A-6 Drilling Program

Environmental Management Plan

October 2016

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Environmental Management Plan

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ALARP	As Low As Reasonably Practicable
DoF	Department of Fisheries
E Guard	E Guard Environmental Services Co. Ltd
EIA	Environmental Impact Assessment
ERM	Environmental Resource Management
EMP	Environmental Management Plan
ERC	Emergency Response Coordinator
ERP	Emergency Response Plan
ft	Feet
GAD	General Administrative Department
GHG	Greenhouse gas
HSE	Health, Safety and Environment
IAPP	International Air Pollution Prevention
IFC	International Finance Corporation
IMO	International Maritime Organisation
IMS	Invasive Marine Species
IOPP	International Oil Pollution Prevention
ISSP	International Sewage Pollution Prevention
JV	A-6 Joint Venture
km	Kilometres
m	Metres
MARPOL	International Convention for the Prevention of Pollution from Ships
MERP	Medical Emergency Response Plan
MFF	Myanmar Fishing Federation
mg/kg	Milligram per kilogram
mg/L	Milligram per litre
MODU	Mobile Offshore Drilling Unit
MOEE	Ministry of Electric Power and Energy
MONREC	Ministry of Natural Resources and Environmental Conservation
MOGE	Myanmar Oil and Gas Enterprise
MPRL E&P	MPRL E&P Pte Ltd
NADF	Non-Aqueous Drilling Fluid
OPEP	Oil Pollution Emergency Pan
PTW	Permit to Work
SDS	Safety Data Sheets
SEEMP	Ship Energy Efficiency Management Plan
SEP	Stakeholder Engagement Plan
SOLAS	The International Convention for the Safety of Life at Sea 1974
SOPEP	Shipboard Oil Pollution Emergency Plan

Acronym	Definition
Total E&P	Total E&P Myanmar
VSP	Vertical Seismic Profiling
WBDF	Water Based Drilling Fluid
Woodside	Woodside Energy (Myanmar) Pte Ltd
WCC	Woodside Communication Centre

1 EXECUTIVE SUMMARY

This document is the Environmental Management Plan (EMP) for a proposed drilling program in Block A-6 (A-6) in the Rakhine Basin, the Union of Myanmar (Myanmar) ("the Project"). This EMP covers both environmental and social impacts and management.

Woodside Energy (Myanmar) Pte Ltd (Woodside) on behalf of the A-6 Joint Venture (JV), is proposing to undertake a drilling program in A-6 commencing in 2017 (*Figure 1.1*). The Project covers a proposed drilling program of up to six wells over the period 2017-2019, although not all of these wells may be drilled.

The 2017 program will include up to two wells, one of which is a firm well and one of which is optional[1]. Depending on the outcome from the proposed 2017 drilling, an additional four wells may be drilled over 2018 and 2019; however, this is yet to be confirmed by the JV. Should additional wells be drilled in 2018 and 2019, the environmental management plan will be updated and provided to the Environmental Conservation Department (ECD) prior to the drilling of any additional wells.

Woodside on behalf of the JV, drilled an exploration commitment well in A-6 over a 51- day period from 27 November 2015 to 17 January 2016. The well, Shwe Yee Htun-1, is located about 33 miles (54 km) offshore Myanmar in about 6560 feet (ft) (2000 metres (m)) water depth and 4 miles (7 km) off the edge of the continental shelf (*Figure 1.1*). The well reached a total depth of 17,408 ft (5306 m). A dry gas column of about 423 ft (129 m) was intersected.

In 2013, Woodside entered a farm-in agreement with MPRL E&P Pte Ltd (MPRL E&P) with respect to A-6 in the Rakhine Basin. In 2015, Total E&P Myanmar (Total E&P) farmed in to A-6. Woodside, Total E&P and MPRL E&P hold 40%, 40% and 20% interests respectively in the JV. Woodside is a joint operator.

The Environmental Impact Assessment (EIA) Study for the Project identified and developed the following key potential impacts:

- The effects of drill cuttings and drilling fluid discharge on water quality, sediment quality and pelagic and benthic communities;
- Short-term disturbance to commercial fishing activities and shipping/navigation within A-6 due to the presence of the Mobile Offshore Drilling Unit (MODU) and support vessels during drilling activities;
- Increases in ambient underwater sound and generation of sound pressure levels from short duration Vertical Seismic Profiling (VSP), causing disturbance to marine mammals, marine turtles and fish that may be present within A-6;
- The contribution of greenhouse gas (GHG) emissions arising from combustion emissions from the MODU, support vessels, machinery engines and flaring;
- Potential impacts from unplanned collisions on fishing vessels and other marine users due to the presence of the MODU and support vessels during drilling activities; and
- Potential water contamination and secondary impacts to biodiversity and fishing activities from accidental spills or leaks (e.g. vessel collision, deck spills or during offshore re-fuelling) or the unplanned release of Non-Aqueous Drilling Fluid (NADF).

[1] An optional activity such as the second 2017 well will only be executed if the JV decides to proceed at some point in the future.

The EIA Study for the proposed drilling program in A-6 was conducted to comply with the requirements of the Myanmar Environmental Impact Assessment Procedures 2015. The EIA demonstrates that the operational environmental and social setting is understood, with all potential environmental and social impacts assessed. Provided that the recommended mitigation measures (as specified in this EMP) are properly implemented, it is expected that the environmental and social impacts of the proposed Project will be managed by the JV in a professional and acceptable manner. As such, the EIA concludes that **no Major** impacts on the environment and people are anticipated from this Project and all residual risks for identified potential impacts have been properly mitigated to be as low as reasonably practicable (ALARP) [(2)].

(2) As Low As Reasonably Practicable (ALARP) has been defined as an impact that is tolerable only if impact reduction is impracticable or if the effort involved in reducing the impact further would be grossly disproportionate to the benefit gained.

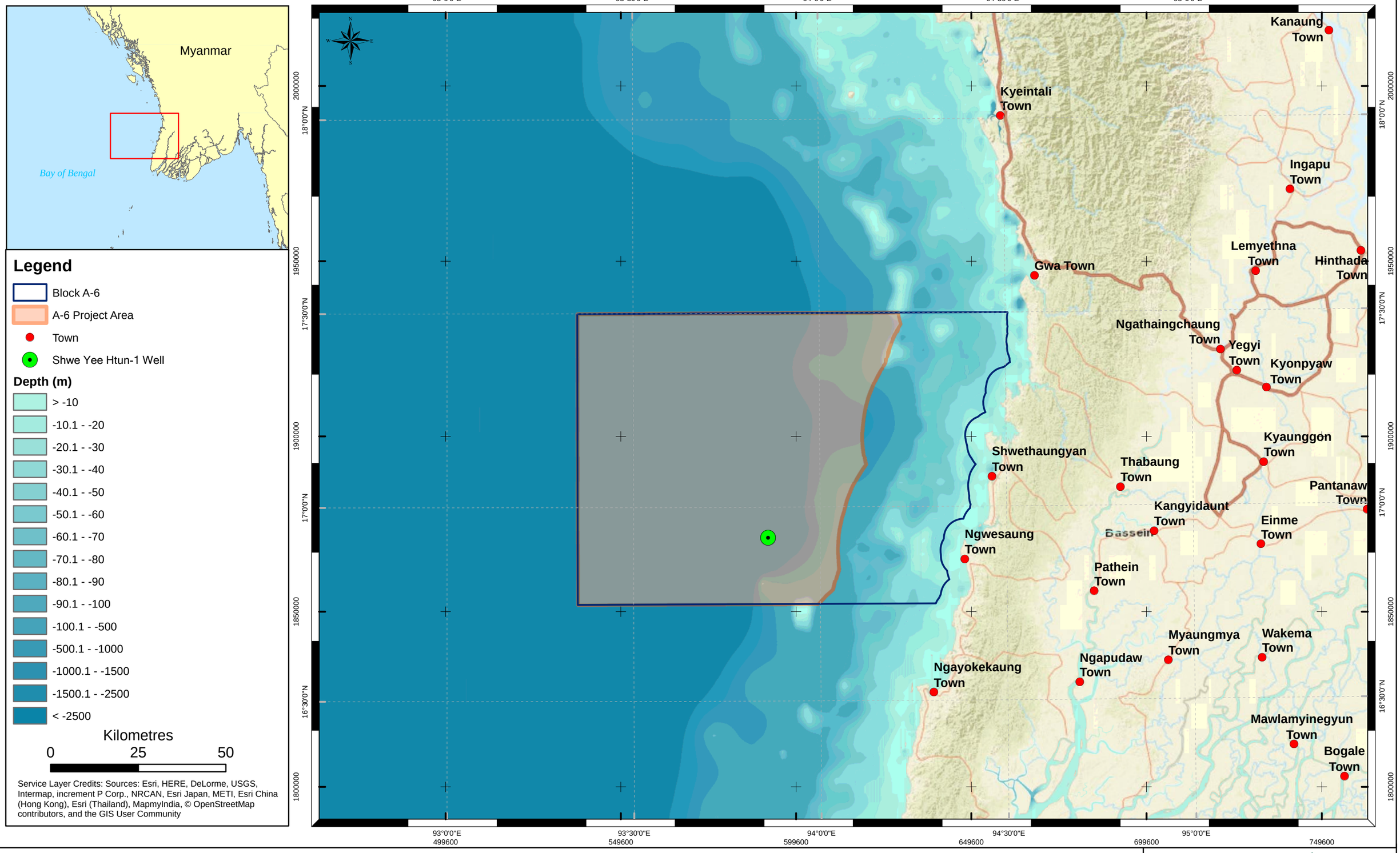

Figure 1.1

Location of A-6 and Project Area

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Date: 30/9/2016

Environmental Resources Management

ERM

2 INTRODUCTION

This document is the Environmental Management Plan (EMP) for the planning and operation of the Project. The Project is the proposed offshore drilling in A-6, offshore Ayeyarwady Region, Myanmar. It aims to provide an environmental and social management framework by outlining the compliance requirements, mitigation measures and monitoring programmes to be implemented throughout the offshore exploration activities.

Woodside Energy (Myanmar) Pte Ltd (Woodside), on behalf of the Block A-6 Joint Venture (JV) is proposing to undertake a drilling program in A-6 commencing in 2017. The Project covers a proposed drilling program of up to six wells over the period 2017-2019, although not all of these wells may be drilled.

Woodside, on behalf of the JV, commissioned Environmental Resources Management (ERM) to undertake the EIA Study for the Project. ERM engaged the national environmental consultant E Guard Environmental Services Co. Ltd (E Guard) to provide local Myanmar expertise.

2.1 SCOPE OF THE EMP

The EMP covers the operations/execution phase implementation of:

- Environmental Management
- Social Management
- Stakeholder Engagement.

This EMP is the means by which the findings of the environmental assessment are implemented during the execution of the offshore exploration activities. The scope of the EMP covers all of the activities as described in *Section 4* of the Environmental Impact Assessment (EIA) Report, with the objective of demonstrating compliance with the relevant national and international legislation and Woodside Health, Safety, Environment and Quality (HSEQ) Policy and Management System.

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.

2.2 PURPOSE AND OBJECTIVES OF THE EMP

This EMP has been prepared based on the findings of the EIA Report (particularly *Chapter 6*) and describes mitigation and management measures designed to mitigate potential environmental and social impacts of proposed offshore exploration activities to a level that is considered to be ALARP. Mitigation strategies have been developed to avoid, prevent or reduce any potential impact on the identified sensitive receptors.

The overarching purpose of this EMP is to:

- Integrate management and mitigation measures into the drilling activities in order to reduce or mitigate any potential environmental and social impacts on natural and socio-economic environments
- Consider and address the concerns and interests of stakeholders who will potentially be engaged or impacted during execution of the offshore exploration activities
- Establish systems and processes for delivery and implementation of environmental and social requirements in order to meet statutory and compliance standards.

The objectives of the EMP are to:

- Demonstrate continuing compliance with the relevant Myanmar environmental legislation, Woodside HSEQ Policy and Management System and good practices
- Describe the mechanism for implementing identified control, monitoring and management measures to mitigate potentially adverse impacts
- Provide a framework for mitigating impacts that may be unforeseen or unidentified until offshore exploration activities are underway
- Provide assurance to regulators and stakeholders that their requirements with respect to environmental and social performance will be met
- Undertake monitoring to provide assurance that the control and management measures are being implemented
- Combine all of the above in a systematic framework of monitoring, reporting and management that will measure the successful implementation of the project in accordance with Woodside's standards for social and environmental performance, and respond as needed to maintain those objectives.

3 DESCRIPTION OF THE PROJECT

A-6 is located in the offshore waters of northwestern Myanmar. At its closest point the A-6 Project Area is about 21 miles (35 km) from the Myanmar coastline (the area shown on Figure 1.1 which has its easternmost boundary 35 km from shore within A-6 is hereafter termed the "Project Area"). Water depths in A-6 range from shallow coastal waters to offshore open waters of 7870 ft (2400 m). The Project covers a proposed drilling program of up to two wells commencing in early 2017, one of which is firm and one of which is optional. Depending on the outcome from 2017 drilling, there is also the possibility that up to four wells may be drilled over 2018 and 2019 (however this is yet to be decided by the A-6 Joint Venture (JV)). The scope of this assessment is for the total of six wells even though they may not all proceed. All wells will be drilled within the boundary of the Project Area. The locations of the wells are not yet finalised and will be determined from the interpretation of seismic data. The details of the Project are summarised in *Table 3.1*.

Table 3.1 Summary of Project Details

	Details
Block	A-6, Offshore Myanmar as per *Figure 1.1*
Joint Venture Participants	Woodside – 40 % (Joint operator and operator of the Project). Total E&P – 40% (Non-operator of the Project). MPRL E&P – 20% (Non-operator of the Project).
Project Area and distance from coastline	At its closest point the A-6 Project Area is about 21 miles (35 kilometres (km) from the Myanmar coastline.
Previous activities in A-6 and operator for the activity	2D marine seismic survey in 2009 (MPRL E&P). 3D marine seismic survey in 2010 (MPRL E&P). Drilling of Pyi Thar-1 well in 2012 (MPRL E&P). Drilling of Pyi Thar-1ST well in 2012 (MPRL E&P). 3D marine seismic survey in 2013 (Woodside) Drilling of Shwe Yee Htun-1 well in January 2016 (Woodside). 3D marine seismic survey in April 2016 (Woodside).
Scope of proposed exploration activities for which approval is sought	2017 – Drilling of two wells, one firm and one optional. 2018/19 - The potential drilling of four wells. This is dependent on the outcomes of the 2017 drilling and has not been decided by the joint venture.
Consultants for proposed activity	Environmental Resources Management (ERM) and E Guard Environmental Services Company Ltd (E Guard).

A dynamically positioned mobile offshore drilling unit (MODU) will be used to drill the wells and will be supported by three to four vessels. A typical well will be drilled to a total depth ranging from 6562 ft (2000 m) to 8202 ft (2500 m) (total vertical depth in metres below sea bed). Offshore drilling involves the MODU sending a drill bit to the seabed to drill a small diameter hole in the seabed. The total depth of a well is set to target suspected oil or gas accumulations under the seabed. The well will use both water based drilling fluid (WBDF) and non-aqueous drilling fluid (NADF) for drilling. WBDF and drill cuttings will be discharged at the seabed. Cuttings containing NADF will be returned to the drill rig and treated on-board to reduce the oil on cuttings (i.e. film on drill cuttings) before discharge overboard.

4 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The Project is being conducted in line with Woodside's environmental and social policy and considering the requirements of the Production Sharing Contract, Myanmar regulatory requirements and international conventions, standards and guidelines. The policy and legislative framework is discussed in more detail in *Section 3* of the EIA Report.

4.1 MYANMAR REGULATORY AUTHORITIES

Matters pertaining to Health, Safety and Environment (HSE) requirements are generally under the jurisdiction of the ministries and state-owned enterprises in the oil and gas sector. Key ministries, agencies and state-owned enterprises that have jurisdiction over HSE matters in oil and gas operations are included in *Table 4.1.*

Table 4.1 Key Ministries, Agencies and State-Owned Enterprises Involved in HSE

Ministry/agency	Responsibility
MONREC	MONREC has ultimate responsibility in the approval, or otherwise, of submissions under the EIA Procedure.
ECD	The ECD of MONREC has responsibility to undertake the review of submissions under the EIA Procedure and provide recommendations to the Minister of MONREC
MOGE	MOGE is the state-owned enterprise responsible for working together with oil and gas companies (local and international) in Myanmar and oversees the PSCs in cooperation with foreign oil companies. MOGE is involved in direct communication and coordination with various levels of different government agencies for HSE related issues.
Ministry of Electricity and Energy (MOEE)	MOEE jointly works with MOGE in managing HSE issues of oil and gas operators in Myanmar, in which MOEE encourages operators to establish a HSE Management System and prepare their own EIA for their project.
Myanmar Investment Commission (MIC)	MIC is a government agency responsible for coordinating with ministries (such as the MOEE) and other state entities to facilitate foreign investment in Myanmar. The MIC is also responsible for granting MIC permits which enable foreign investors to carry out business activities under the Foreign Investment Law (1998). The Law specifies MIC shall "*take consideration on the facts such as financial credibility, economic justification of the business, appropriateness of technology and protection and conservation of environment in scrutinizing the proposals of investment*".

4.2 RELEVANT NATIONAL LAWS

Laws relating to environmental and social issues within the oil and gas sector and hence their relevant relevance to the EIA Study for the proposed Project are included in *Table 4.2*. International legislation and standards are also considered for the Project and relevant legislation and guidelines are listed in full in the EIA Report.

Table 4.2 Myanmar Legislation Relating to the oil and gas sector and relevance to Proposed Project

Legislation	Relevance to the project
Environmental Conservation Law, March, 2012 (No. 9/ 2012)	The project shall carry out an environmental impact assessment, a social impact assessment and prepare and environmental management plan.
Environmental Conservation Rules, June, 2014	
Environmental Impact Assessment Procedure, 2015	The project complies with the appropriate procedure.
National Environmental Quality (Emission) Guidelines	The project shall consider emissions standards in its environment impact assessment and environmental management plan.
Draft EIA Administrative Guidance, 2015	Provides the order and structure of the report.
Foreign Investment Law, November, 2012	The project shall obtain relevant government permissions.
Foreign Investment Rules, January, 2013	
The Protection Of Wildlife And Conservation Of Natural Areas Law, 1994 (No. 6/94)	The project shall not cause unacceptable impacts to protected habitats and species.
Rules On Protection Of Wildlife, And Protected Area Conservation Law (2003) And The Protection Of Wildlife, And Wild Plant And Conservation Of Natural Areas Rules (2002)	
Union Of Myanmar Marine Fisheries Law, 1990 (Amended In 1993)	The project shall not cause water pollution and shall not cause unacceptable disturbance to fishes and other marine organisms.
The Oil Fields Act, 1918	Not directly relevant to the project. Relevant to government.
The Petroleum Act 1934 (The State Peace and Development Council Law No. 33/ 2010)	Not directly relevant to the Project as no production, storage or transportation of oil.
The Petroleum Rules (1937)	
Territorial Sea and Maritime Zones Law 1977 (Law No. 3)	Not directly relevant to the Project. Relevant to government.
The Law Amending The Territorial Sea And Maritime Zone Law (2008)	Not directly relevant to the project. Relevant to government.
The Law Amending The Ports Act 2008 (The State Peace And Development Council Law No. 5/2008)	No ballast, rubbish or other wastes will be discharged at Myanmar ports.
Myanmar Port Authority Law 2015	Project vessels may potentially use the Thaketa supply base in Yangon.
The Inland Navigation Vessel Law 2015	Project vessels may potentially use the Thaketa supply base in Yangon.
Prevention From Danger Of Chemical And Associated Material Law (26th august 2013)	Low toxicity chemicals will be selected where possible for use during drilling.
The Burma Wildlife Protection Act 1936	Not directly relevant to project as no sanctuaries within or near to AD-7.

Legislation	Relevance to the project
The Burma Wildlife Protection Rules 1941 (Burma Act No. Vii Of 1936)	
The Protection And Preservation Of Cultural Heritage Region Law 1998 (The State Peace And Development Council Law No. 9/98)	No cultural heritage sites within or near AD-7.
The Conservation of Antique Objects law 2016	No cultural heritage sites or identified antique objects within or near AD-7.
The Conservation Of Water Resources And Rivers Law, October, 2006 (The State Peace And Development Council Law No. 8/2006)	Not directly relevant to project as no rivers are near to AD-7 and no impact anticipated on water resources.
The Law On Standardization (2014)	Not directly relevant to the project. Relevant to government.
National Sustainable Development Strategy (2009)	Project aligns with principles of environmental and social impact assessment procedure.
National Environmental Policy (1994)	Not directly relevant to the project. Relevant to government.
Myanmar Insurance Law (1993)	Relevant to insurance matters for the project.
Myanmar Agenda 21 (1997)	Relevant to sustainability goals for the project.

5 GOVERNING PARAMETERS

5.1 NATIONAL PARAMETERS

A summary of Myanmar national environmental standards that are relevant to the Project (offshore oil and gas) for effluent discharges are shown in *Table 5.1*.

Table 5.1 National Environmental Quality (Emissions) Guidelines on Effluent Discharge Levels

Parameter	National Environmental Quality Guideline based on 2007 IFC offshore oil and gas guidelines with 2015 IFC offshore oil and gas guidelines noted
Drilling fluids and cuttings (non-aqueous drilling fluid)	Non-aqueous drilling fluid, re-inject or ship-to-shore; no discharge to sea Drilled cuttings, re-inject or ship-to-shore; no discharge except: • Oil concentration lower than 1% by weight on dry cuttings • Mercury maximum 1 milligram per kilogram (mg/kg) dry weight in stock barite • Cadmium maximum 3 mg/kg dry weight in stock barite • Discharge via a caisson at least 15 m below sea surface 2015 change Non Aqueous drilling fluid: Reinject or ship-to-shore, no discharge to sea 2) Drilled cuttings: Reinject or ship-to-shore, no discharge to sea except: • Facilities located beyond 3 miles (4.8 km) from shore; • For new facilities: Organic Phase Drilling Fluid [a], concentration lower than 1% by weight on dry cuttings [b]; • For existing facilities [c]: Use of Group III non-aqueous base fluids and treatment in cutting dryers. Maximum residual Non Aqueous Phase Drilling Fluid d (NAF) 6.9% (C16 -C18 internal olefins) or 9.4% (C12-C14 ester or C8 esters) on wet cuttings; • Discharge via a caisson (at least 15 m below surface is recommended whenever applicable; in any case, a good dispersion of the solids on the seabed should be demonstrated)
Drilling fluids and cuttings (water-based drilling fluid)	Water-based drilling fluid, re-inject or ship-to- shore; no discharge to sea Water-based drilling fluids and cuttings, re-inject or ship-to-shore; no discharge to sea except: • Mercury 1 mg/kg dry weight in stock barite • Cadmium 3 mg/kg dry weight in stock barite • Maximum chloride concentration must be less than four time's ambient concentration of fresh or brackish receiving water • Discharge via a caisson at least 15 meters below sea surface 2015 change 1) WBDF: Reinject or ship-to-shore, no discharge to sea except: • In compliance with 96 hr. LC-50 of Suspended Particulate Phase (SPP)-3% vol. toxicity test first for drilling fluids or alternatively testing based on standard toxicity assessment species [e] (preferably site-specific species) WBDF cuttings: Reinject or ship-to-shore, no discharge to sea except: • Facilities located beyond 3 miles (4.8 km) from shore; Discharge via a caisson (at least 15 m below sea surface is recommended whenever applicable; in any case, a good dispersion of the solids on the seabed should be demonstrated)

Parameter	National Environmental Quality Guideline based on 2007 IFC offshore oil and gas guidelines with 2015 IFC offshore oil and gas guidelines noted
Completion and well work-over fluids	Ship-to-shore or re-inject, no discharge to sea except: • Maximum one day oil and grease discharge • should not exceed 42 milligrams per litre (mg/L); 30 day average should not exceed 29 mg/l • Neutralise to attain a pH of 5 [f] or more 2015 Change Oil and grease content does not exceed 42 mg/L daily maximum; 29 mg/L monthly average
Hydrotest water	Send to shore for treatment and disposal Discharge offshore following environmental risk analysis, careful selection of chemicals Reduce use of chemicals [g]
Cooling water	The effluent should result in a temperature increase of no more than 3°C at edge of the zone where initial mixing and dilution take place; where the zone is not defined, use 100 meters from point of discharge
Desalination brine	Mix with other discharge waste streams if feasible
Sewage	Compliance with MARPOL 73/78[h] (as applicable or required by vessel class)
Food waste	Compliance with MARPOL 73/78[h] (as applicable or required by vessel class)
Storage displacement water	Compliance with MARPOL 73/78[h] (as applicable or required by vessel class)
Bilgewater	Compliance with MARPOL 73/78[h] (as applicable or required by vessel class)
Deck drainage	Compliance with MARPOL 73/78[h] (as applicable or required by vessel class)

a: New facilities include offshore drilling rigs which have been newly designed or structurally modified for the project.
b: As defined by OSPAR (2000) Decision 2000/3.
c: Applicable to existing offshore drilling rigs deployed for development well drilling programs. Applicable to exploratory well drilling programs. Technically and financially feasible techniques, including installation of thermo-mechanical cutting cleaning systems, to meet the guidelines for new facilities should be considered for implementation, in relation to the number of wells (including producers and injectors) included in development drilling programs, and/or to potential impacts on critical habitats.
d: As defined in US EPA (2013a).
e: 96-hr LC-50: Concentration in parts per million or percent of the SPP from sample that is lethal to 50 percent of the test organism exposed to that concentration for a continuous period of 96 hours. See also: http://www.epa.gov/nrmrl/std/qsar/TEST-user-guide-v41.pdf.
f: Standard Unit
g: In accordance with OSPAR (2010a) "Recommendation 2010/4 on a Harmonised Pre-screening Scheme for Offshore Chemicals" or other applicable process
h: In nearshore waters, carefully select discharge location based on environmental sensitivities and assimilative capacity of receiving waters.

5.2 INTERNATIONAL PARAMETERS

The specific emission limit values and environmental quality standards that are relevant to the Project are shown in Table 5.2.

Table 5.2 Environmental Standards of Relevance to the Project

Environmental Parameter	Standard	Details
Air emissions	MARPOL Annex VI	The MODU and vessels will comply with applicable MARPOL requirements (as applicable or required by vessel class), for the prevention of air pollution from ships, including Vessels will hold a valid International Air Pollution Prevention (IAPP) Certificate, comply with allowable NOx emission from diesel engines, the sulphur content of any fuel oil used on board ships shall not exceed 3.5% m/m (where low sulphur fuel is available) and regulation of shipboard incineration.
Waste discharges	MARPOL Annex I, IV & V	The support vessels will comply with applicable MARPOL requirements (as applicable or required by vessel class), including: discharge of untreated sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than 3 nautical miles (nm) from the nearest land. Sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nm from the nearest land. The support vessels will operate in compliance with MARPOL Annex I: any oil-in-water content of discharges should not exceed 15 ppm. General waste (excluding food) will not be disposed of to sea in line with MARPOL Annex V requirements. Combustible wastes will be segregated and disposed by incinerator on-board, should an incinerator be available on the selected vessel. Non-combustible and recyclable wastes will be stored in containers and returned to the selected vessel shore base for disposal. Food waste will be macerated into smaller pieces (25 mm) prior to discharge overboard (if discharged <12 nm from shore. Hazardous wastes will be stored on the vessels in appropriate containers with labels. Hazardous waste storage will be designated in accordance with their Safety Data Sheets (SDS). Hazardous wastes will be returned to the vessels' selected shore base and sent to a licensed disposal facility by a licensed waste contractor).
Underwater noise generation	Good practice	Visual check for marine mammals and turtles within 0.6 miles (1 km) (observation zone) of the MODU or vessel for 20 minutes prior to commencing vertical seismic profiling (VSP) operations. Soft start - build up power for VSP slowly to give adequate time for marine fauna to leave the area (20 minutes at minimum). If a whale or marine turtle is sighted within the shut-down zone (1640 ft (500 m)), the acoustic source should be shut down completely. Soft start procedures should only resume after the whale(s) or turtle(s) has been observed to move outside the shutdown zone (1640 ft (500 m)) or when 30 minutes have lapsed since the last sighting. Visual observations of the observation zone (0.6 miles (1 km)) must be maintained continuously to identify if there are any marine mammals or turtles present. During the pre-start meeting, alert all crew to immediately report to the trained observer when they observe any marine mammals or turtles during and prior to the activity. The pre-start meeting will cover the likelihood of whale observations and required actions if they are sighted. All information on marine fauna sightings will be reported to Ministry of Natural Resources and Environmental Conservation (MONREC) following completion of the proposed drilling program.
Spills	MARPOL Annex I	Support vessel standard operating procedures to be prepared and implemented. Contingency plans will be prepared and implemented, e.g. vessel Shipboard Oil Pollution Emergency Plans (SOPEPs) and Woodside Oil Pollution Emergency Plan (OPEP).

6 SUMMARY OF IMPACTS

The EIA has assessed the potential impacts and proposed mitigation and management measures to reduce the level of the impact. The EIA concluded that potential impacts are typically short term and are well understood from previous experience in the industry, with little or no evidence of adverse consequences on the majority of environmental or social receptors. These potential impacts and the associated mitigation measures are summarised in *Table 6.1*.

Table 6.1 Potential Impacts and Proposed Mitigation Measures

Potential Impact/Issue	Control / Mitigation Measures	Significance of Residual Impact
Impacts from drill cuttings and drilling fluid discharges to sediment quality, benthic communities, water quality, fish and pelagic communities	• WBDF shall be used as the first preference and where WBDF cannot meet required specifications, NADF may be used following technical justification. • The average oil content for discharge of NADF pit cleaning slops will be limited to less than 1% by volume. • Average oil on cuttings for the wells will be limited to 6.9% or less. • Residual NADF will be disposed of downhole, or returned to shore for reconditioning, re-use or disposal No bulk discharge of NADF drilling fluids will be permitted offshore. • No bulk discharge of NADF drilling fluids will be permitted offshore. • Where cuttings are discharged overboard, they will be discharged below the water line. • NADF system set up via the Woodside NADF Start-up Checklist. • All chemicals that may be discharged to the marine environment during the exploration drilling activity will be selected and approved as per the Woodside Chemical Assessment Process. • All Woodside approved chemicals are included on the Chemical Selection List which is regularly reviewed. • Bulk operational discharges conducted under the MODU's permit to work (PTW) system (to operate discharge valves/pumps).	**Negligible** (sediment quality, benthic communities, fish and pelagic species) **Minor** (water quality)
Impacts from underwater sound on marine fauna	• 0.6 miles (1 km) visual observation zone. • Pre-start observations and soft start procedures. • Visual observations of the observation zone (1 km) must be maintained continuously for whales or turtles. • 1640 ft (500 m) precautionary shut-down zone. • Night-time / low visibility procedures. • Pre-start meeting with crew to include marine fauna observations and reporting requirements. • During periods of low visibility, VSP may be used as described in soft start and operating procedures provided that there have not been three or more whale shut down	**Minor** (fish) **Moderate** (marine mammals and turtles) but considered ALARP*

Potential Impact/Issue	Control / Mitigation Measures	Significance of Residual Impact
	situations during the preceding 24 hours or if operations were not underway during preceding 24 hours, no whales were sighted in two hour period during preceding 24 hours. • A trained crew member will be utilised during VSP operations to monitor and record marine fauna.	
Impacts on fishing activity and shipping from physical presence of MODU and vessels	• A 1640 ft (500 m) radius safety exclusion zone will be maintained around the MODU as required. • MODU and support vessels will comply with international regulations for collision avoidance, navigation and maintenance.	**Negligible** (fishing and shipping)
Impacts from unplanned collisions on fishing vessels and other marine users	• Myanmar speaking crew members available on board the MODU. • Implement the stakeholder engagement plan (SEP) to ensure timely sharing of information on the details of the proposed drilling program in order to inform stakeholders. • Issue Notice to Mariners. • Disclosure and implementation of the Grievance Mechanism for the Project and timely investigation of any grievances.	**Negligible** (fishing, shipping and livelihoods)
Impacts from GHG emissions from the MODU, support vessels, machinery engines and flaring	• The well test duration will be minimised to the extent possible. • Energy efficient design and operation of machinery. • Engine maintenance to minimise unburned hydrocarbons. • The MODU and support vessels will have IAPP certificates (as applicable or required by vessel class). • Vessels (as applicable or required by vessel class) will have a Ship Energy Efficiency Management Plan (SEEMP). • Use of low Sulphur fuel (sulphur content not to exceed 3.5% m/m) when it is available.	**Negligible** (atmosphere and climate)

Potential Impact/Issue	Control / Mitigation Measures	Significance of Residual Impact
Impacts from unplanned spills on marine fauna and habitats	• Vessel standard operating procedures and bunkering procedures (including limiting commencement of bunkering to daylight hours, visual monitoring, and dry break couplings). • Vessels will hold a valid International Oil Pollution Prevention (IOPP) certificate, maintain an oil record book, and have a SOPEP on board. • Vessels will hold the Oil Pollution Emergency Plan (OPEP) on board to implement in a spill incident requiring capability beyond the SOPEP. • Chemicals and/or hydrocarbons handled and stored in accordance with SDS. • Appropriate waste segregation and disposal. • Spill response kits on board vessels and the MODU. • Standard maritime safety/navigation procedures.	**Negligible** (marine fauna, seabirds, fish)

7 DESCRIPTION OF PROPOSED MITGATION MEASURES

Through the Project development and the EIA process, Woodside has made commitments to ensure appropriate environmental and social performance. A summary of the Project impacts and the committed measures designed to manage and mitigate those impacts is presented in *Table 6.1*. The mitigation measures are provided in *Table 7.1.*

Table 7.1 Summary of Mitigation and Management Measures

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
Fuel combustion to power engines and machinery on-board MODU and support vessels	SS1	Impacts from exhaust emissions on ambient air quality	SS1.1	Use of low sulphur fuel (sulphur content not to exceed 3.5% m/m) when it is available.	Not Assessed (scoped out)	SS1.1.1	Contractor to provide specifications of fuel to be used by MODU and vessels.	Contractor	Pre-mobilisation and during the drilling program	Copy of marine fuel specifications.
			SS1.2	• The well test duration will be minimised to the extent possible. • Energy efficient design and operation of machinery. • Engine maintenance to minimise unburned hydrocarbons.		SS1.2.1	Well test design to minimise duration and equipment and machinery selected to be energy efficient, where possible.	Contractor / Woodside	Pre-mobilisation	N/A
			SS1.3	Vessels will be in compliance with applicable MARPOL 73/78 Regulations for the prevention of air pollution from ships (Annex VI) (as applicable or required by vessel class).		SS1.3.1	Contractor to provide MARPOL IAPP certification for the MODU and vessels (as applicable or required by vessel class).	Contractor	Pre-mobilisation	MARPOL IAPP certificates
	SS2	Impacts from Greenhouse Gas Emissions from the MODU, Support Vessels, Machinery Engines and Flaring	SS2.1	The MODU and vessels (as applicable or required by vessel class). will have MARPOL Certification and comply with international standards and good practice including IAPP certificates, in accordance with the requirements of Annex VI MARPOL 73/78.	Negligible	SS2.1.1	Contractor to provide MARPOL IAPP certification for the MODU and vessels (as applicable or required by vessel class).	Contractor	Pre-mobilisation	MARPOL IAPP certificates
			SS2.2	Vessels (as applicable or required by vessel class) will have a SEEMP in accordance with MARPOL 73/78 (Annex VI).		SS2.2.1	Contractor to ensure that MODU and vessels have a SEEMP (as applicable or required by vessel class).	Contractor	Pre-mobilisation	SEEMP Certificate
			SS2.3	Use of low sulphur fuel (sulphur content not to exceed 3.5% m/m) when it is available.		SS2.3.1	Contractor to provide specifications of fuel to be used by MODU and vessels.	Contractor	Pre-mobilisation and during the drilling program	Copy of marine fuel specifications.
Routine discharges from MODU and support vessels	SS3	Impacts of sewage and grey water on marine water quality and localised adverse impacts to marine biota	SS3.1	The MODU and support vessels will comply with applicable MARPOL 73/78 Annex IV requirements (Reg 4 and 8), including: • Vessels will have valid International Sewage Pollution Prevention (ISPP) Certificate. • Discharge of sewage into the sea is prohibited, except when the vessel has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than 3 nm from the nearest land. • Sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nm from the nearest land.	Not Assessed (scoped out)	SS3.1.1	Contractor to provide MARPOL ISPP certification and maintain vessel discharge log book for MODU and vessels.	Contractor	Pre-mobilisation and during the drilling program	MARPOL ISPP certificate Vessel discharges log book
	SS4	Impacts of putrescible (food) wastes on marine water quality and localised adverse impacts to marine biota	SS4.1	The MODU and support vessels (as applicable or required by vessel class) will comply with applicable MARPOL 73/78 Annex V requirements (Reg. 3), including garbage discharged by the MODU is passed through a grinder so that it is capable of passing through a screen with no opening wider than 25 millimetres: this applies to support vessels within the 1640 ft (500 m) safety exclusion zone.	Not Assessed (scoped out)	SS4.1.1	Contractor to provide MARPOL Garbage Certificate of Compliance and maintain Garbage Record Book / vessel discharge log book for MODU and vessels.	Contractor	Pre-mobilisation and during the drilling program	MARPOL Garbage Certificate of Compliance Garbage Record Book / Vessel discharges log book

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
	SS5	Impacts of bilge water and deck drainage on marine water quality and localised adverse impacts to marine biota	SS5.1	The MODU and support vessels will comply with applicable MARPOL 73/78 Annex I requirements (Reg 7, 14 and 17) including: • Vessels will have valid IOPP certificate, as applicable or required by vessel class. • Bilge water contaminated with hydrocarbons must be contained and disposed of onshore, unless the oil in water (OIW) content is within 15 ppm and an IMO approved oil/water separator (as applicable or required by vessel class) is used to treat the bilge water. • Vessels will maintain an oil record book. • No direct overboard drainage from sludge/drain/dirty oil/bilge water collecting tanks.	Not Assessed (scoped out)	SS5.1.1	Contractor to provide MARPOL IOPP certification and maintain vessel discharge log/oil record book for MODU and vessels.	Contractor	Pre-mobilisation and during the drilling program	MARPOL IOPP certificate Oil Record Book / Vessel discharges log book
	SS6	Impacts of drill cuttings and drilling fluids on marine water quality	SS6.1	• WBDF shall be used as the first preference and where WBDF cannot meet required specifications, NADF may be used following technical justification. • Residual NADF will be disposed of downhole, or returned to shore for reconditioning, re-use or disposal No bulk discharge of NADF drilling fluids will be permitted offshore. • The average oil content for discharge of NADF pit cleaning slops will be limited to less than 1% by volume. • Average oil on cuttings for the wells will be limited to 6.9%. • No bulk discharge of NADF drilling fluids will be permitted offshore. • Where cuttings are discharged overboard, they will be discharged below the water line. • NADF system set up via the Woodside NADF Start-up Checklist. • All chemicals that may be discharged to the marine environment during the drilling activity will be selected and approved as per the Woodside Chemical Assessment Process. • All Woodside approved chemicals are included on the Chemical Selection List which is regularly reviewed. • Bulk operational discharges conducted under the MODU's PTW system (to operate discharge valves/pumps).	Minor	SS6.1.1	WBDF to be used as far as practicable during the drilling program – NADF shall only be used where WBDF cannot provide the required technical specifications.	Woodside/ Contractor	Pre-mobilisation and during the drilling program	Chemical use and approval records. PTW records
						SS6.1.2	The average oil content of NADF pit cleaning slops discharged to sea will be limited to less than 1% by volume.	Woodside/ Contractor	During the drilling program	MODU log book
						SS6.1.3	Average oil on cuttings for the wells will be limited to 6.9% or less by weight.	Woodside/ Contractor	During the drilling program	Oil on Cutting % records
						SS6.1.4	Residual NADF will be disposed of downhole, or returned to shore for reconditioning, re-use or disposal No bulk discharge of NADF drilling fluids will be permitted offshore.	Woodside/ Contractor	During drilling program	MODU log book
						SS6.1.5	No bulk discharge of NADF drilling fluids.	Woodside/ Contractor	During drilling program	MODU log book
						SS6.1.6	Cuttings discharged overboard will be discharged below the water line.	Woodside/ Contractor	During drilling program	MODU log book
						SS6.1.7	Woodside NADF start up checklists to be implemented.	Woodside/ Contractor	Pre-mobilisation and during drilling program	Completed checklists
						SS6.1.8	Chemicals for discharge or release to sea to be selected and approved as per the Woodside Chemical Assessment Process and included on the Chemical Selection List.	Woodside/ Contractor	Pre-mobilisation and during drilling program	Chemical use and approval records. Chemical Selection List

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
						SS6.1.9	Contractor to conduct bulk operational discharges under the MODU PTW system.	Woodside/ Contractor	Pre-mobilisation and during drilling program	PTW records
Solid & hazardous waste generation from MODU and support vessels.	SS7	Impacts due to solid and hazardous waste generation and disposal from vessels.	SS7.1	The MODU and support vessels will comply with applicable MARPOL 73/78 Annex V requirements (Reg. 10.2 and 10.3) including: • Vessel Waste Management Plan (or equivalent) must contain as a minimum: - Waste handling equipment, waste storage containers, and spill response equipment appropriate to the type and volume of waste will be provided at waste storage areas. - All hazardous wastes will be segregated prior to onshore disposal. • General waste (excluding food) will not be disposed of to sea. • Vessels >400 tonnes (or certified for >15 persons on-board) will have a Garbage Record Book.	Not Assessed (scoped out)	SS7.1.1	Contractor Waste Management plan and contractor to maintain Garbage Record Book for MODU and vessels.	Contractor	Pre-mobilisation and during drilling program	MARPOL Garbage Certificate of Compliance Contractor Waste Management Plan Garbage Record Book.
			SS7.2	Any accidental release of foreign material to the marine environment that does not meet MARPOL discharge standards will be reported if required to relevant Authorities. Where safe and practicable to do so, lost objects will be recovered.		SS7.2.1	Reporting of any accidental release of wastes to the marine environment.	Contractor	During drilling program	Garbage Record Book. Report of any accidental release of wastes
Operation of MODU and support vessel.	SS8	Introduction of invasive marine species (IMS) to the marine environment	SS8.1	All contracted vessels will comply with IMO Ballast Water requirements.		SS8.1.1	Vessels to maintain records of ballast water uptake and discharge locations.	Woodside and Contractor	Pre-mobilisation and during the drilling program	Contractor ballast water log book
			SS8.2	Implementation of Woodside's IMS management process		SS8.2.1	Woodside IMS risk assessment process and management plan will be applied.	Woodside and Contractor	Pre-mobilisation	Woodside IMS records
			SS8.3	MODU will not enter nearshore waters in Myanmar.		SS8.3.1	MODU not to enter nearshore (within 12 nm of the coast) waters.	Woodside and Contractor	During the drilling program	MODU log book
	SS9	Impacts on Fishing Activity and Shipping from Physical Presence of MODU and Vessels	SS9.1	A 1640 ft (500 m) radius safety exclusion zone will be maintained around the MODU as required.	Negligible	SS9.1.1	Contractor to implementation of 1640 ft (500m) safety exclusion zone. The Vessel Master will manage vessel access and activities within this zone.	Contractor Vessel Master	During drilling program	MODU and vessel communications logs
			SS9.2	Myanmar speaking crew members available on board the MODU.		SS9.2.1	Contractor to ensure the provision of Myanmar speaking crew on board the MODU.	Contractor	During drilling campaign	MODU log book
			SS9.3	• Implementation of the SEP. • A Notice to Mariners will also be included in the SEP.		SS9.3.1	Woodside will implement the SEP and provide required information for Notice to Mariners.	Woodside	Pre-mobilisation and during drilling program	Woodside's SEP Notice to Mariners transmittal record
			SS9.4	Disclosure and implementation of the Grievance Mechanism for the Project and timely investigation of any grievances.		SS9.4.1	Woodside to disclose Grievance Mechanism to maritime authorities, fisheries authorities, fishing communities and other marine users.	Woodside	Pre-mobilisation and during drilling program	Woodside's records of disclosure

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
			SS9.5	MODU and support vessels (as applicable or required by vessel class) will comply with international regulations for collision avoidance (COLREGs 1972), navigation and watch-keeping, including: • Maintaining look-outs (e.g. visual, hearing, radar etc.), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar). • Navigation light display requirements, including visibility, light position/shape and noise signals appropriate to activity. • Maintenance of minimum safe manning levels. • Maintenance of navigation equipment in efficient working order (compass/radar / communications). • Navigational systems and equipment as specified in Regulation 19 of Chapter V of SOLAS. • Automatic Identification System installed as applicable or required by vessel class, in accordance with Regulation 19 of Chapter V of SOLAS.		SS9.5.1	Inspection to confirm implementation of relevant navigational and communication requirements for MODU and support vessels operating at sea.	Contractor	Pre-mobilisation and during drilling program	MODU/vessel certification Vessel log books Inspection report.
Discharge of acoustic seismic source during VSP operations	SS10	Impacts from underwater noise generation on marine fauna	SS10.1	Trained crew member utilised during VSP operations to monitor and record marine fauna observations.	Moderate (marine mammals and turtles) Minor (fish)	SS10.1.1	A trained crew member will be utilised during VSP operations to monitor and record marine fauna observations.	Contractor	During VSP operations	Marine mammal observation report. Copy of personnel training records for marine mammal observation requirements.
			SS10.2	Visual observations during daylight hours		SS10.2.1	• Visual check for marine fauna within 0.6 miles (one km) (observation zone) of the MODU or vessel for 20 minutes prior to commencing VSP operations. • Visual observations of the observation zone (one km) must be maintained continuously to identify if there are any marine fauna present.	Contractor	During VSP operations	Marine mammal observation report
			SS10.3	Soft start procedures		SS10.3.1	• Soft start - build up power for VSP slowly to give adequate time for marine fauna to leave the area (20 minutes at minimum). If a whale or marine turtle is sighted within the shut-down zone 1640 ft (500 m), the acoustic source should be shut down completely. • Soft start procedures should only resume after the whale(s) or turtle(s) has been observed to move outside the shutdown zone (500 m) or when 30 minutes have lapsed since the last sighting.	Contractor	During VSP operations	Marine mammal observation Report

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
			SS10.4	Low visibility / night-time procedures		SS10.4.1	During periods of low visibility (where the observation zone cannot be clearly viewed out to 0.6 miles (one km)), including night-time, the VSP source may be used as described in soft start procedures and operating procedures, provided that: • there have not been three or more shut down situations during the preceding 24 hour period. • if operations were not previously underway during the preceding 24 hours, a period of continual observation was undertaken in good visibility for at least two hours (to the extent of the observation zone) within the preceding 24 hour period and no marine fauna were sighted.	Contractor	During VSP operations	Marine mammal observation Report
			SS10.5	Pre-start meeting and crew briefings		SS10.5.1	Pre start meeting with crew to include marine fauna observation and reporting. During the pre-start meeting, alert all crew to immediately report to the trained observer when they observe any marine fauna during and prior to the activity. The pre-start meeting will cover the likelihood of whale observations and required actions if they are sighted.	Contractor	Pre-mobilisation / prior to VSP operations	Crew induction records
Unplanned spills	SS11	Impacts from unplanned spills of hydrocarbons / chemicals on marine fauna and habitats	SS11.1	MODU and support vessels (as applicable or required by vessel class) operate in compliance with MARPOL 73/78 Annex I (Reg. 7, 17 and 37) including: • vessels will hold a valid IOPP certificate • vessels will hold OPEP on board to implement in a spill incident requiring capability beyond the SOPEP • vessels will maintain an oil record book. • SOPEP to be developed as applicable or required by vessel class	Negligible	SS11.1.1	• Contractor to provide MARPOL IOPP certification and maintain oil record book for MODU and vessels. • SOPEP available.	Contractor	Pre-mobilisation	MARPOL certification, (IOPP) Certificate and vessel discharges log book (Oil Record Book). SOPEP
			SS11.2	Chemicals and/or hydrocarbons will be handled and stored in compliance with the Safety Data Sheets (SDSs).		SS11.2.1	Appropriate storage and handling of chemicals.	Contractor	Pre-mobilisation and during drilling program	Any spills to be reported and response measures implemented where appropriate.
			SS11.3	Bunkering undertaken in accordance with operational bunkering procedures including: • use of dry break couplings (or similar) for flexible fuel transfer hoses. • bunkering to commence during daylight hours and appropriate sea conditions. • Visual monitoring of gauges, hoses, fittings and the sea surface.		SS11.3.1	Development and implementation of bunkering procedures.	Contractor/ Woodside	During drilling program	Bunkering records Spill kit inventory lists
			SS11.4	Spill response kits located in proximity to chemical and hydrocarbon storage/bunkering areas and appropriately stocked/replenished as required.		SS11.4.1	Contractor to provide and replenish spill response kits adjacent to chemical and hydrocarbon storage/bunkering areas.	Contractor	Pre-mobilisation and during drilling program	N/A
			SS11.5	Crew trained in spill prevention and use of spill response equipment.		SS11.5.1	Crew induction to include spill prevention and use of spill response equipment.	Contractor	Pre-mobilisation and during drilling program	Crew induction training records
			SS11.6	Woodside OPEP developed and implemented in the event of a spill resulting from a vessel collision beyond the capability of the SOPEP.		SS11.6.1	OPEP available on board MODU.	Woodside	Pre-mobilisation and during drilling program	OPEP

Project Activity	Potential Impact/Issue		Control / Mitigation Measures		Significance of Residual Impacts	Specific Action		Responsible Project Team Member	Schedule	Records
			SS11.7	A 1640 ft (500 m) radius safety exclusion zone will be maintained around the MODU as required. The Vessel Master will manage vessel access and activities within this zone.		As per SS9.1.1	As per SS9.1.1	As per SS9.1.1	As per SS9.1.1	As per SS9.1.1
			SS11.8	MODU and support vessels (as applicable or required by vessel class) will comply with international regulations for collision avoidance (COLREGs 1972), navigation and watch-keeping, including: • maintaining look-outs (e.g. visual, hearing, radar etc.), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar). • navigation light display requirements, including visibility, light position/shape and noise signals appropriate to activity. • maintenance of minimum safe manning levels. • maintenance of navigation equipment in efficient working order (compass/radar / communications). • navigational systems and equipment as specified in Regulation 19 of Chapter V of SOLAS. • Automatic Identification System installed (as applicable or required by vessel class) in accordance with Regulation 19 of Chapter V of SOLAS.		As per SS9.5.1	As per SS9.5.1	As per SS9.5.1	As per SS9.5.1	As per SS9.5.1
			SS11.9	All chemical and/or hydrocarbon wastes will be segregated into clearly marked containers prior to onshore disposal by a licensed waste management contractor, as per the relevant SDSs.		SS11.9.1	Contractor to ensure segregation of hydrocarbon and chemical wastes as per SDS and maintain Garbage Record Book for MODU and vessels	Contractor	During drilling program	Contractor Waste Management Plan Garbage Record Book.
Unplanned collisions	SS12	Impacts from Unplanned Collisions on Fishing Vessels and Other Marine Users	As per SS9.1 to SS9.5	As per SS9.1 to SS9.5	Negligible	As per SS9.1 to SS9.5	As per SS9.1 to SS9.5	As per SS9.1 to SS9.5	As per SS9.1 to SS9.5	As per SS9.1 to SS9.5

8 MONITORING PROGRAM

8.1 OVERVIEW OF MONITORING PROGRAM

Monitoring will be implemented to demonstrate compliance with both regulatory and Woodside's internal procedure and, will also provide verification of the effectiveness of the implemented control measures. A program of periodic monitoring of the Project starts at mobilisation and continues through the duration to completion. This information is collected using the tools and systems such as daily drilling reports, quarterly reviews, and internal auditing.

Compliance will be monitored to ensure that subcontractors meet contractual obligations with respect to work practices and design specifications (e.g. Project emission standards). The monitoring strategies consider consistency with internationally and locally acceptable practices, logistics and cost effectiveness.

Monitoring is listed in *Table 8.1*.

Table 8.1 Monitoring Activities Undertaken for the Project

Project Activity/ Environmental Aspect	Monitoring Measures	Reporting
VSP	Visual monitoring for whales and turtles during VSP	Record if any sightings
Refuelling	Visual monitoring during refuelling of gauges, hoses, fittings and sea surface	Incident report forms
Aqueous discharges meet MARPOL	Inspections to demonstrate MARPOL requirements met	Inspection check sheets
Waste Generation	Quantities of waste discharged Quantities of NADF cuttings discharged	Vessel garbage log
Incident reporting	Details of any environment or social incidents	Incident report forms
Non-Compliance Reporting	Non-Compliance with EMP	Inspection check sheets
Accidental Releases and Leaks	Safety Record	Safety record

8.1.1 Environmental and Social Management Organisation

Woodside is committed to providing resources essential to the implementation and control of the EMP. The internal reporting requirements for each mitigation measure are specified in *Table 7.1*.

Resources include the appropriate human resources and specialised skills. The roles and responsibilities for environmental and social management and implementation of the EMP are outlined in *Table 8.2*.

Table 8.2 Environmental & Social Management Organisation Roles and Responsibilities

Position	Responsibility
Office-based Personnel	
Woodside Well Delivery Manager	• Ensure that drilling operations are undertaken as per this EMP. • Provide sufficient resources to implement the management measures in this EMP. • Relevant personnel will be provided with an environmental induction at the start of the drilling campaign The MODU start-up meets the requirements of the Woodside Drilling and Managing Rig Operations Process.
Woodside Drilling Superintendent	• Ensure that the drilling program meets the requirements detailed in this EMP. • Ensure that changes to the drilling program are communicated to the Drilling & Completions Environmental Adviser. • Ensure reporting of environmental incidents meets external reporting requirements and Woodside's internal requirements. • Ensure corrective actions raised from environmental inspections are tracked and closed out.
Woodside Drilling Engineers	• Ensure that changes to the drilling program are communicated to the Drilling & Completions Environmental Adviser. • Ensure that all drill and completions fluid chemical components and other fluids that are used downhole have been reviewed by the Drilling & Completions Environmental Adviser.
Woodside Drilling and Completions Environmental Adviser	• Prepare environmental component of relevant Induction Package. • Assist with the review, investigation and reporting of environmental incidents. • Ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EMP. • Liaise with relevant regulatory authorities as required. • Assist in preparation of external regulatory reports required, in line with environmental approval requirements and Woodside incident reporting procedures. • Monitor and close out corrective actions identified during environmental monitoring or inspections. • Provide advice to the Well Site Manager and Drilling Superintendent and copies of this EMP to assist them to understand their responsibilities.
Woodside Corporate Affairs Adviser	• Implement the SEP. • Report on stakeholder consultation. • Ensure ongoing liaison as required.
MODU-based Personnel	
Offshore Installation Manager	• The MODU's management system and procedures are implemented. • Ensure that relevant corrective actions related to incidents and inspections are identified, tracked and closed out. • Ensure that personnel starting work on the MODU receive an environmental induction and are competent to undertake the work they have been assigned. • Ensure emergency drills are conducted as per the MODU's schedule. • Ensure the MODU's Emergency Response Team has been given sufficient training to implement the MODU's SOPEP. • Ensure that any environmental incidents are reported immediately to the Well Site Manager.
Well Site Manager	• Ensure that the drilling / completions programs are undertaken as detailed in this EMP • Ensure that the management measures detailed in this EMP are implemented on the MODU. • Ensure that the environmental incidents are reported as per to the Drilling Superintendent. • Ensure that periodic environmental inspections are completed. • Ensure that relevant corrective actions related to incidents and inspections are identified, tracked and closed out.
Woodside HSE Adviser Offshore	• Ensure that the activities are undertaken as outlined in this EMP • Support the Well Site Manager to ensure the monitoring requirements are met and the EMP is implemented on the MODU • Ensure environmental incidents are reported • Ensure periodic environmental inspections are completed

Position	Responsibility
Vessel-based Personnel	
Vessel Master	• Ensure the vessel management system and procedures are implemented. • Ensure that personnel commencing work on the vessel receive an environmental induction and are competent to undertake the work they have been assigned. • Ensure SOPEP drills are conducted as per the vessel's schedule. • Ensure the vessel Emergency Response Team has been given sufficient training to implement the SOPEP. • Ensure any environmental incidents or breaches of this EMP are reported immediately to the Woodside Well Site Manager.

8.1.2 Contractor Management

Woodside will work with and coordinate the contractors to ensure that all contractors are aware of and competent with respect to:

- Environmental and social impacts that could potentially arise from their activities.
- Necessity of conforming to the requirements of the EIA and EMP (i.e. implementing the control and mitigation measures) in order to avoid or reduce those impacts.
- Roles and responsibilities to achieve that conformity, including with regard to change management and emergency response.
- Documentation and reporting requirements and other EMP compliance requirements.

8.1.3 Inspection/Audits

The Woodside Drilling and Completions Environmental Adviser will ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EMP.

8.2 MANAGEMENT OF CHANGE

A risk assessment will be undertaken for all proposed changes in scope (e.g. timing, location or operational details) described in this EMP to assess the significance of any potential new environmental impacts or risk not previously assessed. If the change to risk is determined to be a significant modification, a revision of the EMP will be conducted and submitted to Myanmar Oil and Gas Enterprise (MOGE), MONREC and other relevant authorities.

9 REPORTING REQUIREMENTS

Woodside will submit Monitoring Reports on the implementation of the EMP to MOGE and MONREC every six months in 2017.

Woodside shall submit an Incident Report to MOGE and MONREC within 24 hours of any incident with serious impact, or within seven days for any other incident of lesser impact. The Project will adopt MARPOL requirements (as applicable or required by vessel class) and a SOPEP will be prepared and implemented. Should spills occur, they will be reported in the SOPEP Report.

A summary of the monitoring for the Project is provided in *Table 8.1*.

10 EMERGENCY PLAN

Woodside, through the drilling contractor's HSE Plan, will develop plans and procedures to identify the potential for and response to environmental accidents and health and safety emergency situations and for preventing and mitigating any potentially adverse environmental and social impacts that may arise.

Woodside has a number of Emergency Response Plans (ERP) in place, which detail the actions and resources available in the event of various emergency scenarios. A MODU ERP will be drafted for the proposed drilling in Myanmar. The ERPs contain instructions for support relating to:

- Vessel emergency procedures (SOPEP will be implemented for minor vessel-based spills).
- Woodside's OPEP (Implemented in the event of a hydrocarbon spill requiring response beyond the capability of the SOPEP).
- Medical emergencies including medevac procedures.
- Search and rescue – includes man-overboard procedures.
- Heavy weather/cyclone plan.
- Hazardous material spill response plans.
- Any other emergency response plan required by the Republic of the Union of Myanmar authorities.

The ERP's also contain information on reportable incidents, incident notification, contact information and activation of the Contractor's emergency centre and Woodside Communication Centre (WCC).

In the event of an emergency of any type, the MODU Person in Charge (PIC) will assume overall onsite command and act as the Emergency Response Coordinator (ERC). All persons aboard the MODU/support vessels will be required to act under the ERC's directions. The MODU/support vessels will maintain communications with the onshore Drilling Superintendent and/or other emergency services in the event of an emergency. Emergency response support can be provided by the Contractor's emergency centre or WCC if requested by the ERC. The MODU and support vessels will have on-board equipment for responding to emergencies including but not limited to medical equipment, fire-fighting equipment and oil spill equipment.

Emergency preparedness and response will be continually reviewed by the drilling contractor and Woodside representative during the operations and after the occurrence of any accidents or emergency situations to ensure that lessons learnt inform continuous improvement. Emergency exercises will be undertaken on a regular basis to confirm adequacy of response strategies and investigations of accidents or incidents will follow formal documented procedures.

10.1 WOODSIDE OIL POLLUTION EMERGENCY PLAN

In the event of an unplanned hydrocarbon spill to the marine environment the activity OPEP will be implemented to initiate a response. An OPEP is an activity or facility specific document which details the operational tasks required to mobilise a first strike response. An OPEP for each of Woodside's activities in Myanmar will be developed prior to the commencement of the activity. The OPEP applies to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. OPEPs are intended to be the first document used in a spill to provide guidance to the Incident Controller (IC) and the rest of the Incident Management Team (IMT).

The OPEP contains details and forms for use in immediate response, including oil spill trajectory modelling activation forms, and immediate notifications required in the event of a spill. Woodside is a member of Oil Spill Response Limited (OSRL) who can supplement Woodside capability with the provision of specialist personnel and equipment.

10.2 MEDICAL EMERGENCIES

In the event of a medical emergency on board the MODU the Medical Emergency Response Plan (MERP) will be used to respond to the situation. The MERP covers all likely medical conditions and injuries that may present during the campaign and has been developed to outline the responsibilities and actions to be taken to medically evacuate a person to definitive care. End to end care of all casualties will be provided by International SOS. Evacuation from the MODU will primarily be conducted using a medically equipped helicopter or if necessary a fast supply boat. Specialist medical personnel have been contracted for the campaign including paramedics and Myanmar registered doctors.

10.3 HEAVY WEATHER/CYCLONE

Both Woodside and the Drilling Contractor have comprehensive cyclone preparedness processes in place for the campaign area. The procedures to be followed in the event of a cyclone are described in the Drilling Contractor ERP and Cyclone/Rotating Storm Procedures.

11 CAPACITY DEVELOPMENT AND TRAINING

The Project will require that contractors have implemented training programmes for their personnel and each contractor is responsible for Health, Safety and Environment (HSE) awareness training for personnel working on the Project. The contractors are also responsible for identification of any additional training requirements to maintain required competency levels. Employee training, provided by the contractor, will include awareness and competency with respect to:

- Environmental and social impacts that could potentially arise from their activities.
- Necessity of conforming to the requirements of the EIA and EMP, in order to avoid or reduce those impacts.
- Roles and responsibilities to achieve that conformity, including with regard to change management and emergency response.

The Woodside Well Site Manager is responsible for coordinating training, maintaining employee-training records, and ensuring that these are monitored and reviewed on a regular basis. Woodside will be responsible for the management of contractors to ensure that training needs are met for personnel whose work may have any potential environmental and social impacts.

12 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Woodside, on behalf of the JV, undertook public consultation in Ayeyarwady Region in June 2016 in order to raise awareness for the Project, collect baseline data and to receive opinions on the Project to support the EIA study process, development of mitigation measures and the EMP. The public consultation was conducted in the Pathein and Chaungthar in 2016 and Pathein and Thabaung in 2015. A summary of the consultation is provided in *Table 12.1*.

Table 12.1 Consultation Activities Undertaken during the Project

Date & Location	Stakeholder	Purpose
2015 – For Seismic Survey and Exploration Drilling undertaken in late 2015 / early 2016		
18 March 2015, Pathein	General Administrative Department (GAD), Ayeyarwady Regional Government (eight Government representatives, including the Chief Minister, of the Ayeyarwady Region)	• Project disclosure • Attain comments and suggestions from Regional Government authorities
28 March 2015, Thabaung Town	Thabaung Township Representatives – Township Administrator, Government representatives, local fisher representatives	• Project disclosure • Answer questions • Provide stakeholders with project contacts
30 April 2015, Pathein	Myanmar Fisheries Federation (MFF) – Ayeyarwady Region	• Project disclosure • Request for information – fishing activities specific to the Ayeyarwady Region
25 May 2015, Yangon	Myanmar Centre for Responsible Business	• Follow-up meeting on progress of Marine seismic survey and exploration drilling consultation activities
28 May 2015, Yangon	Fauna and Flora International	• Project disclosure • Request for information
28 May 2015, Yangon	Wildlife Conservation Society	• Project disclosure • Request for information
29 May 2015, Yangon	Istituto Oikos	• Project disclosure • Request for information
10 June 2016, Yangon	Myanmar Centre for Responsible Business	• Follow-up meeting on progress of Marine seismic survey and exploration drilling consultation activities

Date & Location	Stakeholder	Purpose
24 June 2015, Naypyidaw	Department of Fisheries (DoF)	• Project disclosure • Request for information
2016 – For current Project		
10 June, 2016, MCRB Office	Myanmar Centre for Responsible Business (MCRB)	• Disclose information on the Project. • Request for information.
13 June 2016, Pathein	DoF	• Project disclosure • Request for information
14 June 2016, Chaungthar	Township meeting including representatives from Shwe Thaungyan, and sub township – Chaungthar *	• Project disclosure • Request for information
14 June, 2016, Pathein	Ministerial meeting at the offices of the Chief Minister of Ayeyarwady Region (including Minister of Electric Power, Energy, Industry and transportation, Assistant Director of ECD, Regional Secretary of Pathein GAD and Director of DoF)	• Project disclosure • Request for information • Attain comments and suggestions from Regional Government authorities
16 June 2016, Yangon	MFF	• Project disclosure • Request for information
16 June 2016, Yangon	DoF	• Project disclosure • Request for information
26 October 2016, phone call	Department of Tourism in Chaungthar and Ngwe Saung	• Request for information

* During these consultations, the GAD informed Woodside that there is a new Township "Shwe Thaungyan", which used to sit inside Thabaung Township. Also within this new township is the sub-township "Chaungthar". Both the sub-township of Chaungthar and the new township of Shwe Thaungyan use to be included in Thabaung Township. Stakeholders were informed on the Project and were provided an opportunity to voice concern, questions or opinions they may have on the Project.

The following management actions apply in protecting local community livelihoods and safety, while maintaining appropriate communication with local communities.

- Continuing to build awareness of the activities by providing notifications to relevant communities and other key stakeholders as set out in *Table 12.2.*
- An established Grievance Mechanism, which provides a procedure to address any community concerns that may arise even after application of the mitigation measures. All concerns will be investigated by Woodside. Further details are outlined in *Section 3.5.1*.

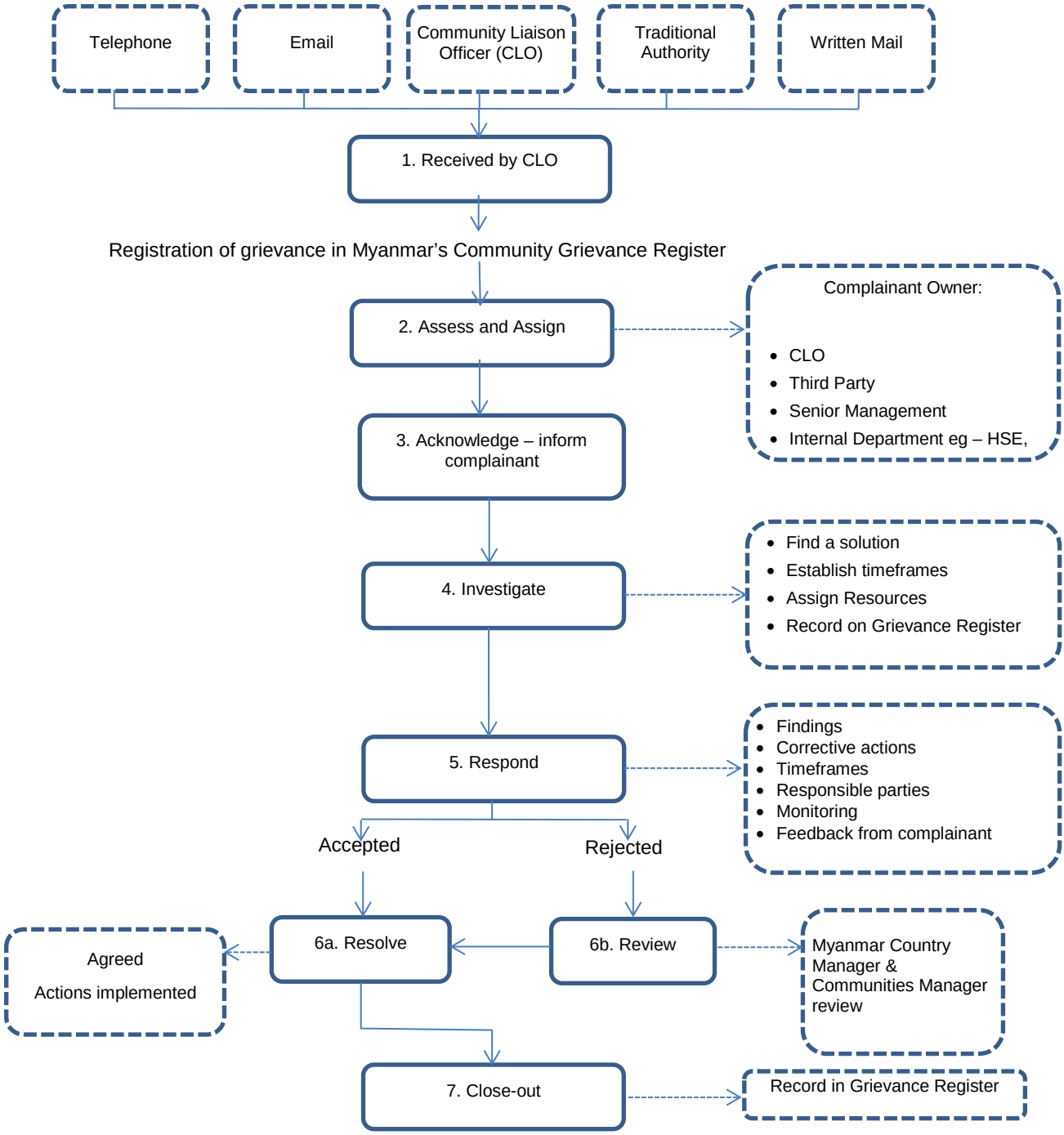
Table 12.2: Stakeholder communication and notifications

Timing	Purpose	Stakeholder/group	Method of communication/notification
Following lodgement of Scoping Report	Disclose Project information	• Relevant stakeholders at all levels • General public	• Project factsheet available on Woodside website • The disclosure of the A-6 Scoping Report was advertised in the New Light of Myanmar and the Mirror
Following lodgement of EIA for assessment	Disclose EIA Report	• Relevant regional officials/authorities • Relevant Government organisations • Offshore fishermen • Other relevant stakeholders • General public	• Hardcopy EIA executive summary (Myanmar) made available in Ayeyarwady and Yangon • Publish Project information on relevant Department of Information noticeboards; • Regional and national advertising • EIA (English) and executive summary (Myanmar and English) available on Woodside website
Following lodgement of EIA for assessment	Engage stakeholders on outcomes of Environmental Impact study	• Relevant regional officials/authorities • Relevant Government organisations	Face-to-face meetings
Prior to the commencement of a drilling campaign in any calendar year.	Notification of commencement and location of drilling activities. Outline safety measures and grievance mechanism.	• DoF (Pathein) • MFF (Pathein) • Relevant regional officials/authorities • Relevant Government organisations • Fishers	• Written notification via factsheet • Publication on Woodside website • Regional and national advertising • Factsheet provided on DOI notice board at GAD offices in Ayeyarwady
During the Project activities	Provide an update, answer any questions and address any grievances.	Meet with MFF (Yangon)	Face-to-face
During the Project activities	Address any community concerns that may arise during Project activities.	Implement the Community Grievance Mechanism as per the indicative procedures outlined in Section 3.5.1	
On completion of the activity (annually)	Provide an update and answer any questions.	To be confirmed	To be confirmed

12.1 WOODSIDE'S MYANMAR GRIEVANCE MECHANISM

The Community Grievance Mechanism established by Woodside provides a procedure to address any community concerns that may arise even after all efforts to mitigate any potential impacts have been made. Woodside aims to address all complaints from community stakeholders that it receives. The Grievance Mechanism is required for the Project's Operations Phase, and a draft of this Procedure is illustrated in *Figure 12.1*. The Procedure will be finalised as part of the pre-drilling consultation activities. More information on the engagement methodology, and information on the key issues raised is provided in *Section 7* of the EIA Report.

Figure 12.1 Woodside's Grievance Mechanism in Myanmar



DRAFT PROCEDURE – INDICATIVE ONLY

13 WORK PLAN AND IMPLEMENTATION SCHEDULE

Through the Project development and the EIA process, Woodside has made commitments to ensure appropriate environmental and social performance. A summary of the Project impacts and the committed measures designed to manage and mitigate those impacts is presented in *Table 6.1* The schedule and responsibility for implementation of these mitigation measures are identified as necessary.

It is estimated that the overall budget for implementing the EMP for each drilling program is between $500k and $1M AUD. Many of the management and mitigation measures are embedded controls as part of the standard operational costs of the MODU and vessels. The operational practices also form part of the Woodside Management System and are integrated into our activities as part of good practice.

The Project covers a proposed drilling program of up to two wells commencing in early 2017, one of which is a firm well and one of which is an optional well. For each well, drilling is expected to take about 60 days. Depending on the outcome from the proposed 2017 drilling, an additional four wells may be drilled over 2018 and 2019; however, this is yet to be confirmed by the JV. Should additional wells be drilled in 2018 and 2019, the environmental management plan will be updated and provided to ECD prior to the drilling of any additional wells. The work plan and commitments of the EMP is provided in *Table 7.1*

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