

timor leste



COVA-1 EXPLORATION DRILLING ENVIRONMENTAL IMPACT STATEMENT SUMMARY

TL-HSE-RP-004

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Abstract:					
<p>This Environmental Impact Statement (EIS) for the Cova-1 drilling campaign was prepared in accordance with <i>Regulation 51/1993</i>, a Framework of Reference document submitted to the Direcção Nacional Do Meio Ambient (DNMA), and review comments from the DNMA and other stakeholders. The EIS provides information concerning the drilling of the Cova-1 exploration well and its associated potential environmental and social impacts.</p>					
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EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) presents the outcomes of a detailed environmental impact assessment for the Cova-1 exploration well drilling campaign. It addresses the environmental and social impacts and management issues associated with the drilling of the Cova-1 exploration well. This assessment concludes that the drilling can be managed to achieve its objectives, without causing unacceptable environmental and socio-economic effects.

INTRODUCTION

Background

Eni Timor Leste S.p.A. (Eni) proposes to drill the Cova-1 exploration well in deep waters (~1,900m) in permit areas S-06-03 (Contract Area C). The permit is located in the northern Bonaparte Basin in Timor Leste sovereign waters, approximately 100km from the southeast coast of Timor Leste, approximately 125km south of Dili and approximately 725km northwest of Darwin (Figure ES.1).

The campaign will last approximately 45 days, with drilling scheduled to commence in October 2010. Cova-1 will be drilled by the *Saipem 10000* drillship.

The Proponent

The proponent of this proposal is Eni Timor Leste S.p.A (Eni). Eni's contact details are:

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Production Sharing Contract (PSC) S06-03 is a joint venture between Eni (80%), KG Timor Leste Limited (10%) and Galp Exploration and Production (Timor Leste) SA (10%).

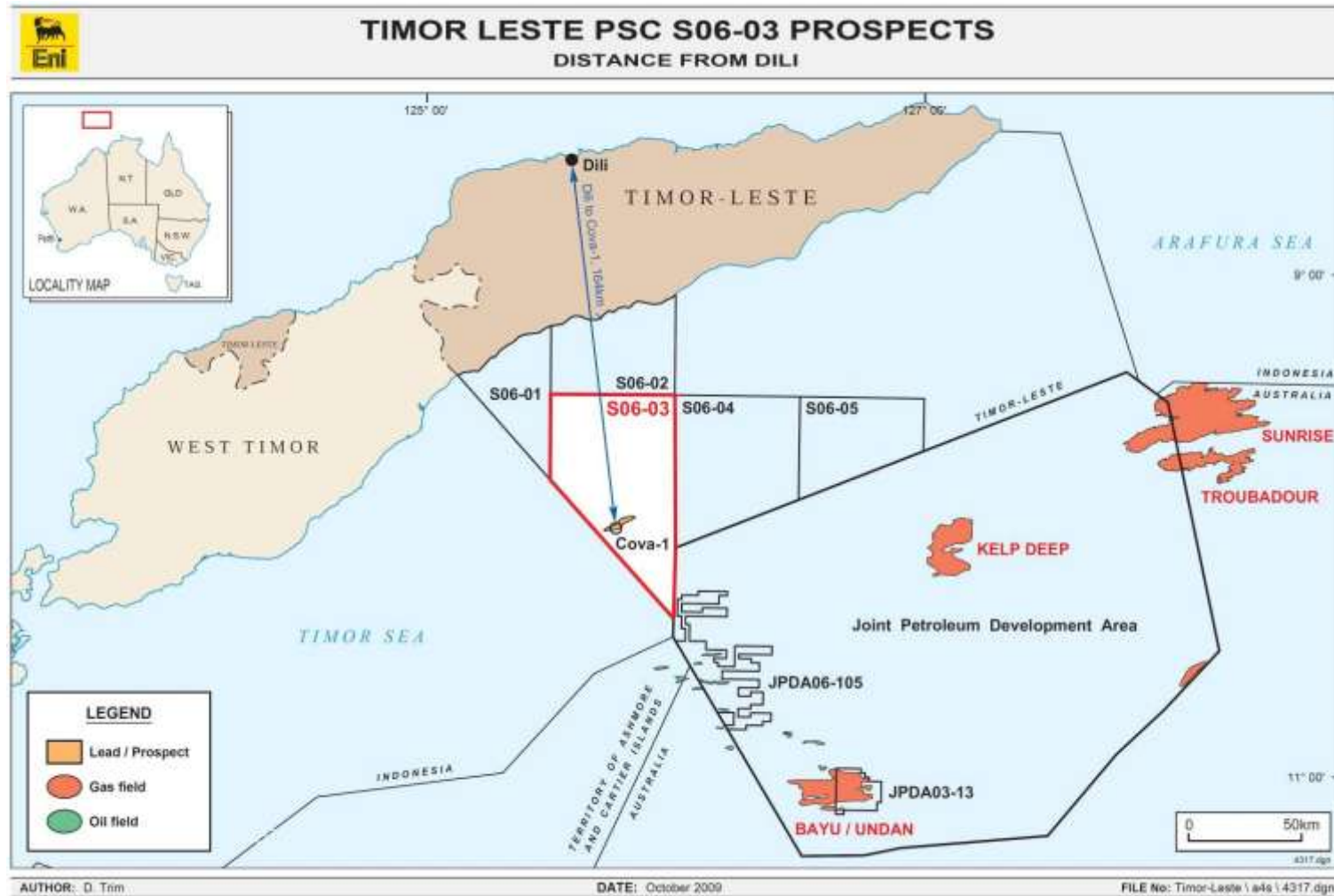


Figure ES.1 Cova-1 Well Location.

THE PROJECT

Proposed Drilling Program

Cova-1 is planned to be drilled in September 2010 as a vertical exploration well. Drilling will be undertaken using the drillship, *Saipem 10000* (Figure ES.2). On arrival at site, the drillship will move into position and remain in position using the Class III Dynamic Positioning system.



Figure ES.2 *Saipem 10000*.

The top sections of the well will use seawater and prehydrated gel (PHG) sweeps. Approximately 150m³ of drill cuttings would be produced and the cuttings will continuously discharged directly on to the surface of the seabed adjacent to the well. The bottom sections of the well will be drilled using WBMs with KCl as the clay stabiliser and weighting agent. A riser will be installed to return cuttings (approximately 250m³) to the drillship where they will be processed to retain the fluids prior to disposing of the cuttings at the sea surface.



ENVIRONMENTAL SETTING

Physical Environment

The climate of the Timor Sea is monsoonal with a wet “summer” and a dry “winter”. The wet season commences between September and November as the southeast trade winds (SE Trades) weaken over Northern Australia and land temperatures rise. Mean annual rainfall in the region is 1,700mm. Almost all rainfall occurs between November and April, the greatest falls being in January and February. Mean air temperature ranges between a mean of 26.9°C in July and 28.4°C in December and vary little during the year. Regional sea surface temperatures range from 26°C to 31°C.

Wind direction is predominantly northeast to southeast in winter months and southwest to west in summer months. A tropical cyclone period prevails over the region from November to April. Surface currents reflect seasonal wind regimes, with summer easterly to north-easterly currents, and winter westerly to south-westerly currents. The Timor Sea region is influenced by the Pacific-Indian Ocean Throughflow which contributes to the westward-flowing South Equatorial Current.

The proposed Cova-1 exploration well is located on the continental slope in an area of uniformly smooth seabed ranging in depth 1,900m to 1,950m. To the north the continental slope continues to decline steadily reaching depths in excess of 2,500m in the Timor Trough.

A system of shoals occurs to the south and southwest of the Cova-1 location (Figure ES.3). The system stretches for approximately 60km in a northeast/southwest direction along the outer edge of the Sahul Shelf and comprises 11 major shoals ranging in size from 0.05km² to 40km², with an average size of 4.6km². The nearest of these shoals, Big Bank Shoals, is located approximately 85km to the south of the Cova-1 well.

The nearest emergent reefs, Ashmore, Cartier and Hibernia, are located on the southwest end of Sahul Shelf. The nearest, Hibernia reef, is more than 300km to the southwest of Cova-1. The nearest shoreline is the southern coastline of Timor-Leste, located approximately 90km to the northwest.

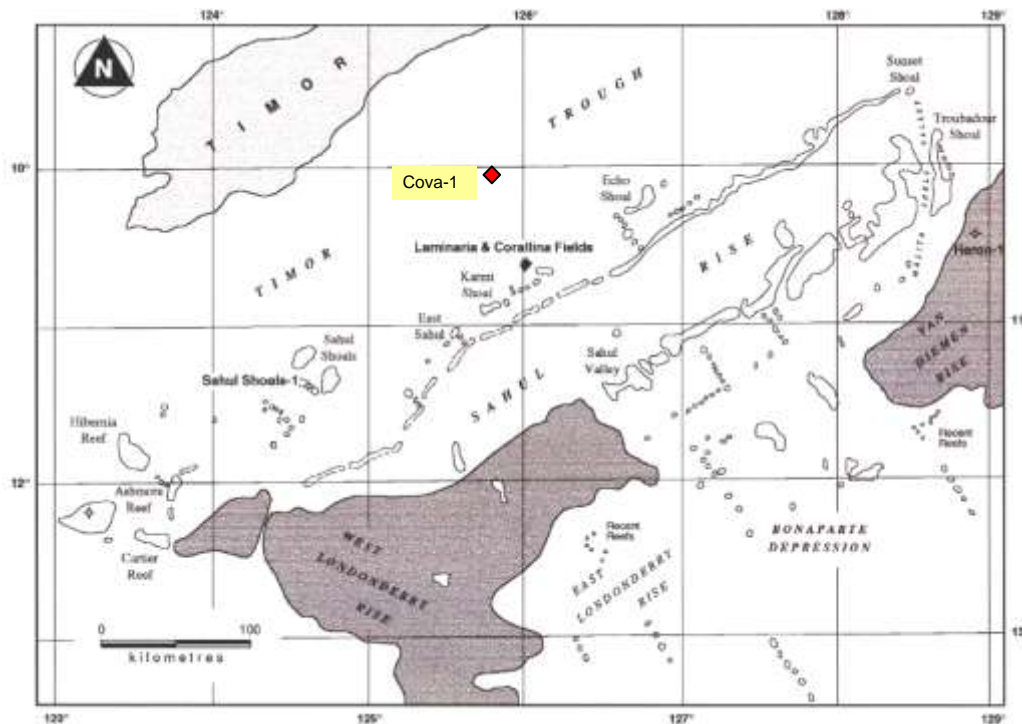


Figure ES.3 Regional Bathymetry.

Biological Environment

The Cova-1 well is situated in approximately 1,900m of water in the Timor Trough. The Timor Trough, in which Cova-1 is located, is classified as the bathypelagic zone (defined as between 1,000m and 4,000m deep). Sunlight does not penetrate the bathypelagic zone and bioluminescence is the only light. Despite the lack of light, the biota of the bathypelagic zone is diverse and sperm whales (*Physeter macrocephalus*) are capable of diving to the bathypelagic zone to feed on deep sea cephalopods and other megafauna.

As no plants can grow in the bathypelagic zone because of lack of light, the fauna are carnivorous, catching in their wide jaws the falling debris of the organisms which exist above them. Fish are common in the bathypelagic zone, typically feeding by ambushing prey or by attracting prey using bioluminescent lures. Due to the relatively small changes in pressure with depth, fish inhabiting the bathypelagic zone can move freely over wide depth changes without being affected by pressure changes. As such, fish species occurring in the bathypelagic zone would be expected to occur over wide depth and geographical ranges.

Benthic invertebrates inhabiting the seabed would be expected to exhibit high diversity though low abundance and productivity due to the water depth, lack of light and reliance on detrital "rain" to drive deep sea ecosystems. Infaunal assemblages would be expected to be dominated by polychaete worms and crustaceans as is typical of marine infaunal assemblages elsewhere including those of continental shelf and slope habitats of the Timor Sea.



A number of whale, dolphin and porpoise species are likely to be encountered during the Cova-1 drilling program, with the Timor Trench providing an important flow-through of species connecting the Pacific and Indian Oceans. Twenty-two whale and dolphin species could potentially occur in the Timor Sea near the permit area. Of these, the Pygmy Killer Whale (*Feresa attenuata*), Killer Whale (*Orcinus orca*), False Killer Whale (*Pseudorca crassidens*), Common Dolphin (*Delphinus delphis*) and the Bottlenose Dolphin (*Tursiops truncatus*) are likely to occur.

Five species of sea turtle may be expected to occur in Timor Sea waters either feeding or migrating between feeding and nesting grounds. These are the Flatback (*Natator depressus*), Hawksbill (*Eretmochelys imbricata*), Green (*Chelonia mydas*) and Leatherback (*Dermochelys coriacea*) and Loggerhead turtles. Fifteen species of seasnake are recorded from the Timor Sea and it is possible that some species inhabit shoals in the vicinity of the Kitan Development. The number and variety of fish species present in the region has not been quantified, although studies have identified a large variety of demersal fish which are common to the area.

A variety of seabirds are expected to pass near or use the Timor Sea waters as part of their main habitat. The bird species utilising the area most frequently are offshore species such as shearwaters, petrels and terns.

Socio-economic environment

Timor Leste is situated approximately 100km north of the proposed drilling location. In mid-2008, the population of Timor Leste was estimated to be 1.1 million. The capital, Dili, on the north coast of Timor-Leste, is serviced by a harbour capable of taking medium sized cargo ships. The airport at Dili is capable of taking medium to large passenger and cargo aircraft. The southern coastal area of Timor-Leste, adjacent to the Cova-1 well, includes the districts of Cova Lima, Ainaro and Manufahi. The two largest population centres on the coast adjacent to the drilling area are Suai (population 23,000), capital of Cova Lima district, and Betano, a coastal village in Manufahi.

Timor Leste is an agricultural based economy, primarily focused on subsistence farming. Traditionally, the East Timorese are not fishing people. Most fishing is from canoes or small boats with outboard motors that remain close to shore. However, the Government sees great potential to increase income from fishing in the future both in deepwater and near coastal areas. Currently, commercial fishing is not conducted in the area around the Cova-1 well location. The oil and gas industry is an emerging industry of major significance for the economy and people of Timor-Leste.



ENVIRONMENTAL IMPACTS AND MANAGEMENT

A high level risk assessment of the Cova-1 drilling campaign found that of fourteen broad hazard categories, one was considered to be high inherent risk and the remainder were considered low inherent risk. The high risk event was loss of well control resulting in a blowout. When the mitigation measures to prevent this occurring were taken into consideration the residual risk was reduced to a medium.

Oil Spills

Oil spills are the most significant potential threat to the environment from drilling. Oil spills can potentially occur from a number of sources ranging from major spills such as from a well blow-out, which is an extremely rare event, down to smaller leaks and spills from equipment and piping. The drilling campaign will be managed to avoid or minimise the potential for accidental releases of all substances, nevertheless, the potential exists for either Cova crude oil or diesel to be spilled at some time during the project.

Eni's safeguards to be implemented for the minimisation of environmental impacts associated with non-routine (accidental) discharges include:

- procedures to reduce the likelihood of oil spills occurring;
- procedures to minimise the volumes spilled; and
- actions to be taken minimise the environmental consequences in the event of a spill occurring, i.e. spill response.

Cova crude is expected to be similar to Kitan crude i.e. a light oil that evaporates readily. Oil weathering studies have indicated that 70-75% would evaporate within the first 24 hours of release to the marine environment, with the residual 25-30% remaining as a thin sheen on the sea surface. Diesel is classified as light persistent oil. Diesels are expected to spread rapidly with moderate evaporative loss in tropical waters and, consequently, slicks are likely to break up. Oil weathering studies have indicated that 50% would evaporate within 24 hours of release to the marine environment, with the residual 50% becoming entrained into the water column. Fate and trajectory modelling predicted that oil would spread predominantly in an easterly direction during the season for the proposed drilling activity (October, summer), with a low (<1%) probability of making contact with the Timorese coastline.

Eni and its contractors will have appropriate oil spill response procedures in place. The oil spill response procedures would be tested regularly to ensure their adequacy in responding to credible oil spill scenarios. Any release of crude oil or diesel into the marine environment would be recorded as an environmental incident and treated accordingly by Eni's incident investigation and corrective and preventative action processes.



Solid and Hazardous Wastes

Unintentional discharge of solid or hazardous wastes was determined to be a medium risk and the effects on the marine environment would vary depending on the nature of the material involved. For example, solid wastes such as plastics are persistent in the environment and have been implicated in the deaths of a number of marine species including marine mammals and turtles. This is due to ingestion, inhalation or physical entanglement. Hazardous wastes such as waste solvents, excess or waste chemicals, oil contaminated materials (e.g. sorbents, filters and rags), and batteries would expect to have localised toxicity effects. Eni's management of solid and hazardous wastes is to return it onshore for recycling or disposal. Any release of solid and hazardous wastes into the marine environment would be recorded as an environmental incident and treated accordingly by Eni's incident investigation and corrective and preventative action processes.

Drilling Discharges

Discharges to sea of drill cuttings and drilling mud was considered to pose a low risk, most likely resulting in localised short- to medium-term environmental effects. These are mainly turbidity plumes generated in the water column, localised smothering of seafloor habitats, alteration of sediment characteristics, and depletion of oxygen in surface sediments.

The nature of effects on seafloor animals will relate to the toxicity, persistence and biodegradability of synthetic-based drilling mud. Drill cuttings and associated drilling mud are expected to settle on the seafloor within a distance of 700m from the discharge point and at very low concentrations. The highest concentration of drill cuttings is expected to occur within 20m of the well as a result of drilling the riser-less top section. Consequently, the concentration of drill cuttings and drilling mud on the seafloor at any point beyond a distance of approximately 20m of the discharge point is expected to be low, and insufficient to cause alteration to sediment characteristics to any extent that would affect sediment fauna composition and abundance.

Atmospheric Emissions

Atmospheric emissions from the Cova-1 drilling campaign are considered unlikely to have a significant impact on air quality at the local and regional scales as they are expected to be quickly dissipated into the surrounding atmosphere. Furthermore, the project area is remote from any land mass and far from sensitive receptors. Therefore, air emissions are not expected to contribute significantly to pollution and the deterioration in air quality.



SOCIO-ECONOMIC IMPACTS AND MANAGEMENT

Timor-Leste faces considerable challenges in rebuilding its infrastructure and creating employment opportunities for young people entering the workforce. The development of oil and gas resources in offshore waters has begun to supplement government revenues resulting in the creation of jobs. In general, the oil and gas industry may be expected to provide the following benefits to Timor-Leste:

- expansion of the economy due to increased service and supply requirements of the oil and gas industry;
- employment opportunities for a large proportion of the population;
- potential funding by the operators for community projects that the government is unable to fund and that donors have not funded;
- vocational education and training opportunities to develop a skilled workforce; and
- gas resources for domestic and industrial use in Timor Leste.

Article 5.4 of PSC S-06-03 includes clear obligations for Eni to provide a real opportunity to suppliers based in Timor-Leste and give preference in employment to Timor-Leste nationals and permanent residents. There is limited opportunity to incorporate significant local content into the Cova-1 drilling program due to the nature of the work and the short duration of the program. However, Eni endeavours to incorporate local content wherever feasible. For example, crew changes for the Cova-1 well will be conducted via helicopter based in Dili. Eni will continue to liaise with Timor-Leste stakeholders to identify and develop local content opportunities, particularly if development of the Cova field proves to be economically viable.

SUMMARY OF MANAGEMENT MEASURES AND COMMITMENTS

Eni is committed to undertaking its petroleum exploration and production activities in a manner that is consistent with the principle of sustainable development. Eni aspires to the goals of zero harm to its people, its host communities and the environment. In keeping with these goals and aspirations, Eni is committed to drilling the Cova-1 well in a manner that minimises impacts on the surrounding biophysical and social environments. Eni's commitments for drilling the Cova-1 well are presented in Table ES1, which are based on Eni's experience of drilling other wells in the Timor Sea.

STAKEHOLDER CONSULTATION

External consultation was initiated by Eni's consultation with DNMA and submission of the draft Framework of Reference (FoR) on 24 November 2009. The purpose of this consultation was to inform DNMA on the scale and nature of the Cova-1 drilling program, clarify the environmental approvals process and present Eni's draft Framework of Reference for the EIA. Eni arranged a public forum in Timor-Leste on 23rd February to introduce the drilling program to a wider group of stakeholders and answer questions.



Subsequently, Eni developed Revision 0 of the EIS, and distributed it to the DNMA and stakeholders for review. A second public forum was held in Timor-Leste on 24 August 2010 to provide updates on the drilling program and answer further queries from stakeholders. Formal written submissions on the EIS from stakeholders were collected by the DNMA and have been incorporated, where necessary, into this document, Revision 1 of the EIS (the final EIS).

CONCLUSION

The Cova-1 well will be drilled in deep offshore waters. The environmental setting is deemed conducive to petroleum related activities given that no sensitive resources are located in the vicinity of the project area or will be impacted upon. Eni believes that by implementing the management strategies and commitments detailed in this EIS, the drilling of the Cova-1 exploration well can be undertaken without compromising the environmental values of the area, in particular the marine biota inhabiting the surrounding pelagic and benthic continental shelf habitats.



Table ES.1 Summary of Eni's Management Measures and Commitments

No.	Topic	Objective(s)	Management Action	Timing
1.	Integrated Management System	Provide a risk-based management system for the identification and control of impacts.	<ul style="list-style-type: none"> Implement Eni's HSE Integrated Management System for the Cova-1 well that embraces the ISO 14001 standards. 	Throughout the drilling program
2.	Environmental Management Plans	Provide operational control documentation for the management of environmental impacts associated with drilling.	<ul style="list-style-type: none"> Develop an Environmental Management Plan and Monitoring Program (EMP) for the Cova-1 drilling program The EMP will incorporate environmental and social management measures detailed in Chapter 5 of this EIS where relevant. The EMP will be developed in consultation with DNMA. 	Prior to Drilling
3.	Risk assessment	Ensure project risks are fully identified and understood and management measures and controls are implemented accordingly.	<ul style="list-style-type: none"> Conduct a detailed environmental and social risk assessment for the Cova-1 drilling program. Maintain the findings of the risk assessment in a project Risk Register. Incorporate any additional management measures identified during the detailed risk assessment into the EMP. 	Prior to Drilling
4.	Marine Environmental Monitoring Program.	Ensure that Eni's management measures for the Cova-1 drilling program are effective in minimising environmental harm.	<ul style="list-style-type: none"> Conduct an ROV survey of the seabed prior to drilling and after drilling. Provide a report to DNMA describing the findings of the pre- and post-drilling ROV surveys. 	Before and after drilling



No.	Topic	Objective(s)	Management Action	Timing
5.	Operational Monitoring Program	<p>Ensure that Eni's management measures for the Cova-1 drilling program are effective in minimising environmental harm.</p> <p>Ensure that the Cova-1 drilling program complies with applicable legislation and regulations.</p> <p>Enable the implementation of contingency measures, if required.</p>	<ul style="list-style-type: none"> Develop an Operational Monitoring Program for the Cova-1 drilling program in consultation with DNMA. Implement the Operational Monitoring Program and provide a report to DNMA upon completion of the program. 	<p>Prior to Drilling</p> <p>Throughout the drilling program</p>
6.	Socio-economic development	<p>Ensure that opportunities for Timor-Leste businesses and communities are maximised in line with Eni's resource requirements for the Cova-1 drilling program.</p>	<ul style="list-style-type: none"> Conduct ongoing stakeholder consultation to identify opportunities and build capacity to source goods, materials, services and labour from Timor-Leste. 	<p>Throughout the drilling program</p>
7.	Emergency Planning and Response	<p>Ensure that adequate emergency response procedures and resources are in place to minimise the environmental impacts of an incident e.g. oil spill.</p>	<ul style="list-style-type: none"> Develop and implement an Incident Management Plan (IMP) and an Oil Spill Response Manual (OSRM) for the Cova-1 drilling program. The IMP and OSRM will be developed in consultation with the DNMA, Eni's contractors and appropriate emergency response authorities and resource centres. The IMP and OSRM will be tested and reviewed at least once during the drilling program. 	<p>Prior to Drilling</p> <p>During the drilling program</p>
8.	Training and awareness	<p>Ensure that all personnel are aware of their responsibilities towards the management of environmental and social impacts.</p>	<ul style="list-style-type: none"> Provide training to all Eni and contractor personnel on the requirements of Eni's EMP, specifically <ul style="list-style-type: none"> the environmental and social sensitivities of the project; Eni's management objectives and commitments; and obligations of all personnel towards the management of impacts in their areas of responsibility. Provide training to all Eni and contractor personnel on Eni's OSRM. 	<p>Prior to Drilling</p>



No.	Topic	Objective(s)	Management Action	Timing
9.	Auditing	Ensure that Eni's environmental and social performance objectives for the Cova-1 drilling program are met.	<ul style="list-style-type: none">• Conduct an environmental compliance audit against the drilling EMP.	During the drilling program
10.	Stakeholder consultation	To maintain open and transparent communication between Eni and its stakeholders.	<ul style="list-style-type: none">• Deliver a presentation on the proposed drilling program to the key stakeholders.• Incorporate stakeholder feedback and comments into the EMP for the proposed drilling program.	Prior to Drilling

