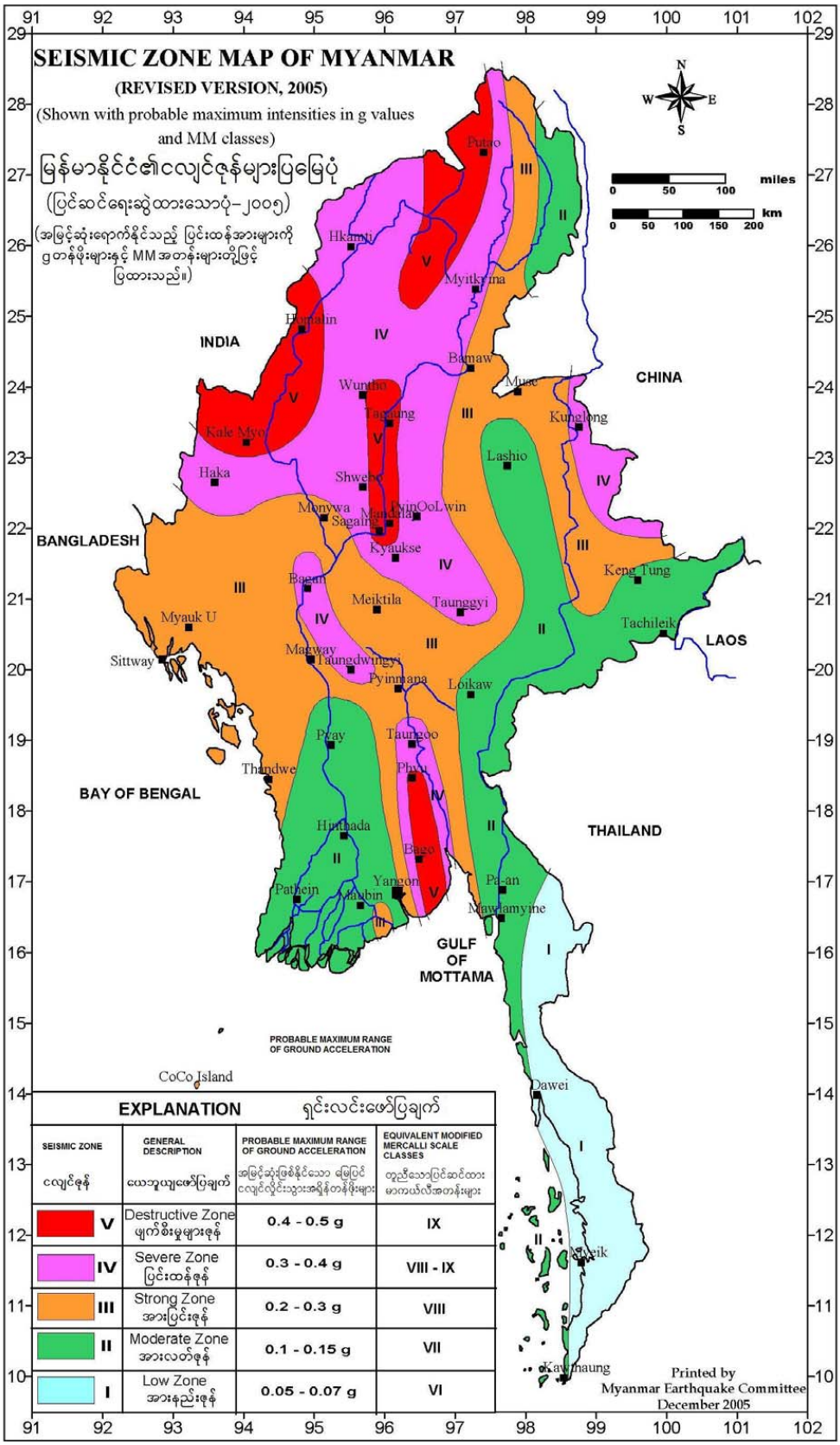
[Source: USGS]

Figure 5.8 Map of Significant Earthquakes 2150 B.C. to A.D. 2017



[Source: http://www.earthobservatory.sg/news/strong-quake-myanmar#.U4wB1ncxXmQ , Accessed 2016]

Figure 5.9Neotectonic Map of Myanmar



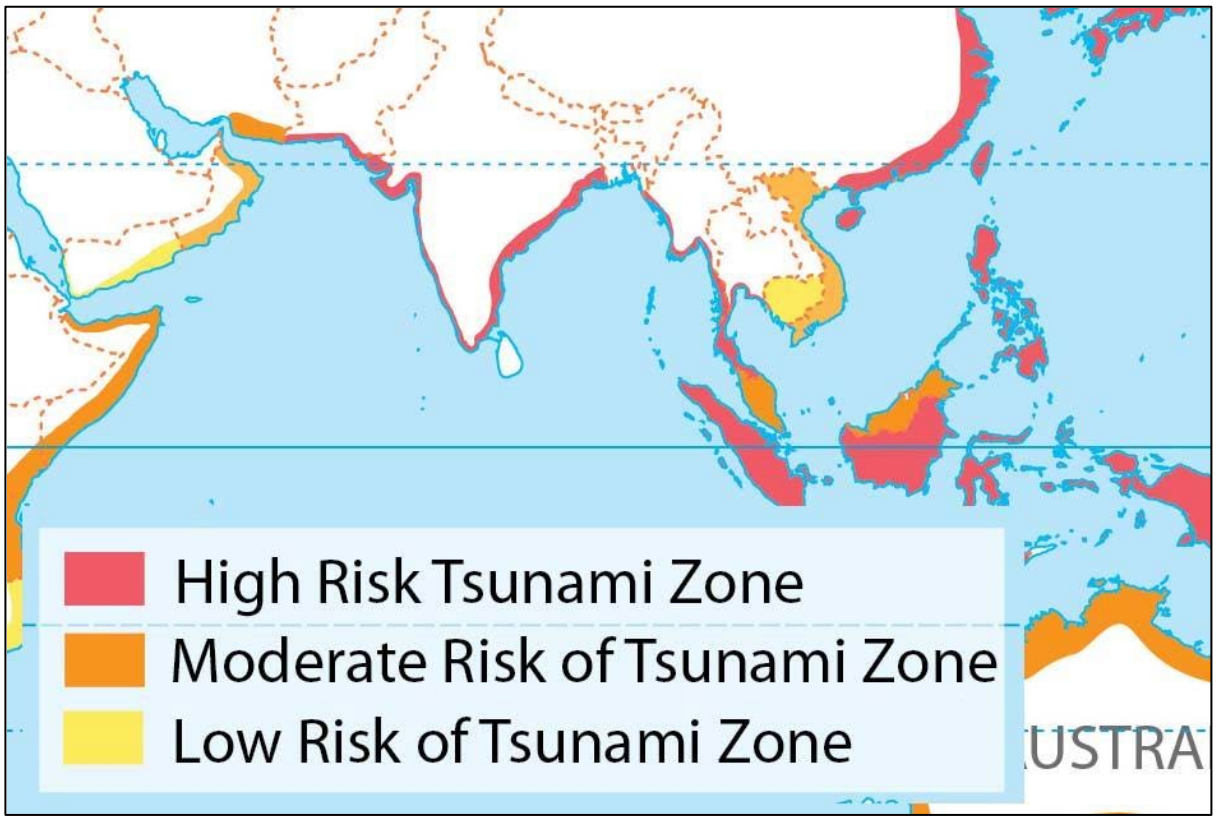
Source: MIMU[Myanmar Information Management Unit]

Figure 5.10Seismic Zone Map of Myanmar

5.6 Tsunamis

In Myanmar there were records of moderate tsunamis, generated by two large magnitude earthquakes, which originated in the Andaman-Nicobar Islands [these are the 31 December 1881 Car Nicobar Earthquake (7.9 Richter scale [RS]) and the 26 June 1941 Andaman Island Earthquake (7.7 RS)]. The tsunami generated by the giant 2004 Sumatra Earthquake also caused moderate damage in some parts of the Myanmar Coast. It is evident that Myanmar is vulnerable to hazards from moderate and large tsunami along its long coastline.

Previous Indian Ocean tsunamis have not been properly documented. The southern Tanintharyi Coast consists of some large offshore islands, and the near-shore areas between these and the coastline are marshy and partly covered with mangrove forests. This setting therefore provides partial protection from tsunami waves.



Source: World Tsunami Zones (www.mapsofworld.com)

Figure 5.11- Tsunami Risk in the Bay of Bengal

However, the northern Tanintharyi Coast is generally flat and sandy areas. Thus, this area is comparatively more vulnerable to the tsunami hazard. The probable earthquake and tsunami hazards along the Myanmar coastal areas are summarised in the following Table.

Table 5.1- Probable Earthquake and Tsunami Hazards along the Myanmar Coastal Areas

Coastal Region	Area	Earthquake Hazard (Modified Mercalli Intensity Scale)	Tsunami Hazard
Rakhine Coast	Northern Part	Strong Zone with MMI 8	Moderate
	Southern Part	Moderate Zone with MMI 7	Moderate
Delta Area	Ayeyarwady Delta	Moderate Zone with MMI 7	Moderate
	Sittaung Estuary	Severe Zone with MMI 8 - 9	Moderate
Tanintharyi Coast	Northern Part	Moderate Zone with MMI 7	Moderate
	Southern Part	Moderate Zone with MMI 7	Light

Source: Hazard Profile of Myanmar (2009)

By studying the above facts and figures, there will be moderate impact of Tsunami on the proposed project.

5.7. Social Environment

5.7.1. Socio-economic Profile by Secondary Data Collection

The following are the secondary data of Kawthoung Township. Some data are collected from Kawthoung Administration Office and some data are sourced from the DepartmentofPopulation,MinistryofImmigrationandPopulation"The2014MyanmarPopulation andHousingCensus–Tanintharyi Region-Kawthoung TownshipReport" October2017.

(a) Population

In 2017, there are about 107,000 people in Kawthoung Township as shown in the following Table. The percentage of urban population is about 49.5% in township.

Township	Total (Male/Female)				Total (Urban/Rural)			Households
	Male	Female	Total	Sex Ratio	Urban	Rural	Urban Population	
Kawthoung	55123	51787	106,910	96.3	11063	9717	49.5	20780

Source:Kawthoung Township Administrative Offices (2017)

According to the above table, the male percentage is a little higher than the male percentage and so the job opportunities for male and gender equality is important in this region. The

proposed project will create job opportunities for local people especially for female due to the nature of hotel project. So, the proposed hotel project will be great benefit for local people.

(b) Ethnicity

Most of the people who live in Kawthoung are Bamar, followed by Mon,Kayin and Bangladeshipeople. A small number of Kayar and Kachin live in Kawthoung Township. The races residing in KawthoungTownship are shown in the following table.

No.	Race	Number	%
1	Kachin	22	0.02
2	Kayar	13	0.01
3	Kayin	1001	0.94
4	Chin	79	0.07
5	Mon	5145	4.81
6	Bamar	83374	77.9
7	Rakhine	860	0.80
8	Shan	398	0.37
9	Salone	844	0.79
10	China	1028	1.01
11	Indian	452	0.42
12	Pakistan	1113	1.04
13	Bangladeshi	1153	1.08
Total		106,910	100

Source:KawthoungTownship Administrative Offices, 2017

(c) Religion

All of 100% of the people living in the township are Buddhists. There are many religious places in the region including four historic and well-known pagodas, 272 pagodas and 153 monasteries for Buddhists. The different kinds of religion present in Kawthoung Township are shown in in the following Table.

Township	Religion	Buddhist	Christian	Hindu	Muslim	Total
Kawthoung	Number	90166	737	395	13948	106910
	(%)	84.34	0.69	0.37	14.60	100.0

Source:KawthoungTownship Administrative Offices, 2017

So, the proposed hotel project will have a plan for sustaining of Buddhist Cultural in proposed hotel project (architecture design for cultural heritage and donation of Baddish Image or pagoda inside the project campus).

(d) Land Use

Kawthoung Township mainly use its land for agriculture followed by grazing land. Detailed acres for land uses in Kawthoung Township are shown in in the following table.

Land Category	Acres
Agricultural Land	132909
Forest and Natural Area	365794
Grazing land	771
Industrial Land	229
Settlement Land	2300
Wastelands	58148
Forest wild	19192
wild land	43
Other	85662
Total Area	666492

Source:KawthoungTownship Administrative Offices, 2017

(e) Living Profile

Type of housing unit

The majority of the households in Kawthoung Township are living in wooden houses (39.7%) followed by households in bungalow/brick house (20.4%). About 30.1 per cent of urban households and 49.0 per cent of rural households live in wooden houses.

Table 5.2- Conventional households by type of housing unit by urban/rural

Residence	Total	Apartment/ Condominium	Bungalow/ Brickhouse	Semi-pacca house	Wooden house	Bamboo house	Hut2-3 years	Hut1year	Other
Total	25481	12.9	20.4	14.4	39.7	9.2	2.0	0.4	1.2
Urban	12580	19.2	25.4	20.4	30.1	3.6	0.6	0.1	0.6
Rural	12901	6.7	15.5	8.5	49.0	14.6	3.2	0.7	1.8

Source:DepartmentofPopulation,MinistryofImmigrationandPopulation"The2014MyanmarPopulationandHousingCensus–Taninthayi Region-Kawthoung TownshipReport" October2017

Water Usage

In Kawthoung Township, 79.8 per cent of households use improved sources of drinking water (tapwater/piped, tube well, borehole, protected well/spring and bottled water/water purifier).Compared to other townships in Tanintharyi Region, this household proportion belongs to the highest group in use improved sources for drinking water and it is also higher than the Union average (69.5%).About 39.9 per cent of the households use water from protected well/spring and 26.7 per cent use water from bottled water/water purifier.About 20.2 per cent of the households use water from unimproved sources. In rural areas, 27.3 per cent of the households use water from unimproved sources for drinking water.

Table 5.3- Source of Drinking Water in KawthoungTownship

Sourceofdrinkingwater		**Total**	**Urban**	**Rural**
Tapwater/Piped		9.9	9.6	10.3
Tubewell,borehole		3.3	1.7	4.8
Protectedwell/Spring		39.9	23.9	55.5
Bottledwater/Waterpurifier		26.7	51.9	2.1
Total improveddrinkingwater		*79.8*	*87.1*	*72.7*
Unprotectedwell/Spring		5.8	0.6	10.9
Pool/Pond/Lake		0.2	0.1	0.3
River/stream/canal		2.2	0.1	4.3
Waterfall/Rainwater		5.7	1.1	10.1
Other		6.3	11.0	1.7
Total unimproveddrinkingwater		*20.2*	*12.9*	*27.3*
Total	**Percent**	**100.0**	**100.0**	**100.0**
	Number	**25,481**	**12,580**	**12,901**

Source:DepartmentofPopulation,MinistryofImmigrationandPopulation"The2014Myanmar PopulationandHousingCensus–Tanintharyi Region-Kawthoung TownshipReport" October2017

Lighting

In Kawthoung Township, 6.4 per cent of the households use electricity for lighting. This proportion belongs to the lowest group in electricity usage compared to other townships in

Tanintharyi Region.The use of generator (private) for lighting is the highest in the township with 66.9 per cent.In rural areas, 46.7 per cent of the households use generator (private) for lighting.

Table 5.4- Conventional households by source of lighting by urban/rural

Sourceoflighting		Total	Urban	Rural
Electricity		6.4	5.1	7.7
Kerosene		2.4	0.3	4.4
Candle		19.4	5.0	33.5
Battery		1.3	0.2	2.4
Generator(private)		66.9	87.6	46.7
Watermill(private)		1.0	1.5	0.5
Solarsystem/energy		1.0	-	3.2
Other		0.9	0.2	1.5
Total	**Percent**	**100.0**	**100.0**	**100.0**
	Number	**25,481**	**12,580**	**12,901**

Source:DepartmentofPopulation,MinistryofImmigrationandPopulation"The2014Myanmar PopulationandHousingCensus–Tanintharyi Region-Kawthoung TownshipReport" October2017

Cooking Fuel

In Kawthoung Township, households mainly use wood-related fuels for cooking with 14.7 per cent using firewood and 71.1 per cent using charcoal. Only 3.4 per cent of households use electricity for cooking.About 25.3 per cent of households in rural areas use firewood and 68.0 per cent use charcoal.

Table 5.5- Conventional households by type of cooking fuel by urban/rural

Typeofcookingfuel	Total	Urban	Rural
Electricity	3.4	4.9	1.9
LPG	6.2	11.2	1.3
Kerosene	0.1	-	0.2

Bio-Gas		2.1	2.7	1.5
Firewood		14.7	3.9	25.3
Charcoal		71.1	74.2	68.0
Coal		1.5	1.6	1.4
Other		0.9	1.4	0.3
Total	**Per cent**	**100.0**	**100.0**	**100.0**
	Number	**25,481**	**12,580**	**12,901**

Source:DepartmentofPopulation,MinistryofImmigrationandPopulation"The2014Myanmar PopulationandHousingCensus–Tanintharyi Region-Kawthoung TownshipReport" October2017

(f) Occupational Patterns

Data shows that agriculture and tradeare the common livelihood means of households in Kawthoung Township. The other main economic activities in the area are fisheries, arbitrary, and public services. According to official statistics, Kawthoung has a total of 89,733 people as the township workforce and 65,804 are employed with an unemployment rate of 26.67%. Per capita income in the township is estimated to be 2021,002 Kyats in 2015-2016.

Table 5.6- Occupational Patterns

Government Employee	Services	Agriculture	Livestock	Trade	Industry	Fisheries	Arbitrary	Others
3527	1576	39661	63	2071	297	1845	13763	12514

Table 5.7- Employment

Workforce	Employed	Unemployed	Unemployment rate
89733	65804	23929	26.67%

Table 5.8- Per Capita Income

Year	Income
2014-15	1773,760 Ks.
2015-16	2021,002 Ks
2016-17	-

(g) Education

Over sixteen percent of the total township population is students. For education sector, although primary school education is compulsory and fee-free, school enrollment rate of 5-year-olds is relatively half over of (65.8%) in the overall township. Percentage of students passing the matriculation is 36.54%. The teacher-student ratios are 1:23 in BEPS, 1:58 in BEMS, and 1:26 in BEHS. Data on education and literacy report that literacy rate in Kawthoung Township was 100%. Detailed for educational facilities in Kawthoung region are as below:

Table 5.9- Educational Facilities

School	No. of Schools	No. of Teachers	No. of Students	Teacher/ Student Ratio
BEHS	6	212	5704	1:26
BEHS (Extan)	6	173	5046	1:29
BEMS	4	42	2453	1:58
BEMS (Extan)	11	158	4481	1:28
Post (BEPS)	20	200	5944	1:30
BEPS	50	169	3048	1:23
Monastery school	6	48	1098	1:22
Preschool	4	5	103	1:21

Table 5.10- Scholl Enrollment

No. of 5 yrs-old children			Enrollment			Enrollment Rate
Male	Female	Total	Male	Female	Total	
2525	2415	4940	2525	2415	4940	100%

Table 5.11- Literacy Rate

Population	Above 15 Years of Age	Literate	Literacy Rate
106910	78241	78241	100%

According to the above tables, educational facilities, enrollment rate, literacy rate are in good conditions. Nevertheless, the CBG should have a plan to encourage local education facilities, especially scholarship program for

(k) Healthcare Profile

As described in the following tables, there are 16-bed township hospital, and two 16-bed hospital in the village tract. There are also 38 rural healthcare centers and sub- centers. Infrastructures for health care services are also seemed to be insufficient especially for rural people.

Table 5.12- Hospitals

Sr.No.	Hospital	Govt./Private	Bed
1.	Township hospital (Kawthoung)	Govt.	100
2.	Military Hospital	Govt.	100
3.	Station Hospital (Khamaukkyi)	Govt.	16
4.	Station Hospital(Chan Hpan)	Govt.	16
5.	Station Hospital(Aung Bar)	Govt.	16
6.	Station Hospital(Mar Yun)	Govt.	16

Table 5.13- Healthcare Centers

Sr. No.	Type of Healthcare Center	No. of Healthcare Center
1.	Rural Healthcare Center	5
2.	Rural Healthcare Sub-Center	21

Table 5.14- Healthcare Facilities

Population	No. of Doctors	Ratio	No. of Nurses	Ratio	No. of Healthcare Assistant	Ratio
105987	25	1:4276	69	1:1549	8	1:13364

Common Diseases

According to secondary data available, the most common diseases include Diarrhoea, Hepatitis, malaria, stomach ailment, and tuberculosis. It was also found out that there was substantial amount of incidence of Diarrhoea, and TBin the township.

Table 5.15- Common Diseases

Sr. No.	Disease	Incidence
1.	Malaria	189
2.	Diarrhoea	2030
3.	TB	529
4.	Stomach Ailment	374
5.	Hepatitis	50

Table 5.16- HIV/AIDS

2015-16		2016-17	
Infected	Dead	Infected	Dead
194	17	167	14

Table 5.17- Health Indices

No. of Maternal	No. of Infant	Per 1000			
		Birth Rate	Maternal Mortality Rate	Infant Mortality Rate	Abortion Rate
2697	1825	23.6	3.90	12.7	7.4

In public health sector, the ratios of medical service personnel and local population indicate the existing conditions of the insufficient health care facilities, especially for rural people. As described in the above tables, the health care facilities of Kawthoung Region are in good conditions.

5.8. Living Environment

The living environment will include the overall conditions of air quality, water quality and noise levels. The locations of the baseline environmental monitoring for living environment are shown in Figure 5.12.

Figure 5.12. Location of Environmental Survey for Overall Conditions

Location	GPS Coordinate	
SW	N10º22′15.30″	E97º56′22.39″
TW	N10º22′14.43″	E97º56′61.07″
AQ	N10º22′12.30″	E97º56′36.44″
N1	N10º22′12.67″	E97º56′40.14″
N2	N10º22′14.30″	E97º56′36.91″

5.8.1 Air Quality

The project site is located in a rural environment that is largely characterized by scattered households, beach restaurants and fish framing. No industry has been identified within the area. The primary sources of air pollution are therefore anticipated to include dust arising from unpaved roads and vehicle movements, and domestic fuel burning from rural households (fuel wood and charcoal for cooking and space heating during winter).

Air Quality Monitoring

ESIA Team used Haz Scanner EPAS air quality monitoring station to detect ambient air quality inside the project. The methodology used by ESIA Team are as follow:

(a) Monitoring Parameters

The parameters for ambient air quality monitoring were SO_2, NO_2, CO_2, CO, H_2S, O_3, $PM_{2.5}$ and PM_{10}.

(b) Methodology

Determination and analysis of ambient air qualities were conducted by using Haz-Scanner Environmental Perimeter Air Station (EPAS).

Haz-Scanner EPAS Air Quality Monitoring Station

Sampling rate of air quality were recorded automatically every one minute for important gases (Sulfur dioxide, Nitrogen dioxide, Carbon dioxide, Carbon monoxide, Hydrogen sulfide, Particulate matter, Hydrogen sulfide and Ozone) to describe ambient air quality. Sampling pump was adjusted to 2 liter/min. Different analysis methods are integrated in the instrument, such as particulates 90° Infrared Light Scattering for particulate matters (PM_{10}, $PM_{2.5}$), electrochemical sensors for toxic gases (SO_2, NO_2, CO, H_2S), NDIR (optional sensor) for (CO_2) and Gas Sensing Semiconductor- GSS technology (optional sensor) for O_3.

Monitored Gases for Ambient Air Quality

No.	Parameters	Analysis Methods
1.	Sulfur dioxide (SO_2)	Electrochemical sensors
2.	Nitrogen dioxide (NO_2)	Electrochemical sensors
3.	Carbon Dioxide (CO_2)	NDIR (optional sensor)
4.	Carbon monoxide (CO)	Electrochemical sensors
5.	Hydrogen Sulfide (H_2S)	Electrochemical sensors
6.	Particulate matter 2.5 ($PM_{2.5}$)	Infrared Light Scattering
7.	Particulate matter 10 (PM_{10})	Infrared Light Scattering
8.	Ozone (O_3)	Gas Sensing Semiconductor- GSS technology (optional sensor)

(c) Location of Air Quality Monitoring Points

The air quality monitoring was conducted near the costal Line.

Air quality monitoring at Day Time (7:00 am to 7:00 pm)

Air quality monitoring at Night Time (7:00 pm to 7:00 am)

(d) Monitored Period

Air quality was monitored by 12 hours for day time and 12 hours for night time. Detailed for measured periods are shown in following table.

Monitoring Points	Duration
Night Time	(07:00 pm to 07:00 am)
Day Time	(07:00 am to 07:00 pm)

(e) Air Quality Monitoring Results

The air quality monitoring results obtained by every minute were combined to make average values for day time (12 hours) and nigh time (12 hours) for evaluation and comparison with standard values.

Air Quality Monitoring Results of Day Time

Parameters	Unit	Measured Values
Barometric Pressure	mBar	1021
CO	$\mu g/m^3$	4.3
CO_2	$\mu g/m^3$	1164
H_2S	$\mu g/m^3$	0.00
NO_2	$\mu g/m^3$	4.72
O_3	$\mu g/m^3$	29.5
PM_{10}	$\mu g/m^3$	84.13
$PM_{2.5}$	$\mu g/m^3$	41.48
SO_2	$\mu g/m^3$	70.4

Air Quality Monitoring Results for Night Time

Parameters	Unit	Measured Values
Barometric Pressure	mBar	1049
CO	$\mu g/m^3$	3.0
CO_2	$\mu g/m^3$	807
H_2S	$\mu g/m^3$	0.00
NO_2	$\mu g/m^3$	6.4
O_3	$\mu g/m^3$	22.62
PM_{10}	$\mu g/m^3$	42.72
$PM_{2.5}$	$\mu g/m^3$	27.46
SO_2	$\mu g/m^3$	41.5

(f) Comparison with Guidelines Values

Monitoring results are compared with National Environmental Quality (Emission) Guidelines (2015); World Health Organization Guideline Value (Global Update 2005); National Ambient Air Quality Standard Central Pollution Control Board (Ministry of Environment and Forests, 2003) as shown in following table.

Pollutants	Day Time (12 hours)	Night Time (12 hours)	NEQG Value	WHO Guideline Value	NAAQS
CO_2 ($\mu g/m^3$)	164	25	-	-	-
CO ($\mu g/m^3$)	4.3	3.0	5(mg/Nm^3)	-	10,000 for Industrial, 4,000 for residential, (1 hour)
H_2S ($\mu g/m^3$)	0.00	0.00	2 (30 min) for Agriculture, Livestock and Forestry	-	-
NO_2 ($\mu g/m^3$)	4.72	6.4	200 (1 hour)	200 (1 hour)	120 for Industrial, 80 for residential, rural and other areas (24 hour)
O_3 ($\mu g/m^3$)	29.5	22.62	100 (8 hour)	100 (8 hour)	-
PM_{10} ($\mu g/m^3$)	84.13	42.72	50 (µg/m3) (24 hour)	50 (µg/m3) (24 hour)	150 for Industrial, 100 for residential, rural and other areas
$PM_{2.5}$ ($\mu g/m^3$)	41.48	27.46	25(µg/m3) (24 hour)	25(µg/m3) (24 hour)	-
SO_2 ($\mu g/m^3$)	70.4	41.5	500 (10 min)	500 (10 min)	120 µg/m3 (24 hour) for Industrial, 80 for residential, rural and other areas

Note:

NEQG = National Environmental Quality (Emission) Guidelines 2015)

WHO Guideline = World Health Organization Guideline Value, Global Update 2005

NAAQS = National Ambient Air Quality Standard, 2003 (Central Pollution Control Board, Ministry of Environment and Forests)

According to the monitoring results, the concentrations of $PM_{2.5}$ and PM_{10} in daytime are a little higher than the ambient air quality standard. Monitoring results of CO_2 are also higher

and the most possible source will be open space burning of domestic wastes within the village.

However, no guideline values were provided for carbon dioxide. Other measured gases are below the National Environmental Quality (Emission) Guidelines (NEQG) value, WHO guideline value and NAAQS.

5.8.2 Water Quality

As the proposed project can impact on water environment (depletion of natural water source and impact on water quality), water samples are collected and some parameters of water quality are measured on site and some parameters are sent to respective laboratories. Water samples are tested for drinking water purpose in ISO-TECH Laboratory (one of the national approved laboratory).

Sampling of Water at Bo Wei Island

Table 5.18-Tube Well Water Quality Testing Results inside the Project Site

Analyses	Results	Unit	WHO- Drinking Water Guideline
pH	6.9		6.5-8.5
Color (True)	10	TCU	15
Turbidity	28	NTU	5
Electro conductivity	168	µS/cm	1500

Total Hardness	50	mg/l as $CaCO_3$	500
Calcium Hardness	34	mg/l as $CaCO_3$	
MagnesiumHardness	16	mg/l as $CaCO_3$	
Total Alkalinity	56	mg/l as $CaCO_3$	
PhenolphthaleinAlkalinity	Nill	mg/l as $CaCO_3$	
Carbonate($CaCO_3$)	Nill	mg/l as $CaCO_3$	
Bicarbonate(HCO_3)	56	mg/l as $CaCO_3$	
Iron	0.58	mg/l	0.3
Chloride	25	mg/l	250
Sodium Chloride	41	mg/l	
Sulphate	30	mg/l	500
Total Solid	119	mg/l	1500
Suspended Solid	35	mg/l	
Dissolved Solid	84	mg/l	1000
Manganese	Nill		0.05
Phosphate	Nill		
Phenolphthalein Acidity	3	mg/l	
Methyl Orange Acidity	Nill	mg/l	
Salinity	0.1	ppt	
Temperature	25	C°	
Fluoride (F)	1.2		1.5
Lead (as Pb)	Nill		0.01
Arsenic (As)	Nill	mg/l	0.01
Nitrate (N,NO_3)		mg/l	50
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH_4)		mg/l	
Dissolved Oxygen		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOO)		mg/l	
Cyanide (CN)	Nill	mg/l	0.07
Zinc	Nill	mg/l	3
Copper (Cu)	Nill	mg/l	2
Silica (Si)	10.7	mg/l	
Calcium (Ca)		mg/l	
Magnesium		mg/l	

The following Table shows results of sea water quality (location point SW_2) at near the proposed project.

Table 5.19- Sea Water Quality at near the Proposed Project

Analyses	Results	Unit	WHO- Drinking Water Guideline
pH	7.6		6.5-8.5
Color (True)	Nill	TCU	15
Turbidity	4	NTU	5
Electro conductivity	51700	µS/cm	1500
Total Hardness	6000	mg/l as $CaCO_3$	500
Calcium Hardness	4000	mg/l as $CaCO_3$	
MagnesiumHardness	2000	mg/l as $CaCO_3$	
Total Alkalinity	116	mg/l as $CaCO_3$	
Phenolphthalein Alkalinity	Nill	mg/l as $CaCO_3$	
Carbonate ($CaCO_3$)	Nill	mg/l as $CaCO_3$	
Bicarbonate (HCO_3)	116	mg/l as $CaCO_3$	
Iron	0.22	mg/l	0.3
Chloride	19850	mg/l	250
Sodium Chloride	32753	mg/l	
Sulphate	450	mg/l	500
Total Solid	25856	mg/l	1500
Suspended Solid	6	mg/l	
Dissolved Solid	25850	mg/l	1000
Manganese	0.05		0.05
Phosphate	0.8		
Phenolphthalein Acidity	2	mg/l	
Methyl Orange Acidity	Nill	mg/l	
Salinity	25.8	ppt	
Temperature	25	C°	
Fluoride (F)	3.8		1.5
Lead (as Pb)	Nill		0.01
Arsenic (As)	Nill	mg/l	0.01
Nitrate (N,NO_3)		mg/l	50
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH_4)		mg/l	
Dissolved Oxygen		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOO)		mg/l	
Cyanide (CN)	Nill	mg/l	0.07
Zinc	Nill	mg/l	3
Copper (Cu)	Nill	mg/l	2
Silica (Si)	Nill	mg/l	
Calcium (Ca)		mg/l	
Magnesium		mg/l	

According to the testing results for surface water qualities, all of the water is not suitable as drinking water.

5.8.3. Noise

To monitor the existing noise level, the (IEE) team used TES-1353H Integrating Sound Level Meter which is applicable with IEC61672-1: 2003, IEC60651: 1979, ANSI S1.4: 1983 and IEC60804: 1985 standards. Existing noise level are monitoring in both day time (07:00 to 22:00) and night time (22:00 to 07:00).

The results of noise levels (Leq) in April 2018 are shown in the following Table. The noise levels at AN1 located eastward 150 m away of theproposed project site was at 46.3dB(A) during daytime and at 40.8dB(A) during nighttime. On the other hand, the noise levels at AN2 located southward 30m away of the project site was at 48.6dB(A) during daytime, and at 42.2 dB(A) during nighttime.

Table5.20-NoiseLevels Monitoring Results

Receptors and distances from project		**Existing noise levels monitored by integrated noise level meter (dBA)**	
		Daytime	**Nighttime**
AN1	Costal line (15 m)	46.3	40.8
AN2	In land(30m)	48.6	42.3
MEGTarget Value*	Residential, institutional, educational	55	45
	Industrial,commercial	70	70

Given the generally costal nature of the existing environment, noise levels can be predicted to be low. Primary contributions to noise as observed in the project area is emit from diesel generators. Noise receptors would include individual residents, wild and domesticated animals.

5.9 Biodiversity Environment

5.9.1. Introduction

The construction industry is growing exponentially in Myanmar. It is mainly focusing on the civil construction buildings especially in commercial, services, hotels, offices and luxury apartment complexes, under the Government's urbanization strategy as infrastructure developments are immediately required in many sectors for country's economy development. With those developments, environmental concerns are increasing among the people who are living around the project area. However, the infrastructure development and environmental sustainability are important enable to be growing for ecological balance and economy development. Biodiversity is the part of the nature and plays in important role in natural environment and human benefits. Thus with those reasons, biodiversity sustainability and conservation plans are more important for balance of nature and future perspectives.

The Initial Environmental Examination (IEE) on Biodiversity will be conducted systematically and scientifically to find the possible environmental impacts of the proposed hotel project as well as to see the solution for the mitigation measures on impacts which could be happened in the project activities.

The purposes of IEE are to identify:

- the important issues to be considered in all developmental processes;
- the information necessary for decision-making; and
- the facts to support the mitigation measures and management plan.

Regards on biodiversity conservation and sustainable use, Myanmar's Environmental laws relating to biological conservation and management issued by the Ministry of Natural Resources and Environment Conservation (MONREC) are listed below (Table 5.21).

Table (5.21) Environmental law related to biological matters

1. The Forest Law, 1992	Provisions to conserve water, soil, biological diversity and the environment; sustain forest produce yields; protect forest cover; establish forest and village firewood plantations; sustainably extract and transport forest products
2. Forest Rule, 1994	Provision of the sustainability of ecosystems and biodiversity
3.Forest Policy 1995	Provision of the sustainability of ecosystems, habitats and biodiversity
4. Biodiversity and Protected Area Law 2018	Provision of biodiversity and wildlife protection, natural areas conservation, carrying out the protection and conservation of biodiversity, ecosystems and protected areas as well as protection of migratory birds in accordance with International Conventions acceded by the State, protecting the endangered species of wildlife and their natural habitats and contribution for the development of research on natural science.

Biological environment of the project site

According to "Biodiversity in Myanmar, including Protected Areas and Key Biodiversity Areas (2018)", the proposed project site waslisted in the High Priority Key Biodiversity Areas (KBAs). The proposed project site of Bowhee Island is located to the North-west of Kawthong District, Tanintharyi Region. Approximately, the distance from Kawthong Town to Bowhee Island is 79 km in straight line. The total land area of Bowhee Island is about 167.50 acres and the project site area is about 12 acres. The central coordinate point of the project site is at 10°22'9.55"N and 97°56'34.00"E. The forest type of the project area is tropical evergreen forest (Figure 5.13). Generally, flora is moderately abundant commonly found Thakut tree, *Stereospermum glandulosum*and the terrestrial fauna diversity is low and aquatic fauna is moderate found groper fish as known species. There is a sandy beach mixed with rocks about 70 m, no information about sea turtle nesting on the beach as well as marine mammals like a dugong inhabiting around the water of the project area.

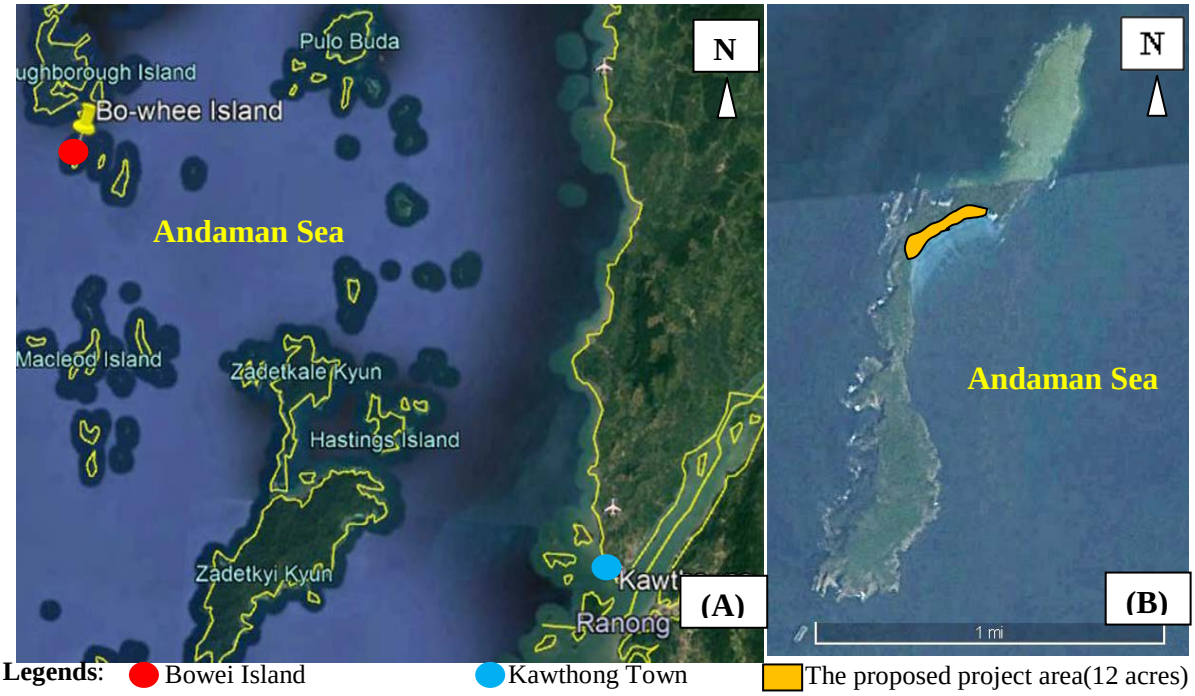


Figure (5.13) Location map of Bowhee Island from Kawthong Town (A); Aerial view of Bowhee Island (B); Close up view of Bowhee Island (C); Vegetation of Bowhee Island (D)

4.9.2. IEE Survey Methodology

Survey scope

- listing the flora (herbs, shrubs and trees) and fauna (amphibian & reptiles, birds, mammals and fish) species and recording their abundance status in both terrestrial and aquatic
- Listing the Red List species of Flora (herbs, shrubs and trees) and Fauna (amphibian & reptiles, birds, mammals and fish) in both terrestrial and aquatic
- Listing the Endemic and Invasive species of flora (herbs, shrubs and trees) and Fauna (amphibian & reptiles, birds, mammals and fish) in both terrestrial and aquatic
- Identify the potential impacts on flora (herbs, shrubs and trees) and Fauna (amphibian & reptiles, birds, mammals and fish)

- Identify the mitigation measures and monitoring plan
- Survey areas assign for 1 km radius of the proposed project site
- Conduct two days for flora and fauna survey in dry season

Survey and data collection

Both direct observation and interview method were used to collect necessary data and information. Specimen collection, taken photographs and interview were carried out in and around the proposed project site. Data collection for flora and fauna were assigned for 1 km radius of project site. GIS site mapping is also created for biological sample study area. Identification, list of the plant and animal species and their abundance status were made. IUCN listed species were targeted for special attention.

A total of (20) sampling point for flora and fauna survey recorded (Figure 5.14 and Table 5.23). A Global Positioning System (GPS) was used to present the recorded survey points in field. Field survey points based on Google map and GPS are created by using Adobe Phtoshop software in computer (Figure 5.14 and 5.15).

Data collection of plant species

Random sampling method was used. The plant species from the project site and its surrounding areas was observed and listed by walking within 1 km radius of the project site in which most survey was conducted on island. Interviews with some people who they live in island conducted (Figure 5.13).

Data analysis of plant species

Samples of species were not directly identified in field. After field trip, plant identification was conducted based on available literatures such as key to the families of the flowering plants, issued by Department of Botany, Yangon University (1994), Backer *et. al.*(1963), Kress *et. al.* (2003), Gardner *et al.* (2000), Caton *et al.*etc., and verification was also conducted by recorded field photographs and some useful internet websites. In this scoping report, most scientific names and family names of flora were based on the literature of "A checklist of the trees, shrubs, herbs and climbers of Myanmar" (2003). In flora identification, some species have not Myanmar name, and also some species can only be identified in genus levels. Finally, the threatened levels of plant species of the survey area were checked and mentioned in accordance with "The IUCN Red List of Threatened Species, 2018".

Data collection of animal species

Direct observation in the field was taken to collect the primary data and information. Secondary data and interview survey were also done for manipulation and for the reference. For terrestrial animal species, four groups such as birds, reptiles and amphibians, fish and mammals were targeted to collect the samples. Appropriate biological survey methods for each kind of animal are used to collect the data and information. Specimen collection was taken around 1km radius of the project area. Identification and list of animal species inhabiting in the surrounding area are made. Observed frequency and abundance of individual species of animals are also recorded. Interview survey was taken with fisherman to investigate fish species richness and abundance. Some specimens were recorded by photograph.

Data collection of Herpetofauna

The Survey work mainly involved walking and visual inspection. No traps or Snares were used. Snakes and other reptiles including lizards are observed in their habitats (resting and foraging habitats). Guide books and camera were used to identify the snake species. Interview survey was also used for information.

Bird survey

Birds were studied using the line transect and point count methods. Observation was be madealong the line transect (500 m) at 50 m interval. Species identification, observed numbers of birds, habitat utilization was examined. Species richness and abundance of birds in the study area were investigated.

Specimen collection of Fish

Fish specimens were collected with the help of fishermen who they are fishing along the coastal waters nearby the project area. Fish sample collection was made by use of drifted gill net, trammel-net and line & hook fishing. Identification was made by FAO (2012) and Fishbase 2015.

Mammal survey

Mammals were studied using direct sighting method. Track and sign observation were used to investigate the presence of mammals around the project area. Interview survey was undertaken for the secondary data source. No trapping methods were used in this study

Data analysis for animal species

Encountered rate

Encountered rate for each species is equal to the individual recorded by two observers divided by observation time and multiplied by ten to give a result in units individuals recorded per ten hours of survey. This analysis was done according to the method of Bibby, Jones and Marsden (2001).

$$\text{Encountered rate} = \frac{\text{Total number of individuals}}{\text{Number of hours}} \times 10$$

Encountered rate data was split into ordinal categories of abundance as follows:

Abundance category	Abundance score	Ordinal scale
<0.1	1	Rare ®
0.1-2,0	2	Uncommon (UC)
2.1-10.0	3	Frequent (F)
10.1-40.0	4	Common ©
40.1 +	5	Abundant (A)

Classification of Impact levels

Impacts might be happened by the project activity were classified into four categories: Small, Moderate, Large and Very large followed by the Bureau of Land Management by the US (2016).

Table (5.22) Classification of impact levels and caused event on biodiversity

	Impact level	Caused events
1	Low (L)	This is an impact that is limited to the immediate project area, affects a relatively small proportion of the local population (less than 10%), and does not result in a measurable change in carrying capacity or population size in the affected area.
2	Moderate (M)	This is an impact that extends beyond the immediate project area, affects an intermediate proportion of the local population (10 to 30%), and results in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area.
3	High (H)	This is an impact that extends beyond the immediate project area, could affect more than 30% of a local population, and could result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area.
4	Very High (VH)	This is an impact that extends beyond the immediate project area, could affect more than 50% of a local population, and could result in a very large, measurable, and destabilizing change in carrying capacity or population size in the affected area.

Impact analysis

Impact levels with the associate significant points by the project activities which might be falling on flora and fauna existing in and around the project area were anticipated followed by the Bureau of Land Management by the US (2016). According to the Bureau, the following factors are used in determining impact significance and magnitude. These factors are: area of influence, percentage of resource affected, persistence of impacts, sensitivity of resources, status of resources, regulatory status, and social values.

Map source: Google map

Figure (5.14) Sampling points of flora and fauna survey on BoWei Island

Table (3) Representative coordinates points of flora and fauna survey

GPS no	Latitude	Longitude
Terrestrial sampling points		
1	10°21'58.84"N	97°56'26.91"E
2	10°21'55.71"N	97°56'28.13"E
3	10°21'49.57"N	97°56'25.30"E
4	10°21'46.74"N	97°56'28.43"E
5	10°21'40.61"N	97°56'30.27"E
6	10°21'37.78"N	97°56'28.70"E
7	10°22'5.13"N	97°56'28.64"E
8	10°22'5.99"N	97°56'30.34"E
9	10°22'12.21"N	97°56'36.98"E
10	10°22'14.85"N	97°56'41.72"E
11	10°22'16.67"N	97°56'47.05"E
Aquatic sampling points		
12	10°22'4.17"N	97°56'34.89"E
13	10°22'9.47"N	97°56'39.98"E
14	10°22'2.54"N	97°56'23.52"E
15	10°22'4.65"N	97°56'24.07"E

Figure (5.15) Field activities: (A-B) Trip to Bowei Island; (C to G) Flora and fauna survey on island; (H) interview

5.9.3. IEE Results

1. Flora and Fauna species recorded in and surrounding area of the project site

FLORA

Plant species of the project site and surrounding areas

In this survey, plant species in and around the proposed project area within 1 km was recorded and listed. In flora portion, a total of (41) species from (23) families was recorded in which trees were (51.21%) species, followed by small trees (19.51%), climbers (14.63%), Shrubs (12.19%), and finally herb (2.43%) respectively included (Table 4 and Figure 5.16). In family composition, the significant families were Myrtaceae (with 4 species), followed by Bignoniaceae, Euphorbiaceae, Fabaceae, Lecythidaceae, Malvaceae, and Rubiaceae (with each 3 species), and finally Arecaceae, Lamiaceae, and Stericulaceae (with each 2 species). The other remaining families were composed of a single species respectively (Table 5.24 and Figure 5.17). Grass species were omitted.

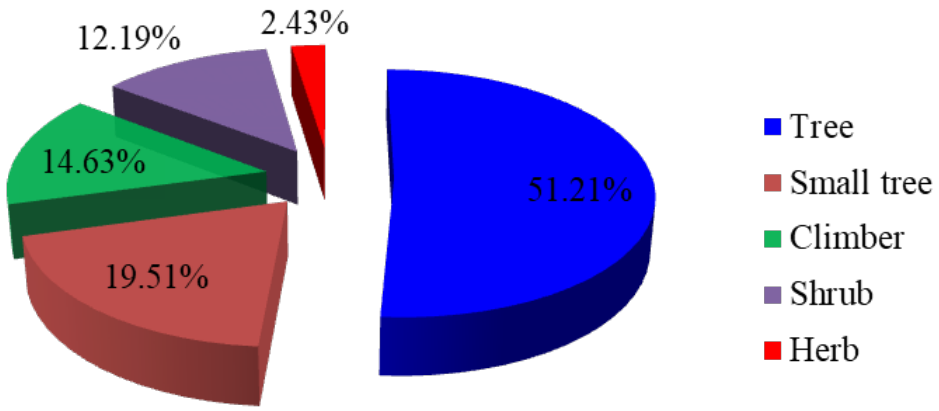


Figure (5.16) Species Composition of the Project Area

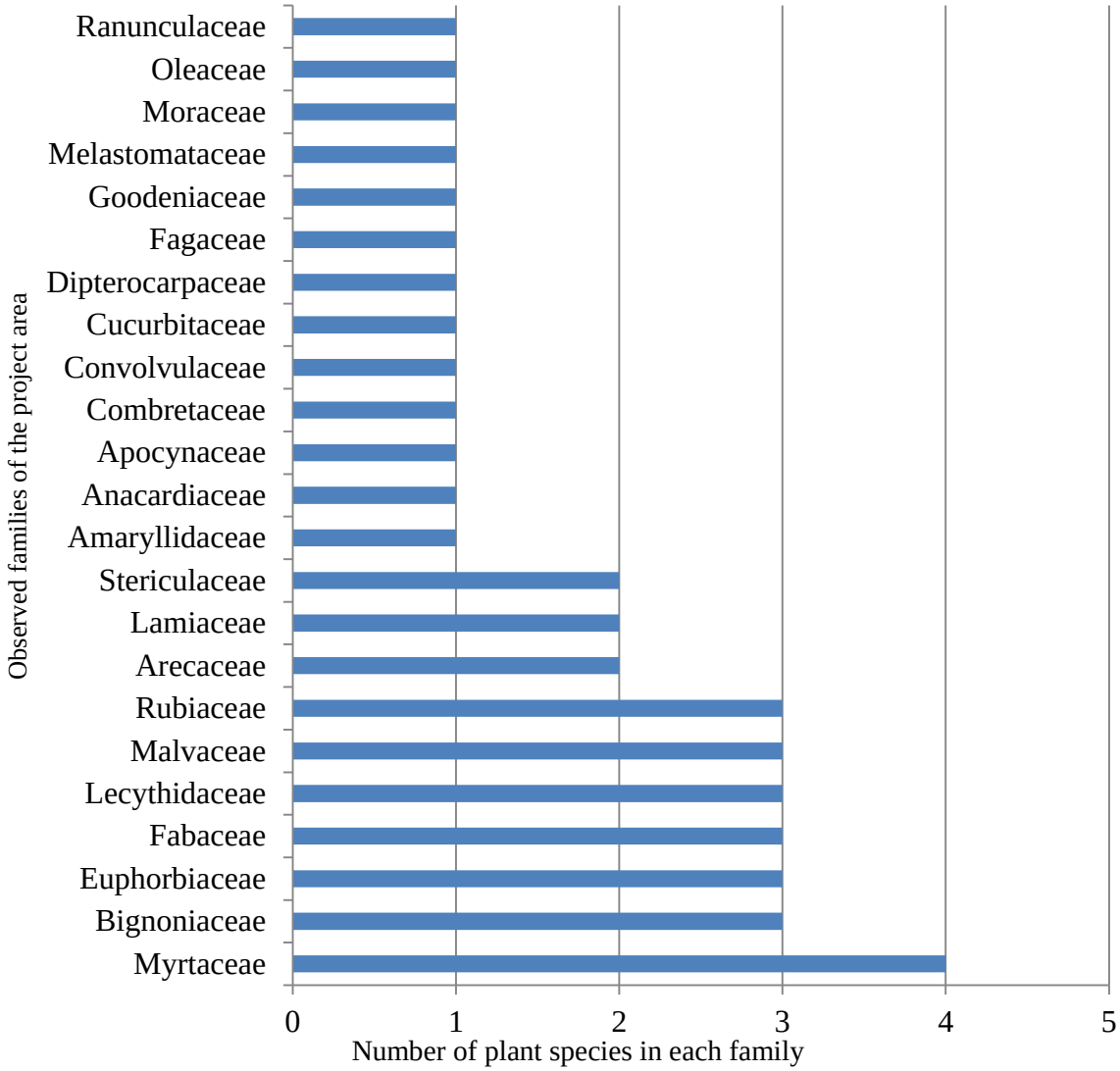


Figure (5.17) Family Composition of the Project Area In Accordance With Observed Number of Plant Species

Table (5.24) Recorded plant species together with Scientific names, Family names, Habits, Myanmar names and IUCN status

No.	Scientific Names	Family	Habit	Myanmar Name	IUCN status
1	*Abrus* sp.	Fabaceae	Climber=6	Ywe-ngwe	NL
2	*Archidendron jiringa* (Jack) I.C. Nielsen	Fabaceae=3	Tree	Danyin	NL
3	*Atalantia monophylla* A. DC.	Rubiaceae	Shrub	Taw-shauk	NL
4	*Barringtonia asiatica* (L.) Kurz.	Lecythidaceae	Tree	Kyi-gyi	NL
5	*Barringtonia conoidea* Griff.	Lecythidaceae	Small tree	Nil	NL
6	*Bridelia retusa* (L.) Spreng.	Euphorbiaceae=3	Tree	Seikchi	NL
7	*Calamus gregisectus* Burret	Arecaceae=2	Climber	Kyein	NL
8	*Careya arborea* Roxb.	Lecythidaceae=3	Tree=21	Bambwe	NL
9	*Cerbera odollam* Gaertn.	Apocynaceae=1	Small tree	Nil	NL
10	*Clematic smilacifolia Wall.*	Ranunculaceae=1	Climber	Sabal-yine	NL
11	*Colona floribunda* (Kurz) Craib	Malvaceae	Small tree	Phet-shat	NL
12	*Crinum asiaticum* L.	Amaryllidaceae=1	Herb=1	Koyan-gyi	NL
13	*Eriolaena* sp.	Stericulaceae=2	Tree	Tayaw	NL
14	*Ficus fistulosa* Reinw	Moraceae=1	Small tree	Nil (Nyaung)	NL
15	*Gmelina arborea* Roxb.	Lamiaceae=2	Tree	Yemane	NL
16	*Heterophragma adenophyllum* Seem.	Bignoniaceae	Tree	Petthan	NL
17	*Hibiscus macrophyllus* Roxb.	Malvaceae=3	Small tree	Petwun-gyi	NL
18	*Hopea sangal* Korth.	Dipterocarpaceae=1	Tree	Thingan-magale	NL

Table (5.24) Contd. (a)

No.	Scientific Names	Family	Habit	Myanmar Name	IUCN status
18	*Diospyros ehretioides* Wall.	Ebenaceae=1	Tree	Aukchinsa	NL
19	*Duabanga grandiflora* (Roxb.) Walp.	Lythraceae=2	Tree	Myauk-ngo	NL
20	*Eriolaena* sp.	Stericulaceae	Tree	Tayaw	NL
21	*Ficus fistulosa* Reinw	Moraceae	Small tree	Nil (Nyaung)	NL
22	*Ficus glandulifera* Wall.	Moraceae	Small tree	Nil (Nyaung)	NL
23	*Ficus heteropleura* Blume	Moraceae	Tree	Nil (Nyaung)	NL
24	*Ficus hispida* L.f.	Moraceae	Small tree	Kadut	NL
25	*Garcubua cowa* Roxb.	Clusiaceae=1	Tree	Taung-thale	NL
26	*Gmelina arborea* Roxb.	Lamiaceae=2	Tree	Yemane	NL
27	*Heritiera javanica* (Blume) Kosterm.	Stericulaceae=3	Tree	Taung-kanazo	NL
28	*Heterophragma adenophyllum* Seem.	Bignoniaceae	Tree	Petthan	NL
29	*Hibiscus macrophyllus* Roxb.	Malvaceae=5	Small tree	Petwun-gyi	NL
30	*Hopea sangal* Korth.	Dipterocarpaceae	Tree	Thingan-magale	NL
31	*Jasminum multiflorum* (Burm.f.) Andrews	Oleaceae	Climber	Tawsabe	NL
32	*Lagerstroemia villosa* Wall. ex Kurz	Lythraceae	Tree	Zaungbale	NL

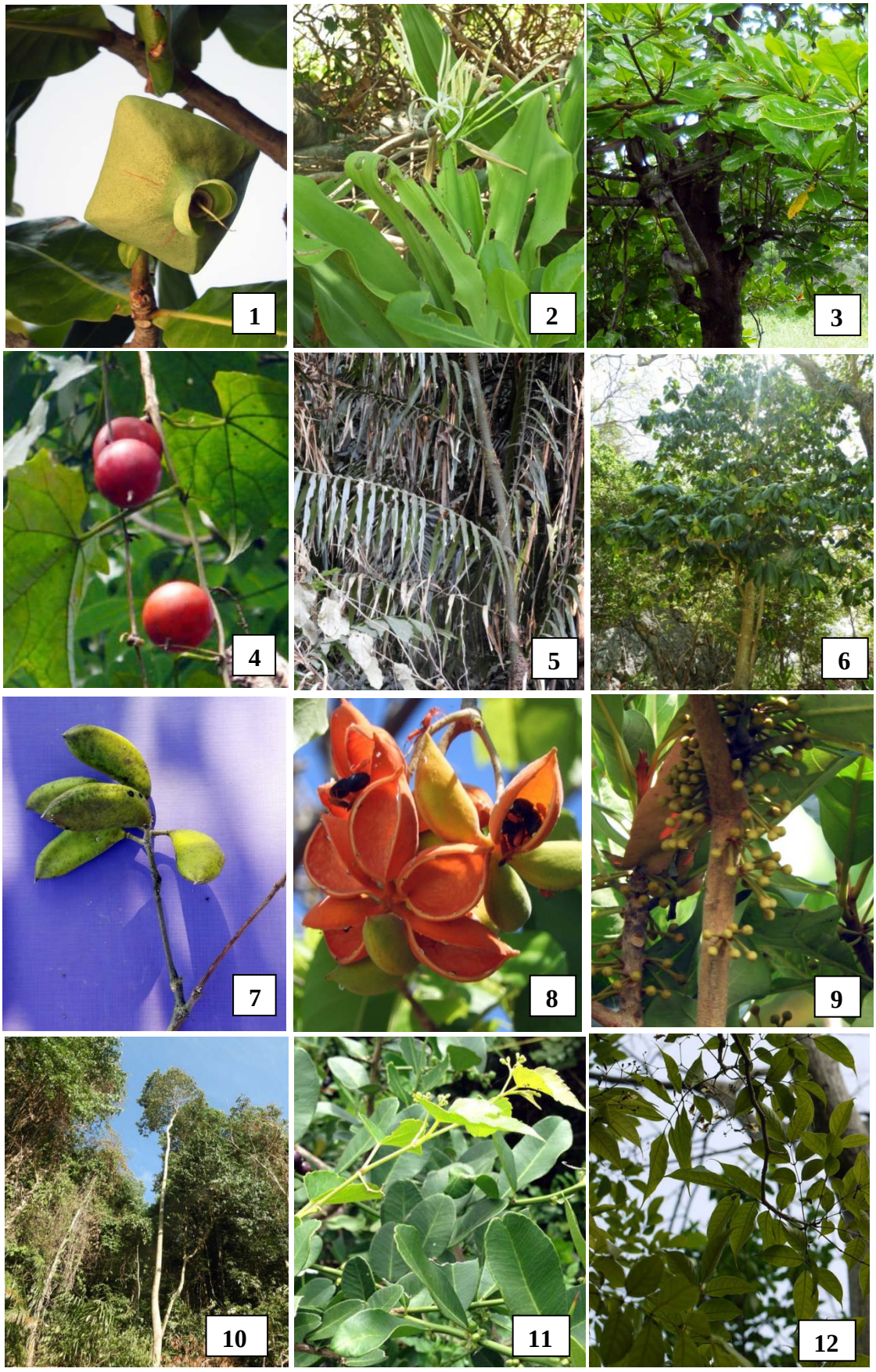
Table (5.24) Contd. (b)

No.	Scientific Names	Family	Habit	Myanmar Name	IUCN status
19	*Ipomoea pes-caprae* (L.) RBr.	Convolvulaceae=1	Climber	Pinle-kazun	NL
20	*Jasminum multiflorum* (Burm.f.) Andrews	Oleaceae=1	Climber	Tawsabe	NL
21	*Lannea coromandelica* (Houtt.) Merr.	Anacardiaceae=1	Tree	Nabe	NL
22	*Lithocarpus* sp.	Fagaceae=1	Tree	Nil	NL
23	*Macaranga denticulata* Muell. Arg.	Euphorbiaceae	Small tree	Phet-wun	NL
24	*Melastoma malabathricum* L.	Melastomataceae=1	Shrub	Kyet-gale	NL
25	*Melicope* sp.	Rubiaceae=3	Shrub=5	Nil	NL
26	*Morinda tetrandra* Roxb.	Rubiaceae	Small tree=8	Nibase	NL
27	*Pongamia pinnata* (L.) Pierre	Fabaceae	Tree	Thinwin-phyu	NL
28	*Scaevola koenigii* Vahl	Goodeniaceae=1	Shrub	Pinle-tan	NL
29	*Sterculia parviflora* Roxb. ex G. Don	Stericulaceae	Tree	Nil	NL
30	*Stereospermum fimbriatum* (Wall. ex G. Don) A. DC.	Bignoniaceae	Tree	Than-that	NL
31	*Stereospermum glandulosum* Miq.	Bignoniaceae=3	Tree	Thakut	NL
32	*Syzygium cumini* (L.) Skeels.	Myrtaceae	Tree	Thabye-kyet-chi	NL
33	*Syzygium inophyllum* DC.	Myrtaceae	Tree	Thabye-satche	NL
34	*Syzygium kurzii* (Duthie) N. P. Balakr.	Myrtaceae	Tree	Thabye-nyo	NL

Table (5.24) Contd. (c)

No.	Scientific Names	Family	Habit	Myanmar Name	IUCN status
35	*Syzygium zeylanicum* (L.) DC.	Myrtaceae=4	Tree	Thabye-ni	NL
36	*Terminalia catappa* L.	Combretaceae=1	Tree	Banda	NL
37	*Thespesia lampas* (Cav.) Dalzell & A. Gibson	Malavaceae	Shrub	Thaman-shaw	NL
38	*Trewia nudiflora* L.	Euphorbiaceae	Tree	Setkadon	NL
39	*Trichosanthes tricuspidata* Lour.	Cucurbitaceae=1	Climber	Kyi-arh	NL
40	*Vitex pubescens* Vahl	Lamiaceae	Tree	Kyet-yo	NL
41	*Wallichia disticha* T. Anderson	Arecaceae	Small tree	Min-baw	NL

Note: IUCN- International Union for Conservation of Nature; NL- Not listed in IUCN red list (2018)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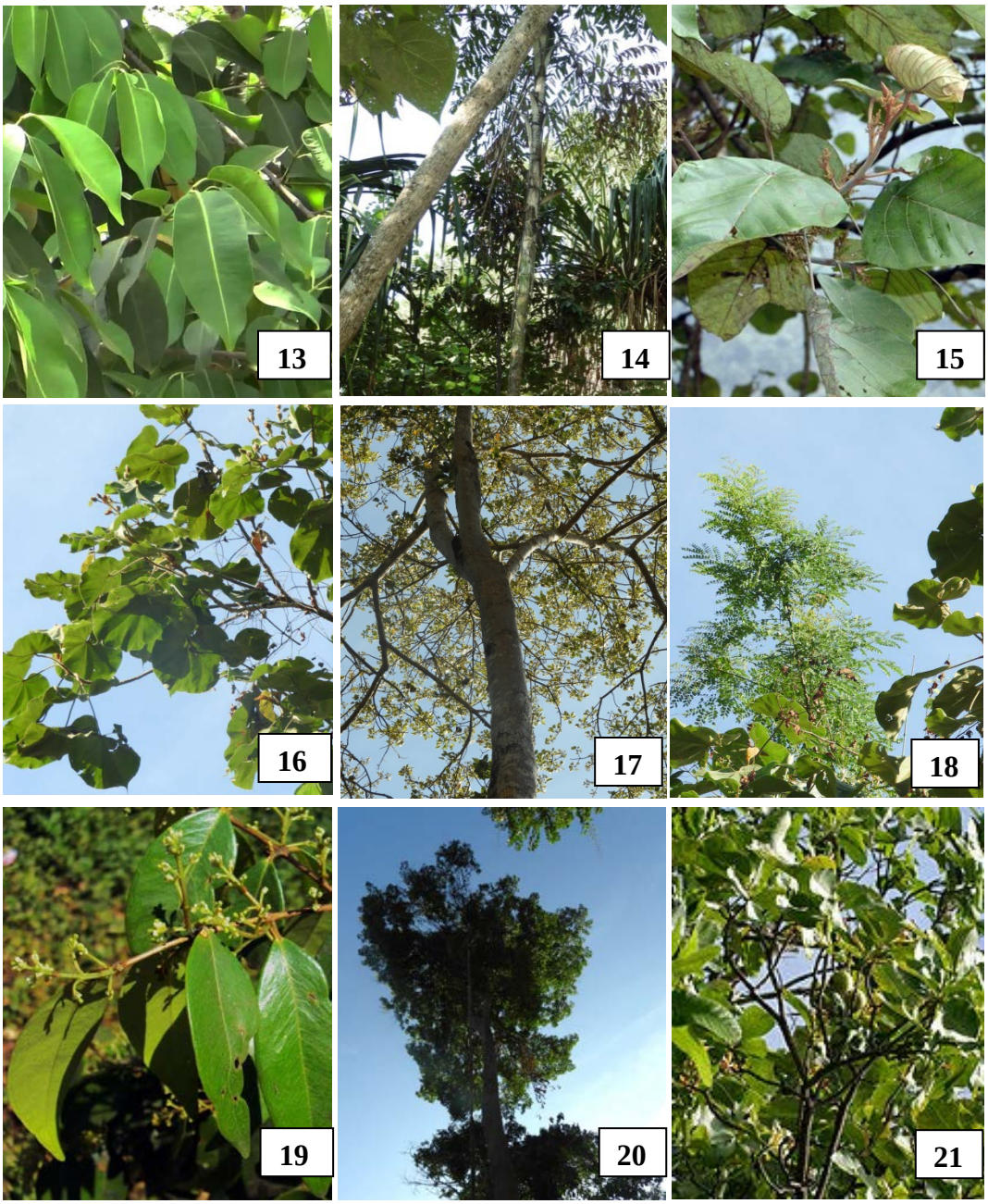


Figure (5.18) Some recorded plant species of Bowhee Island: (1) *Barringtonia asiatica* (Kyi-gyi); (2) *Crinum asiaticum* (Koyan-gyi); (3) *Terminalia catappa* (Banda); (4) *Trichosanthes tricuspidata* (Kyi-arh); (5) *Calamus platyspathus* (Kyet-u-kyein); (6) *Cerbera odollam* (Nil); (7) *Pongamia pinnata* (Thinwin-phyu); (8) *Sterculia parviflora* (Nil); (9) *Ficus fistulosa* (Nil); (10) *Hopea sangal* (Thingan-magale); (11) *Atalantia monophylla* (Taw-shauk); (12) *Stereospermum glandulosum* (Tha-kut); (13) *Syzygium cumini* (Thabye-kyet-chi); (14) *Wallichia disticha* (Min-baw); (15) *Macaranga denticulate* (Phet-wun); (16) Eriolaena sp. (Ta-yaw); (17) *Stereospermum fimbriatum* (Than-that); (18) *Lithocarpus* sp. (Nil); (19) *Syzygium zeylanicum* (Thabye-ni); (20) *Gmelina arborea* (Yemane); (21) *Careya arborea* (Bambwe)

Note: Some photos will be the same from BoWei island report because of the same trip of the two islands

Discussion for plants

The proposed project area is the high priority key biodiversity areas (KBAs) in accordance with the literature of "Biodiversity in Myanmar, including Protected Areas and Key Biodiversity Areas (2018)". According to this point of view, Bowhee Island is an actual important area to conserve the flora and fauna diversity in Myanmar. In flora survey, not only monocotyledonous but also dicotyledonous flora species are abundantly found within 1 km radius of the project site. According to angiosperm diversity, a total of (3) monocotyledonous species of *Calamus gregisectus* (Kyein), *Wallichia disticha* (Min-baw) and *Crinum asiaticum* (Koyan-gyi) are growing on this island. The resting (38) species were recorded as dicotyledonous species. At present situation, land preparation was not occurred in the proposed project site (12 acres) and its surrounding areas. If land preparation has to conduct on this island, the developer should be built the native flora nursery on this island and grown the native flora species on the roadsides and fragmented areas to compensate land preparation. And also, the native flora species from the flora nursery should be grown on the road areas and fragmented areas of the forest after closing the hotel resort project.

In this survey, plant species in and around the proposed project area within 1 km was recorded and listed. In flora portion, a total of (41) species from (23) families was recorded in which trees were (51.21%) species, followed by small trees (19.51%), climbers (14.63%), Shrubs (12.19%), and finally herb (2.43%) respectively included. In family composition, the significant families were Myrtaceae (with 4 species), followed by Bignoniaceae, Euphorbiaceae, Fabaceae, Lecythidaceae, Malvaceae, and Rubiaceae (with each 3 species), and finally Arecaceae, Lamiaceae, and Stericulaceae (with each 2 species). The other remaining families were composed of a single species respectively.

In conclusion, recorded flora species were not found in threatened categories of IUCN red list (2018) when all specimens check through IUCN web address after identification.

FAUNA

Four groups for animals are classified according to their presence in the surrounding area of the project site. The study is to investigate their abundance status and possible impacts caused by the project activities. According to survey result, the abundance of individual recorded species in terrestrial habitat in and around the project area are low and moderate. However aquatic fauna species are intentionally observed as ecological important which includes fish. Stingray fish was recorded which listed IUCN as nearly threatened species (NT) during the observation period. Four fauna groups are as follow,

- -Herpetofauna (Reptiles and Amphibians)
- -Avifauna/birds
- -Mammals
- -Fish

Herpetofauna(Amphibian and reptiles)

Herpetofauna with low population and small diversity are recorded. A total of 11 species belong to (9) families were recorded during the scoping survey (Table 5.25). The abundance status of individual species based on observed frequency was recorded as rare in the study area. All recorded amphibians and reptiles are common species. Amphibians and reptiles are one of the important members of aquatic and terrestrial ecosystems as they serve as both predators and prey.

Table (5.25) Recorded amphibian and reptile species in the project area

Sr. No	Family	Common name	Scientific name	Conservation status IUCN 2016	Habitats	Abundance status
Frog and Toad						
1	Dicroglossidae	Indian cricket frog	*Fejervarya limnocharis*	LC	Shrub	R
2	Rhacophoridae	Common tree frog	*Polypedates leucomystax*	LC	Shrub	R
3	Bufonidae	Asian common toad	*Duttaphrynus melanostatus*	LC	Ground	R
Snake						
4	Colubridae	Long-nosed whip snake	*Ahaetulla nasuta*	LC	Shrub/Tree	R
5	Colubridae	Copper head racer	*Elaphis radiatus*	LC	Shrub/grass	R
6	Colubridae	Indo-Chinese Rat Snake	*Ptyas korros*	LC	Shrub/grass	R
7	Elapidae	Monocellate cobra	*Naja kaouthia*	LC	Shrub	R
8	Pythonidae	Reticulated python	*Python reticulatus*	LC	Forest	R
Lizard						
9	Agamidae	Garden fence lizard	*Calotes versicolor*	LC	Shrub	S
10	Gekkonidae	Tockay	*Gekko gecko*	LC	Tree	S
11	Veranidae	Clouded monitor	*Varanus bengalensis*	LC	Tree	S

Notes: Abundance status in the study area. Rare=R, Uncommon=UC, Frequent=F, Common=C and Abundant=A

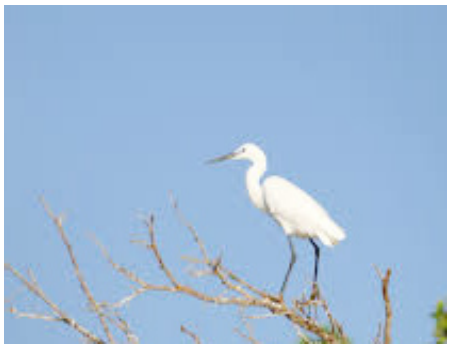
Birds

A total of 11 species of bird belongs to 9 families are recorded around the project area (Table 5.26 and Figure 5.19). Among themBlack-eared Kite*Milvus lineatus* was remarkable bird species found in the study area with small number about 5 individuals. This species is also found as widely distributed in the islands of this region. No migratory and threatened species are observed during the observation period. Birds are taking play in ecological important role as theyserve as in food-chain and food web, seed dispersal and propagation, pollination, pest control and rodent control.

Table (5.26) Recorded bird species around the project area

Sr. No	Family	Common name	Scientific name	Conservation status (IUCN 2016)	Habitats	Abundance Status
1	Accipitridae	Black-eared Kite	*Milvus lineatus*	LC	Tree	R
2	Columbidae	Spotted dove	*Streptopelia chinensis*	LC	Tree	R
3	Corvidae	House crow	*Corvus spledens*	LC	Tree	R
4	Dicruridae	Black drongo	*Dicrurus macrocercus*	LC	Tree	R
5	Hirundinidae	Barn swallow	*Hirundo rustica*	LC	Sky/branch	R
6	Sturnidae	Hill myna	*Gracula religiosa*	LC	Tree	R
7	Pycnonotidae	Red whiskered bulbul	*Pycnonotus jocosus*	LC	Tree	UC
8	Passeridae	House sparrow	*Passer domesticus*	LC	Terrestrial	UC
9	Ardeidae	Little egret	*Egretta garzetta*	LC	Aquatic	R
10	Ardeidae	Great egret	*Ardea alba*	LC	Aquatic	R
11	Ardeidae	Indian pond heron	*Ardeola grayii*	LC	Aquatic	R

Notes: Abundance status in the study area. Rare=R, Uncommon=UC, Frequent=F, Common=C and Abundant=A



Black-eared Kite*Milvus lineatus*Little egret*Egretta garzetta*

Passer domesticus

Figure (5.19) Some Recorded Birds around the Project Area

Mammals

Mammal species are very less in the project area. The rodents and squirrel belong to Family Cricetidae and Sciuridae, are observed in the forest and shrub. Population are small.

Fish

Fish sample collection was made with the help of local people. Those people are fishing for their home consumption. No commercial fishing was observed around this area. Both commercial fish and small fish with small population are recorded during the survey period. Fish species richness is moderate and abundance is low in each species. All recorded fish species, the fish *Scatophagus argus, Plotosus canius* and *Chelon macrolepis* were found as moderate and Uncommon status in the assessed category. A total of 17 species under 15 families were recorded (Table 7 and Figure 5.20). All recorded fishes are common species and widely distributed in this region. But the sting-ray fish or mangrove whipray (*Himantura walga*), and small size shark, *Scoliodon sp* a cartilaginous fish in the familyDasyatidae was recorded. It is a demersalfish and is found in coastal water. The IUCN has assessed it as being "Near-Threatened (NT)and (LC)" and which should be protected as prohibited fishing these species by Myanmar Fishery Law.

Table (5.27) Recorded fish species in the water around the project area

Sr. No	Family	Common name	Scientific name	IUCN 2018	Habitats	Abundance status/remark
1	Carangidae	Giant trevally	*Caranx ignobilis*	LC	Rocky shore	R
2	Carangidae	Slender queenfish	*Scomberoides tol*	LC	Coastal sea	R
3	Scaridae	Parrotfish	*Scarus sp*	LC	Rocky shore	R/information

4	Disyatidae	Mangrove whipray	*Himantura walga*	NT	Coastal Sea flow	R
5	Carcharhinidae	Spadenose shark	*Scoliodon sp*	LC	Coastal sea	R/information
6	Serrinidae	Gropper/Kyauk nga	*Epinephelus tauvina*	LC	Rocky shore	R
7	Polynemidae	Indian Threadfin/Ka Ku Yan	*Polinemus indicus*	LC	Coastal	R
8	Litadae	Seabass/Kakatit	*Lates calcarifer*	LC	Coastal	R
9	Sciaenidae	Caroun croaker/Nga Poke thin	*Johnius carouna*	LC	Rocky shore/coastal	R
10	Scatophaguidae	Spotted scat/Nga pathon	*Scatophagus argus*	LC	Rocky shore	UC
11	Gobiidae	Golden tank goby/Kathaboe	*Glossogobius aureus*	LC	River	R
12	Hemiramphidae	Needlefish/ Nga Phaung Yoe	*Hyporhamphus limbatus*	LC	Coastal & surface water	R
13	Mugilidae	Large scale mullet/Kabilu	*Chelon macrolepis*	LC	Open and coastal water	UC
14	Plotosidae	Canine Catfish eel/Nga Khu	*Plotosus canius*	LC	Coastal water	UC
15	Cynoglossidae	Fourlined tonguesole/Nga Hway Shar	*Paraplagusia bilineata*	LC	Sea flow	R
16	Sciaenidae	Croaker/Ngapokethin	*Johnius coitor*	LC	Coastal	UC
17	Lutjanidae	John's snapper/Ngapani	*Lutjanus johnii*	LC	Rocky shore	R

Notes: Abundance status in the study area. Rare=R, Uncommon=UC, Frequent=F, Common=C and Abundant=A

Epinephelus tauvina Spotted scat*Scatophagus argus*

Gerres filamentosus

Threapon jarbua

Plotosus canius

Himantura walga

Figure (5.20) Some Photo-Recorded Fishes nearby the Project Area

IUCN Red list species, Endemic species and Invasive species

There were no recorded of those species of flora and fauna in the study area during the survey period. However, the flora and fauna diversity in the study area are suggested to protect them according to the island was listed as one the high priority KBAs and geological isolation.

5.9.4. Management

- Wildlife poster described key information of remarkable animals and plants such as Long-tailed monkey and Black Kate bird, Python snake and Yemane tree found in the area with pictures should be set up in suitable place of the project area for conservation purpose.
- It should be included A Notice of prohibiting the killing of any wildlife, fishing and cutting of the trees around the project area,
- Plastic waste, liquid waste disposal and any rubbish management plan should be for special attention, no plastic and rubbish to water is very important in the plan.

5.9.5. Conclusion

In the proposed project area, the flora and fauna species area unique because of the geological isolation. The proposed project area is moderately significant for biodiversity as well as the important ecosystem and environmental values of marine sources. A total of (41) flora species and (40) species of fauna were recorded, Plant and animal species are not found in IUCN Red list but two fish species of Shark and Ray were observed as protected species by Fishery law is considered as conservation importance. Plant density and species abundance are moderate in and around the project area. Vegetation with trees are mainly composed of land area. According to the data, there will be an impact on biological community especially to the existing aquatic organisms and land vegetation. The extent of the impact on fauna and flora is investigated as only in the site specific and the duration of the impact is assumed as may be long term.