



**Environmental Impact Assessment Report**  
for  
**Myint & Associates Offshore Supply Base**

**Executive Summary**

January 2018

# 1 EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

Myint & Associates Company Ltd. (M&AOSB) is proposing to construct an Offshore Supply Base (OSB) near Nga Yoke Kaung Bay in Ayeyarwady Region, which is located approximately 40 km south of the town of Ngwe Saung. The facilities will initially include an access bridge and jetty of about 1.2 ha and a main onshore base of about 12.12 ha (29.955 acres). The nearest road lies ~ 25 km to the east. Details of the Project are shown in *Table 1.1* and the location is shown in *Figure 1.1*.

**Table 1.1** *Project Details*

| Component   | Details   |
|---|---|
| Name of the Project                               | Myint & Associates Offshore Supply Base   |
| Project Owner                                     | Myint & Associates Offshore Supply Base Ltd. (M&AOSB)                                       |
| Area of the Project                               | 12.12 ha (onshore) and 1.2 ha (offshore). This could be expanded up to 50 ha in the future. |
| Type of infrastructure                            | Jetty with a platform and a main onshore base   |
| Plans after commencement of the Project operation | To be used as an offshore supply base for current / future offshore operations              |

As per the Myanmar Environmental Impact Assessment (EIA) Procedure, this Project requires an EIA to be conducted and submitted to the Environmental Conservation Department (ECD) of the Ministry of Natural Resources and Environmental Conservation (MONREC). An Environmental Management Plan (EMP) will also be submitted as part of the EIA.

This EIA Report has been prepared for the proposed Project activities related to the OSB (the "Project") and has been prepared in accordance with the Myanmar EIA Procedure and other relevant legislation.

Figure 1.1 Location of Project



## 1.2 *POLICY AND REGULATORY FRAMEWORK*

The Project will be undertaken in line with a number of national and local standards and laws. Local laws relating to EIA include:

- Environmental Conservation Law (2012);
- Environmental Conservation Rules (2014);
- National Environmental Quality (Emission) Guidelines (2015); and
- Environmental Impact Assessment Procedure (2015).

## 1.3 *PROJECT DESCRIPTION AND ALTERNATIVES*

### 1.3.1 *Alternatives*

Consideration of options and alternatives is a fundamental requirement in the planning of any project as a means of avoiding or reducing adverse environmental and social impacts and maximising or enhancing project benefits. Alternatives that have been considered for the Project include:

- Location of the Project: the Project Area is Nga Yoke Kaung in Ayeyarwady Region. There were 8 locations identified as potential sites for the OSB. The selected location is in Palin Gyaing beach on Goyangyi Island.
- Access Bridge Design: An access bridge/trestle will connect the coast to the main jetty structure offshore. This could be a causeway or piled trestle structure. No piling will take place for the access bridge.
- Jetty Design: the jetty could either be a closed or open structure. A 'closed' reclaimed structure has been selected which is built of a sand core and rock layers on the outside to protect against erosion by waves and currents.

### 1.3.2 *Proposed Project*

This EIA Report is based on a PRE-FEED report made available in December 2017. Where applicable, this EIA Report has been based on conservative information to ensure impacts are adequately assessed.

#### *Offshore Construction Activities*

The offshore activities include construction of a jetty and the dredging of an access channel and turning circle using a trailer suction hopper dredger or cutter suction dredger. The total area of the jetty will be 1.2 ha (0.012 km<sup>2</sup>).

It is expected that during dredging of the navigation channel and turning basin, most of the dredged / excavated materials will be used for land reclamation and fill material for the jetty construction. Only a small portion of non-suitable materials (silts) will be taken away by a ship to an authority approved (Myanmar Port Authority - MPA) disposal area. A total volume of 410,000 m<sup>3</sup> of dredged materials is estimated. The dredging operation is expected to take between 1 and 3 months to complete, depending on the type of dredger used. Total offshore construction of the jetty will take 12 to 18 months.

The equipment used during the offshore construction activities includes piling barges, construction barges with small tugboats and landing craft.

#### *Onshore Construction Activities*

There will also be a supply base area onshore for the storage of supplies and materials destined for offshore oil and gas operations. The onshore construction will include site preparations (such as site clearing, soil improvement and other earthworks), construction of temporary labour shelters, temporary fencing as well as temporary water supply and lighting. Open concrete yards for warehouse and container storage will be constructed. The equipment used during the construction includes rollers, dump trucks, bulldozers, mobile cranes, and batching plants.

During construction, there will be on-site power generation by a small diesel-powered generator located on the eastern side of the base, away from the village.

Given the topography of the OSB, levelling of rocky hills will be conducted and the fill material will be used for jetty/causeway construction.

There will be around 400 to 700 workers at its busiest period during construction, with around 70% of total workforce from local communities and the rest made up of migrant workers.

Waste types generated during construction include site clearance waste, excavated materials, waste concrete, wooden material, chemical waste, sewage and domestic waste. Waste management will be carried out by local authorised waste handling facilities.

The construction phase is scheduled for 1.5 to 2 years; estimated to be sometime between 2018 and 2023.

#### *Operational Activities*

The Project objective is to provide logistics services to the offshore O&G industry in Myanmar. During the first years of operation all goods will arrive by cargo ship, and will be stored at the base, loaded on an offshore

supply vessel (OSV) to the rig/platform. Return cargoes will be shipped on an OSV back to the base and then taken by a cargo ship back to facility for repairs or treatment.

There will be around 100 staff in the 1st phase and an additional 100 staff in the 2nd phase during operation, with around 70% of total workforce from local communities and the rest made up of migrant workers.

Maintenance dredging of the navigation channel will occur around once every year during operation. The volumes of dredged materials generated will be around 20 to 30% of those generated during construction. Dredged materials will be taken away by a ship to an authority approved (MPA) disposal area.

The OSB will include firefighting facilities and oil spill response facilities. Domestic wastes will be treated on site and discharged. Hazardous waste will be sent to a licensed waste handling facility in Thilawa. Types of hazardous wastes include; oil, industrial chemicals, and chemical using for O&G industry (such as bentonite).

## **1.4** *BASELINE CONDITIONS*

The Project's Area of Influence covers the Project Area, as well as its immediate surroundings. ERM has conservatively assumed that the potential impacts from air and noise emissions, waste discharges, and sedimentation will be felt up to 5 km from the Project Area.

### **1.4.1** *Onshore Environment*

The onshore Project Area is located in cultivated land which is currently being used for agriculture and grazing by cattle. Photos of the land and flora are provided in *Figure 1.2*. Given the modified nature of this habitat, the presence of species or habitats of conservation concern is unlikely. As the Project contains an offshore aspect, there is an area of beach and coconut grove that is inside the footprint of the Project. This is shown in *Figure 1.3*.

**Figure 1.2** *Terrestrial Modified Habitat in the Project Area*



**Figure 1.3** *Beach Front inside the Project Area*



#### **1.4.2** *Offshore Environment Baseline Conditions*

United Nations Environment Programme (UNEP) satellite analyses indicate the potential presence of coral communities (typically fringing or patch reefs) along the coast of the Ayeyarwady Region, including within the shallower waters near the Project Area. The prevalence of rocky substrate in shallow waters indicates possibly favourable conditions for the growth of corals and coral communities. During consultation in January 2017, locals mentioned that there could be potential coral reefs in the Project footprint. The presence of coral reefs was confirmed during environmental baseline surveys as part of the EIA Study. However, no corals were recorded in the Project Area.

Along the coastline of the Ayeyarwady Region, there are mangrove habitat areas occurring along the shoreline margins of river mouths and extending inland, fringing tidal creeks. In the Area of Influence, there are mangroves in the Nga Yoke Kaung River / estuary to the south-east of the Project Area.

Seagrass beds occur along the nearshore habitats of the Ayeyarwady Region and typically occur in less than 65 ft. (20 m) water depth in sheltered intertidal or subtidal areas (Short, *et al*, 2001). Seagrass habitat is confined to shallow waters with good light penetration a.

Recent fish trawl surveys to look at fisheries composition were conducted by the R.V. Dr. Fridtjof Nansen in 2013 and covered a number of stations in Ayeyarwady Region, as well as other parts of Myanmar waters. The findings showed that pelagic marine fishery resources had significantly decreased, by up to tenfold, between 1980 and 2013, which was attributed to exploitation by fisheries. The results of the analysis by region showed that the most common species (groups) in the Rakhine Coastal Zone (Project Area) were hairtails (*Trichiurus lepturus*), bigeye (*Priacanthus hamrur*), jellyfish, lizard fish (*Saurida tumbil*), toothpony fish (*Gazza minuta*), Japanese threadfin bream (*Nemipterus japonicas*), spinycheek lanternfish (*Benthosema fibulatum*), *Decapterus sp.*, and Indian anchovy (*Stolephorus indicus*).

A total of 21 cetaceans (whale and dolphin) and one sirenian (dugong) species have been reported in Myanmar waters (International Union for the Conservation of Nature (IUCN) Red List Website). Two species, the Irrawaddy dolphin (*Orcaella brevirostris*) and dugong (*Dugong dugon*), have been protected under the Myanmar Protection of Wildlife and Conservation of Natural Areas Law since 1994 under the category “completely protected”.

Five species of marine turtles, all of which are IUCN-listed threatened species are reported for Myanmar waters. These are the olive ridley turtle (*Lepidochely olivacea*) (Vulnerable), loggerhead turtle (*Caretta caretta*) (NE Indian Ocean subpopulation - Critically Endangered), green turtle (*Chelonia mydas*) (Endangered), hawksbill turtle (*Eretmochelys imbricata*) (Critically Endangered), and the leatherback turtle (*Dermochelys coriacea*) (Endangered).

#### *Environmental Baseline Survey Results*

In order to better understand the potential sensitivity of the baseline conditions of the marine environment around the project area, primary baseline surveys were conducted by ERM. These surveys were undertaken following standard international practice and provide an indication of the existing conditions as well as providing data for any future monitoring programmes.

An overview of the survey schedule is presented in *Table 1.2*. The survey was successfully concluded within the scheduled three day period from 16<sup>th</sup> September to 18<sup>th</sup> September 2017.

**Table 1.2** *Survey Schedule for Seawater Physio-chemical Sampling, Marine Sediment Sampling, Marcobenthos Survey and Subtidal Habitat Verification and Assessment Survey, September 2017)*

| Date                    | Activity   |
|-------------------------|--|
| 16 to 18 September 2017 | Seawater Sampling and Marine Sediment Sampling<br>Drop Camera Survey and Marcrobenthos Survey<br>Scientific Snorkel Survey |
| 14 to 16 September 2017 | Air Survey   |
| 14 to 16 September 2017 | Noise Survey   |
| 14 to 16 September 2017 | Soil and groundwater Survey  |
| 16 to 19 September 2017 | Terrestrial Flora and Fauna Survey   |

For the marine environment, metal concentrations in sediment were considered to be indicative of naturally occurring background conditions with no metal at concentrations of environmental concern. The sediments were not contaminated. The sediment type was composed of sandy silt and clay fractions. The marine water quality parameters were compared against ASEAN marine water quality guidelines and all results for pH fell within the permissible limits of 6 to 9. Dissolved Oxygen (DO) concentrations in seawater samples were found to be similar across the Survey Area and complied with the ASEAN water quality guidelines. Low Total Suspended Solid (TSS) concentrations and turbidity were recorded which complied with the ASEAN water quality guidelines and the results revealed high water clarity indicative of oceanic conditions.

The air quality of the Survey Area was considered to be generally undegraded except for elevated levels of SO<sub>2</sub> which did not meet the WHO / NEG Guidelines. High levels of SO<sub>2</sub> are usually from fuels burning SO<sub>2</sub> such as diesel and petrol. The source of this emission in the Project Area is not known. Noise at the sampling locations was within the NEQ guidelines during the day but slightly exceeded at night. This was due to vehicle (motorbike) noise and wave action. Soil samples showed no evidence of contamination and ground water tested from wells observed that all parameters were within the acceptable standards of the WHO Drinking Water standards and NEQ. In the Zin Yaw Chaung well, a slightly higher BOD was recorded that indicated potentially polluted water. This would occur from

large amounts of organic matter from sewage or other discharges present in the water.

The terrestrial survey recorded two habitat types “Terrestrial” (wild and cultivated land) and Mangroves and Marine Vegetation in the Survey Area. Only a few degraded mangrove species were recorded in the southwest of the Project Site. These habitat types are common to the area and no species of conservation concern were encountered. No species recorded were listed as “completely protected” under Myanmar Law. The faunal survey recorded birds, amphibian and reptiles, aquatic fauna, and odonates. Of the species recorded, some of the amphibians (frogs), snakes, and fish were considered to be species of conservation concern (IUCN). The habitat in the Project Area was not considered to be unique for the Survey Area and likely to be more important than the surrounding environment for supporting these species.

### 1.4.3 Social Baseline Conditions

During the January and February, 2017 consultations a number of “wards” within Nan Thar Pu Village Tract were consulted and 50 household surveys were conducted. A summary of the demographics of the Village Tract is presented in *Table 1.3*.

**Table 1.3 Population of Villages Consulted in Nan Thar Pu**

| No    | Sub-village (ward) | Numbers of Houses | Household | Total |     |      |      |       |
|-------|--------------------|-------------------|-----------|-------|-----|------|------|-------|
|       |                    |                   |           | M     | F   | M    | F    | Total |
| 1     | Seik Kann          |                   |           |       |     |      |      |       |
| 2     | Zin Yaw Chaung     | 131               | 137       | 245   | 241 | 460  | 468  | 928   |
| 3     | Kyauk Phyar        |                   |           |       |     |      |      |       |
| 4     | Ale Gone           | 87                | 93        | 129   | 132 | 264  | 252  | 516   |
| 5     | Nant Thar Pu       | 141               | 146       | 228   | 222 | 453  | 464  | 917   |
| 6     | Gyaing Galay       |                   |           |       |     |      |      |       |
| Total |                    | 359               | 376       | 602   | 595 | 1177 | 1184 | 2361  |

Drinking water is provided from wells in the village. These are deep to ensure that the freshwater is not effected by the proximity to the coastline.

Within the Area of Influence, the main infrastructure and facilities are found in Nga Yoke Kaung town which is an hour drive from Nan Thar Pu. The nearest main hospital and secondary school are found here.

During the consultations; fishing focus group discussions (FGDs) were held with the Department of Fisheries (DoF) in Nga Yoke Kaung and Nan Thar Pu. Boats in the Nga Yoke Kaung area range from 12 ft. to 36 ft. in length but all

operate within 10 miles from the coastline. Most of the voyages are day trips. In Nan Thar Pu, the boats in the “ward” are between 25 ft. and 50 ft. in length. There are 15 small and 15 large boats. These boats fish in the coastal waters (inshore fishing area) out to around 10 miles from the coast. Four different types of nets were mentioned as being used; gill netting, beach seine, trawling and purse seine. Some boats observed in the Study Area during the site visit in January, 2017 are shown in *Figure 1.4*.

**Figure 1.4** *Fishing Boats in Study Area*



There is a guesthouse on the beach adjacent to the Project Area as well as another guesthouse on the north facing side of the peninsula (*Figure 5.15*).

## **1.5** *KEY POTENTIAL IMPACTS AND PROPOSED MITIGATION*

### **1.5.1** *Area of Influence*

The Project’s Area of Influence covers the Project Area, as well as its immediate surroundings. Potential impacts from air and noise emissions, waste discharges, and sedimentation are conservatively assumed in this report to be felt up to 5 km from the Project Area.

### **1.5.2** *Impact Assessment*

The summary of the Impact Assessment is provided in *Table 1.4*.

**Table 1.4 Summary of Impacts and Mitigation**

| Potential Impacts   | Proposed Mitigation Measures  | Construction Phase                   |                              | Operational Phase                    |                              |
|---|---|--------------------------------------|------------------------------|--------------------------------------|------------------------------|
|   |   | Impact Significance (pre-mitigation) | Residual Impact significance | Impact Significance (pre-mitigation) | Residual Impact significance |
| Dust and emissions and nuisance impacts for local communities               | <ul style="list-style-type: none"> <li>Site hoarding along the Project Area boundary.</li> <li>Control the height of unloading of fill materials.</li> <li>Regularly maintain all diesel-powered equipment to reduce emissions of NO<sub>x</sub> and SO<sub>2</sub>.</li> <li>Apply dust suppression methods.</li> <li>Use alternative fuels and fuel mixes where possible.</li> </ul>  | Minor                                | Minor                        | Minor                                | Minor                        |
| Increase in ambient noise levels and nuisance impacts for local communities | <ul style="list-style-type: none"> <li>Only well-maintained equipment should be operated on-site.</li> <li>Regular maintenance of equipment such as lubricating moving parts, tightening loose parts and replacing worn out components should be conducted.</li> </ul>  | Minor                                | Minor                        | Minor                                | Minor                        |
| Visual impacts for local communities  | <ul style="list-style-type: none"> <li>Erect fencing between Zin Yaw Chaung and the OSB to reduce visual impacts. The hoarding shall be of sufficient height to ensure that there is no direct line of sight between the OSB and Zin Yaw Chaung.</li> <li>A Traffic Management Plan will be developed.</li> </ul>   | Moderate                             | Minor to Moderate            | Moderate                             | Minor to Moderate            |
| Physical presence of jetty altering coastal processes                       | <ul style="list-style-type: none"> <li>A coastal erosion study has been conducted separately to this EIA by Royal Haskoning. The findings of this study are that erosion would be expected to be minor.</li> </ul>  | Not significant                      | Not Significant              | Minor                                | Minor                        |
| Impact to water quality and resources                                       | <ul style="list-style-type: none"> <li>Appropriate surface drainage will be designed and provided where necessary.</li> <li>Surface runoff from potential sources of contamination will be prevented.</li> <li>M&amp;AOSB will ensure that due consideration is given to the local groundwater resources and availability to minimize impact to communities</li> <li>Runoff from areas without potential sources of contamination will be minimized (e.g. by minimizing the area of impermeable surfaces) and the peak</li> </ul> | Negligible                           | Negligible                   | Negligible                           | Negligible                   |

| Potential Impacts  | Proposed Mitigation Measures  | Construction Phase                        |   | Operational Phase                    |                              |
|--|---|---|---|--------------------------------------|------------------------------|
|  |   | Impact Significance (pre-mitigation)      | Residual Impact significance              | Impact Significance (pre-mitigation) | Residual Impact significance |
|  | discharge rate will be reduced (e.g. by using vegetated swales and retention ponds).  |   |   |                                      |                              |
| Smothering and marine habitat loss                         | <ul style="list-style-type: none"> <li>Minimise size of footprint on seabed.</li> <li>Avoid construction in sensitive habitats (e.g. coral reefs).</li> <li>Silt curtains will be deployed during dredging of the navigation channel during construction and operation to reduce the levels of suspended solids that could reach to nearby sensitive receivers.</li> </ul>                                  | Minor                                     | Minor                                     | Moderate                             | Moderate                     |
|  |   | Moderate (corals)                         | Moderate (corals)                         | Moderate (corals)                    | Moderate (corals)            |
| Loss of beach habitat and disturbance to nesting behaviour | <ul style="list-style-type: none"> <li>The contractor should verify that the works area is clear of sea turtle nests prior to commencement of works to avoid destruction of any buried nests.</li> <li>Minimising lighting to that which is absolutely necessary for the construction / operation area.</li> <li>No illegal gathering of eggs by contractors.</li> </ul>                                    | Moderate                                  | Minor                                     | Moderate                             | Minor                        |
| Disturbance to marine fauna                                | <ul style="list-style-type: none"> <li>In case single round piles are used these and the hammer will be enclosed in protective screen;</li> <li>An exclusion zone of 500 m radius will be established around the construction site for marine mammals and turtles during sheet piling.</li> </ul>   | Minor (fish)                              | Minor (fish)                              | Not significant                      | Not Significant              |
|  |   | Moderate (sea turtles and marine mammals) | Moderate (sea turtles and marine mammals) |                                      |                              |
| Terrestrial habitat loss                                   | <ul style="list-style-type: none"> <li>Footprint of the proposed OSB is minimised during the design stage and existing vegetation shall be retained as far as practicable.</li> <li>Landscape planting will be implemented by planting native tree species which are fast growing in nature.</li> <li>Construction activities will be restricted to works areas that will be clearly demarcated.</li> </ul> | Minor                                     | Minor                                     | Minor                                | Minor                        |
| Community health and safety.                               | <ul style="list-style-type: none"> <li>There will be a perimeter wall around the premises to stop anyone trespassing onto the site.</li> </ul>  | Moderate                                  | Minor                                     | Moderate                             | Minor                        |

| Potential Impacts   | Proposed Mitigation Measures  | Construction Phase                   |                                 | Operational Phase                    |                                 |
|---|---|--------------------------------------|---------------------------------|--------------------------------------|---------------------------------|
|   |   | Impact Significance (pre-mitigation) | Residual Impact significance    | Impact Significance (pre-mitigation) | Residual Impact significance    |
| Increased risk of accidents, security issues for                                  | <ul style="list-style-type: none"> <li>M&amp;AOSB will also provide navigation guidance to all vessels in line with Myanmar national requirements.</li> <li>As discussed in other sections on vessel movements, M&amp;AOSB will provide regular communications to fishermen on vessel movements as required.</li> </ul>   |                                      |                                 |                                      |                                 |
| Livelihoods and economy. Job creation, fishing impacts                            | <ul style="list-style-type: none"> <li>Vessel movements should be discussed with Port Authority as appropriate to ensure minimal disturbance to ongoing operations and reduce the risk or marine accidents.</li> <li>Jetty and vessels will be appropriately lit with good navigation warning devices, including navigation lights, area lighting, navigation/communications equipment and radar reflectors to provide sufficient warning to other vessels in the area.</li> <li>At least four weeks prior to construction activities, relevant authorities and stakeholders (i.e. local fishing and tourism operators, fishery/tourism associations, and local villagers) will be alerted to the final works area design as well as the construction programme and any specific restrictions.</li> </ul> | Positive (job creation)              | Positive (job creation)         | Positive (job creation)              | Positive (job creation)         |
|   |   | Minor (fishing and livelihoods)      | Minor (fishing and livelihoods) | Minor(fishing and livelihoods)       | Minor (fishing and livelihoods) |
| Occupational health and safety. Risk of fatality or injury to workers             | <ul style="list-style-type: none"> <li>The Project will design an occupational health and safety management plan which will be a subset of the overall EMP system, tailored to the needs of the project.</li> <li>The Project will create and implement a health and safety management system for the project.</li> </ul>   | Minor                                | Minor                           | Minor                                | Minor                           |
| Impacts to tourism from air and noise nuisance and restriction of access to beach | <ul style="list-style-type: none"> <li>Mitigation measures provided in above sections.</li> </ul>   | Moderate                             | Moderate                        | Moderate                             | Moderate                        |
| Impact to people and environment from waste                                       | <ul style="list-style-type: none"> <li>Impacts regarding wastes can be managed by good housekeeping practices for waste storage and handling supported by a comprehensive waste management plan (WMP) which will be prepared by M&amp;AOSB.</li> </ul>  | Minor                                | Minor                           | Minor                                | Minor                           |

| Potential Impacts           | Proposed Mitigation Measures   | Construction Phase                   |                              | Operational Phase                    |                              |
|-----------------------------|--|--------------------------------------|------------------------------|--------------------------------------|------------------------------|
|                             |  | Impact Significance (pre-mitigation) | Residual Impact significance | Impact Significance (pre-mitigation) | Residual Impact significance |
| discharge and disposal      | <ul style="list-style-type: none"> <li>Construction materials will be managed in a way to avoid over-ordering, poor storage and maintenance, mishandling as well as improper operation procedures.</li> <li>Segregated wastes will be temporarily stored at designated areas for reuse on site.</li> <li>Waste will be collected regularly.</li> </ul>   |                                      |                              |                                      |                              |
| Impact from spill and leaks | <ul style="list-style-type: none"> <li>Standard Operating Procedures for handling / storage / transfer of hazardous materials;</li> <li>Bunding of fuel storage area;</li> <li>Shipboard Oil Spill Emergency Plans (MARPOL requirement) for larger vessels;</li> <li>M&amp;AOSB Supply Base Oil Spill Response Plan and associated response procedures / protection measures for oils spills.</li> </ul> | Minor                                | Minor                        | Minor                                | Minor                        |

## 1.6

### STAKEHOLDER ENGAGEMENT

During the EIA, one meeting was undertaken at the General Administrative Department (GAD) office in Nga Pu Daw and one in Nan Thar Pu Village Tract. The Nga Pu Daw meeting was attended by over 200 government employees. In Nan Thar Pu, around 60 people from the six wards attended the meetings. Civil Society Organisations (CSOs) were also present at the meeting. The date, time, location, stakeholder and purpose of each meeting is provided in *Table 1.5*.

**Table 1.5** *Consultation Activities Undertaken*

| Date, time, location                              | Stakeholder  | Purpose of Engagement  |
|---|--|--|
| 28 February, 2017, Nga Pu Daw                     | Nga Pu Daw Township GAD  | <ul style="list-style-type: none"> <li>Present information on Project impacts and EIA findings.</li> <li>Seek permissions and approvals required to conduct engagement in Ayeyarwady Region (Nga Yoke Kaung).</li> </ul> |
| 3 March, 2017, Nan Thar Pu Village Tract          | Nan Thar Pu villagers  | <ul style="list-style-type: none"> <li>Undertake 50 household surveys.</li> </ul>  |
| 2 March, 2017, Nga Yoke Kaung and Goyangyi Island | Site visit to Project Area, Goyangyi Island and Nga Yoke Kaung bay | <ul style="list-style-type: none"> <li>Gather information from tourism operators.</li> <li>Gather information on terrestrial and marine environment.</li> </ul>  |
| 3 March, 2017, Nan Thar Pu Village Tract          | villagers and CSO in Nan Thar Pu                                   | <ul style="list-style-type: none"> <li>Present information on Project impacts and EIA findings.</li> <li>Gather information on Potential Affected Communities and Peoples.</li> </ul>                                    |

Key questions during EIA public consultation included the impacts to fishing and the grievance procedure, job opportunities and discharges from the project impacting the local communities. These issues were considered and assessed where applicable in the EIA Report.

## 1.7

### ENVIRONMENTAL MANAGEMENT PLAN

An EMP has been prepared for the proposed Project that aims to provide an environmental and social management framework by outlining the compliance requirements, mitigation measures, and monitoring programmes to be implemented throughout the Project activities.

The EMP is the means by which the findings of the environmental and social assessment are implemented during the execution of the offshore drilling activities. The scope of the EMP covers all of the activities as described in the EIA Report (summarised in *Section 1.3*), with the objective of demonstrating

compliance with the relevant national and international legislation. The EMP lists the obligations and responsibilities of each party involved in the Project, stipulates methods and procedures that will be followed, and outlines the environmental and social management actions that will be implemented.

The EMP lists all Project commitments and describes the plans to be produced for the Project. M&AOSB will submit an Environmental Monitoring Report to the Ministry of Natural Resources and Environmental Conservation (MONREC) every **six months** as per the EIA Procedure requirements.

A summary of the environmental monitoring is provided in *Table 1.6*.

**Table 1.6** *Summary of the Reporting and Monitoring Requirements*

| Project Activity/<br>Environmental Aspect | Monitoring Measures  | Responsibility      |
|---|--|---------------------|
| Air Emissions                             | Air emissions will be measured at Zin Yaw Chaung once during construction. If the levels are within the NEG Guidelines, no further monitoring is required.   | M&AOSB /Third Party |
| Noise Generation                          | Noise will be measured one daytime and one night time during the construction phase. If the levels are within the NEG Guidelines, no further monitoring is required.   | M&AOSB /Third Party |
| Marine Water Quality                      | During construction and operational dredging, marine water quality should be monitored to ensure the levels of total suspended solids do not exceed thresholds.  | M&AOSB /Third Party |
| Soil and Groundwater                      | As Project impacts to soil and groundwater are unlikely, no monitoring is required. The discharge domestic water from the construction and operation phase should be monitored every 6 months to check it complies with the NEQ Guidelines.  | M&AOSB /Third Party |
| Terrestrial Flora & Fauna                 | As there are no significant impacts anticipated on terrestrial flora and fauna, - no monitoring is required.   |                     |
| Marine Flora & Fauna                      | During construction dredging, the amount of sediment accretion on the eastward side of the jetty should be studied given the presence of corals in the T3 transect (east of the jetty). Monitoring during operation should be conducted for up to two years from operation. If no changes detected, then monitoring can cease. | M&AOSB /Third Party |

The EIA Study focused on the impacts associated with the Project in Nga Yoke Kaung. Impacts are likely to be localised to within the operational area. An Area of Influence of 5 km around the Project Area has been proposed to include potential impacts from noise, waste and water use, air emissions, and impacts to livelihoods (including fishing).

The EIA Report notes that communities in Nan Thar Pu village tract; specifically Zin Yaw Chaung “ward,” which is the nearest to the Project Area, could be potentially affected by the Project. The EIA consultation will therefore be focused on local communities within Nan Thar Pu village tract. Social baseline data was collected to support the current understanding of fishing and livelihoods in the region.

For onshore activities, there is potential for noise or dust from the Construction activities to impact local communities. The impact of the operational activities are expected to be limited because there will be no major source of emissions. The Project is likely to have a positive impact on local communities due to the job opportunities available during the construction phase.

There is potential for social and environmental impacts due to jetty construction activities. Marine habitats in the Project footprint will be directly impacted. Fishermen in the Area of Influence are likely to be directly or indirectly impacted by the jetty construction and operation.

The monitoring as listed above in *Section 1.7* will be conducted to ensure the impacts are properly mitigated.

If significant design changes are made once Project design is finalised during the FEED Stage, the impacts should be re-evaluated and if necessary, the EIA Report and/or EMP may be revised.