Otway Operations

Summary Environment Plan

This summary of the Otway Operations Environment Plan has been submitted to comply Regulation 11(7)(8) of the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999.

This document does not contain share market sensitive information, including but not limited to potential production volumes, probability of success, forward looking information, costings or commercially sensitive information.

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ABBREVIATIONS

ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
CMS	Competency Management System
CRG	Community Reference Group
Cwlth	Commonwealth
EES/EIS	Environment Effects Statement / Environmental Impact Statement
EP	Environment Plan
EPA	Environment Protection Authority
HR	Human Resources
HSE	Health, Safety and Environment
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organization
ISO	International Standards Organization
MARPOL	International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)
POSC	Performance Objectives, Standards and Criteria
ROV	Remotely Operated Vehicle
SEAGas	South Eastern Australia Gas Pipeline
SOPEP	Shipboard Oil Pollution Emergency Plan
VIC	Victoria
WMS	Woodside Management System

1 PROJECT DESCRIPTION

1.1 Facility Overview

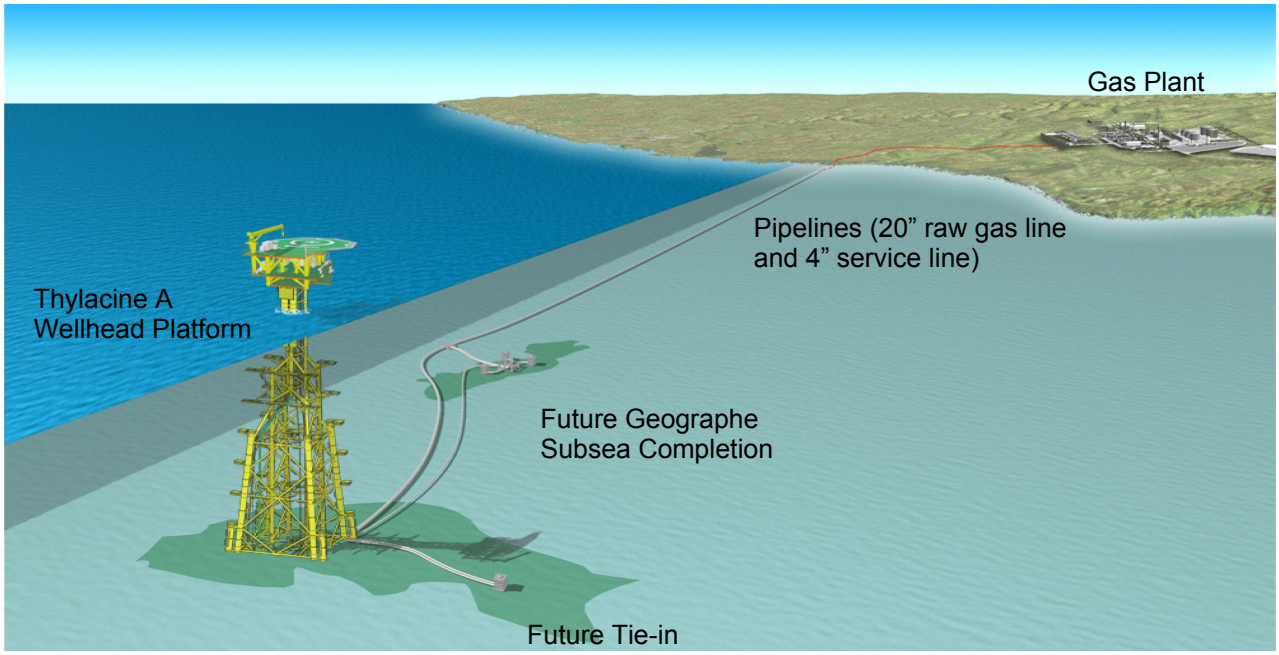
Woodside Energy Ltd. (Woodside), on behalf of its joint venture partners; Origin Energy Resources Limited, CalEnergy Gas (Australia) Pty Ltd and Benaris International Pty Ltd are developing two gas reserves in the Otway Basin, off the south west coast of Victoria. These fields have been named Thylacine and Geographe and are located in production licences; T/L2 and T/L3; and VIC/L23 respectively. The location of key infrastructure and the operational characteristics of the asset, which take the Thylacine and Geographe gas fields to commercial production involves:

- Offshore gas gathering systems at the Thylacine and Geographe gas fields
- A seabed pipeline from the Thylacine reservoir to shore near Port Campbell, routed to pass the Geographe field
- A buried pipeline starting as the offshore seabed pipeline approaches the shore, passing through a drilled shore crossing in the Port Campbell region, and continuing to the slugcatcher at the gas processing plant
- A gas processing plant, at which the raw gas and liquids from the reservoirs will be separated into sales gas, propane, autogas and condensate products.

Sales gas is then exported from the gas plant, currently through a connection to the SEAGas pipeline, for distribution to the south east Australian gas markets. The propane, autogas and condensate produced at the gas plant will be loaded into road tankers at the gas plant for delivery to local and regional customers.

The project infrastructure is illustrated in Figure 1.1. Whilst the project includes development of both the Geographe and Thylacine fields, full field development of these resources is staged and development of the Geographe field will occur after the Thylacine field is in production.

Figure 1.1 Otway Gas Project Infrastructure



1.2 Scope of the Environment Plan and Summary Environment Plan

The Operations Environment Plan (EP) covers the operation of Woodside’s Otway Gas Project. It describes the entire facility and operations directly under the control of Woodside, the environment within which the asset sits, assesses the associated environmental risks and defines the management measures that are used to avoid or manage any potential environmental impacts to as low as reasonably practicable (ALARP).

This Summary EP is written to fulfil the requirements of the *Petroleum (Submerged Lands)(Management of Environment) Regulations 1999* and as such the scope is restricted to those elements of the project that fall within the jurisdiction of the *Petroleum (Submerged Lands) Acts*, which includes the offshore pipeline from

the Victorian coastline to the Thylacine field and the wellhead platform, wells and associated offshore infrastructure.

2 DESCRIPTION OF THE RECEIVING ENVIRONMENT

The offshore facilities are located in a cold temperate climate; however the area can be affected by storms emanating from the polar region at any time of the year. Mean surface seawater temperatures range from approximately 10 to 12°C in winter to around 18 to 20°C in summer. The dominant climatic processes affecting western Bass Strait are successive high- and low-pressure systems in the zone of the 'Roaring Forties'.

The Thylacine area is located in Commonwealth Waters near the outer edge of the Australian Continental Shelf slope, centred approximately 70 km south of Port Campbell, Victoria, in water depths of 95 to 105 m. This area lies within the Otway Province of the Interim Marine and Coastal Regionalisation for Australia (IMCRA, 1998).

Video surveys of the seabed were carried out in 2003 in support of the Otway Gas Project EES/EIS. The survey found seabed in vicinity of the Thylacine field to consist of limestone pavement with a coarse sand veneer of variable thickness. Hard substrates generally supported a low to medium density benthic community that were generally sponge dominated.

At least 27 species of cetaceans (whales and dolphins) and one species of fur seal are known to occur in, or near to, the Thylacine location or offshore pipeline alignment from time to time. Most of the cetaceans are wide ranging oceanic species and are expected to pass through the offshore project area either seasonally, due to migration, or occasionally and irregularly due to feeding movements. All species have vastly greater migratory, breeding and foraging geographic ranges than the survey area.

The facilities are within a number of commercial fishing grounds. Commercial fisheries operating in this area are summarised below based on information presented in Larcombe et al. (2002) and include:

- Ocean Fishery
- Inshore Scalefish Fishery
- Gillnet Fishery
- Dropline and Longline Fishery
- Rock Lobster Fishery
- Giant Crab Fishery
- South East Trawl Fishery

Information provided by the Australian Maritime Safety Authority (AMSA) in 2004 shows a major shipping lane passing to the north of the Thylacine location and across the pipeline route, although there is little shipping activity at the platform location itself.

3 KEY RISKS AND MANAGEMENT MEASURES

Environmental risk assessments have been carried out during all phases of the project, from early concept and design, through detailed design and construction, and will continue to be carried out during operations. The environmental risks for the operations phase have been assessed using the *Consequence* and *Likelihood* approach, consistent with Woodside's Corporate Risk Assessment methodology.

For the offshore facilities and offshore section of the pipeline, five (5) environmental hazards, grouped into three (3) key aspects, were identified as being significant for the facility (i.e. ranked as medium or higher risks on the Corporate Risk Matrix). Table 3.1 summarizes these risks by aspect, and identifies the principal controls in place that manage the resulting risk.

Table 3.1 Aspects and Hazards, Controls and Mitigation Measures

Aspect	Hazards	Principle Hazard Controls and Mitigation Measures
Chemical Inventories	Release of chemicals or fuels to the marine environment from offshore vessel incidents	All vessels are audited by Woodside prior to commencing work on the facilities, to ensure they meet International and Woodside vessel requirements, In addition: • Onboard chemical storages are bunded and suitably secure • Shipboard Oil Pollution Emergency Plans will be in place, where required in accordance with MARPOL; and • The Woodside Oil Spill Contingency Plan in place for the region covers credible ship-based spill scenarios
Raw hydrocarbon Inventories	Hazard to the marine and shoreline environment from a breach in the integrity of: • the subsea wells and/or the wellhead platform; and • the offshore pipeline	All Project infrastructure has been designed to Woodside and industry standards, with containment being a key focus. In addition: • Operating procedures focus on ensuring plant integrity is maintained at all times • Technical integrity, maintenance and monitoring procedures are in place for the facilities, to ensure that throughout the life of the facility a robust system of maintenance and monitoring is in place, with an auditing process in place to ensure these systems are being implemented; and • Emergency response plans and equipment are in place for credible offshore spill scenarios, primarily through maintenance and implementation of an Oil Spill Contingency Plan and resourcing through AMOSC • Third party risks are controlled by inclusion of: a 500m safety exclusion zone around the platform; navaids and a racon on the platform itself; and marking of the facilities on maritime charts by the Australian Hydrographic Office
Hazardous Waste	Hazard to the marine environment from: • mishandling hazardous wastes (e.g. reservoir sand) offshore, or • incorrect disposal of hazardous wastes	No solid or liquid waste (hazardous or non-hazardous) is disposed of offshore from the facilities. In addition: • Staff inductions cover waste handling and management • Handling and disposal procedures for key hazardous waste sources are in place (e.g. the de-sanding package) • A formal Waste Management Plan is in place for the facility and identifies key hazardous waste streams and the appropriate management of the wastes • A competent contractor has been engaged to provide waste management and disposal services to the facility; and • Hazardous wastes are tracked and recorded

4 IMPLEMENTATION STRATEGY

4.1 Overview

The primary goal of the Implementation Strategy is to ensure that the environmental performance objectives and standards in the EP are met. Environmental performance objectives and standards are defined for the key environmental risks identified by the risk assessment. The aim of an **Objective** is to define the target the facility management is aiming to meet. The purpose of a **Standard** is to define the benchmark against which performance will be measured. **Criteria** are specified to identify those critical elements of the standard that apply to controlling the specific risk (as a Standard, which is generally an operating procedure, regulation or industry guideline, may also cover a range of other activities not relevant to the specific risk being addressed). Key Performance Objectives, Standards and Criteria (POSC) for the identified environmental risks are listed in Table 4.1.

Table 4.1 Environmental Performance Objective, Standard and Criteria for Significant Hazards

Aspect / Hazard	Performance Objective	Standard(s)	Criteria
Chemical inventories – offshore vessel incidents	Manage the facility and its operations to prevent the uncontrolled release of hydrocarbons or hazardous chemicals	• MARPOL 73/78 (Annexe 1 Regulation 26) • Woodside Prequalification Audit and Vessel Inspection Procedure • Petroleum (Submerged Lands)(Management of Environment) Regulations	• All vessels above 400t gross tonnage will have a SOPEP in accordance with IMO requirements • All vessels to work on the facility will be inspected and the company audited in accordance with Woodside procedures if: a) they have not worked for Woodside within the last 2 years; or b) if there is a specific reason that justifies an audit. • All on deck chemical storages will be bunded and chemical containers secured • Chemical spills will be cleaned up on deck, and spill absorbent contained as wastes for suitable onshore disposal • All hydrocarbon spills >80L will be reported to the designated Authority, verbally within 2 hours of the event
Raw hydrocarbon Inventories - wells, wellhead platform and associated infrastructure		• Inspection, Monitoring and Maintenance Plan • IALA Recommendations • Petroleum (Submerged Lands) Act	• The platform and wellheads will be periodically inspected for evidence of leaks or damage • The platform is equipped with navaids and a racon and is marked on maritime charts • A 500m safety zone is gazetted around the platform • All hydrocarbon spills >80L will be reported to the designated Authority, verbally within 2 hours of the event
Raw hydrocarbon Inventories - offshore pipeline		• Inspection, Monitoring and Maintenance Plan • Operations Pipeline Management Plan • Onshore Plant Operating Manual	• Offshore pipelines are periodically inspected by remotely operated vehicles (ROV) • The flowrates at the wellhead and gas plant are monitored at the gas plant control room for evidence of gross hydrocarbon losses • All hydrocarbon spills >80L will be reported to the designated Authority, verbally within 2 hours of the event
Hazardous waste – mishandling wastes offshore	Ensure hazardous wastes are identified, segregated, handled and stored in line with regulations. Continue to explore ways to minimise the quantity and ecotoxicity of hazardous wastes generated by the facility.	• Waste Management Plan • Environment Protection (Prescribed Wastes) Regulations • Facility Induction Procedure	• A Waste Management Plan is in place that identifies all hazardous waste streams and their methods of disposal • Hazardous wastes are tracked and recorded • The facility induction covers correct waste management
Hazardous wastes – incorrect disposal of hazardous wastes		• Waste Management Plan	• All hazardous wastes from offshore facilities are taken to shore for disposal at an appropriately licensed site

The performance objectives, standards and criteria are implemented within the facility through the Woodside Management System (WMS). The WMS outlines the way in which business risks, including HSE risks, are managed using the Operations, HSE, HR and other business processes. The framework is defined to enable all staff and contractors to understand what the WMS is, and what resources are available to assist them in continually improving HSE performance.

The expectations of the WMS and supporting business processes are met by the Otway facility operations primarily through its implementation of the:

- Otway Operations Environment Plan;
- Otway Operations Safety Cases;
- Annual Otway Operations HSE Plan;
- Woodside, Operations Division, and facility operation standards and procedures; and
- Requirement that contractors and service suppliers for the facility align their performance with Woodside's HSE requirements.

The Otway facility application of the WMS is also compliant with the requirements of the Environmental Management Systems Standard, ISO 14001.

4.2 Roles, Responsibilities, Competence and Training

The fundamental responsibility of Woodside staff and contractors, etc. is to ensure compliance with the Woodside policies, standards and procedures, and that the WMS is maintained and used. Everyone is responsible for:

- identifying hazards and reporting incidents;
- ensuring that their actions are performed in compliance with the Environment Policy;
- halting any part of an operation, which they deem to present an unacceptable risk;
- carrying out assigned HSE activities according to plan;
- carrying out their role in compliance with the principles of Duty of Care.

A clearly defined organisation structure, detailing lines of reporting and communication during operations is critical to the effective management of HSE. There are key personnel both onshore and offshore who play important roles in ensuring that the environmental management of the Otway facility complies with regulator and company requirements, as well as broader community expectations.

The Otway Operations Team is a cross-skilled group with the required competencies to perform production and maintenance tasks on the onshore and offshore facilities. The following is a brief summary of position descriptions:

- The Otway Operations Manager is responsible for the overall operation and is the link with all statutory bodies;
- The Operations Superintendent is in charge of the facilities on a day-to-day operations basis. The Operations Superintendent reports to the Operations Manager;
- The Operations Team Leader is the 2nd in charge of the facilities on a day-to-day operations basis;
- Production and Maintenance Technicians are responsible for all day to day operations on the facilities and for coordinating front-line maintenance of the facilities within the agreed operational envelope.

The facility team is also able to draw on extensive expertise and support services from within Woodside as required. Such areas may include specialist HSE and risk advice, technical advice, logistical support, financial services and human resources management.

Training within Woodside is considered fundamental to future success and maintaining world class HSE operations. Training is aimed at ensuring that personnel have the knowledge, skills and ability to competently perform their duties to the level required in their jobs.

Training is managed by the Competency Management System (CMS), an application available on the intranet. It provides a mechanism for maintaining up-to-date records of individuals current training and competency achievements.

4.3 Monitoring, Auditing, Reporting and Review

Management uses the following tools and systems to monitor performance:

- asset-produced daily reports;

- monthly reports on Key Performance Indicators (KPIs) vs. targets, including progress against the Otway Operations HSE Plan;
- comparison of other performance indicators against agreed targets (e.g. incident and hazard reports, flaring etc);
- progress against agreed divisional/departmental HSE Management Plans; and
- An annual program of periodic inspection of the facilities by senior management.

Inputs that are monitored include chemical usage and fuel gas consumption, while outputs include emissions determined from fuel gas metering and wastes (tracked through the waste tracking database). Emissions, discharges and wastes are reported both internally and, where required, externally to regulatory authorities.

Woodside undertakes regular environmental monitoring to examine the effects of operating its assets. During the development of the infrastructure for the Otway Gas Project, extensive baseline studies were undertaken. These included investigation of the biological and physical characteristics of the sediments around the proposed facility location, surveys of marine flora and fauna, and underwater noise monitoring. Monitoring of the cuttings discharged during drilling operations was also conducted as part of work conducted through Woodside's partnership with SERPENT (Scientific and Environmental ROV Partnership using Existing I[N]dustrial Technology).

Various levels of HSE audits are carried out on the offshore facilities and the management system. These are:

- external audits – audit undertaken by external organisations for confirmation of compliance with requirements such as ISM and the P(SL)A and other certifying bodies.
- internal audits – audits coordinated by groups within the Woodside organisation.

In addition, the Otway operations team is responsible for conducting an ongoing program of HSE self checks and reviews that are directed at critical activities, which require close and ongoing monitoring. The Self Audit System (SAS) is implemented by site personnel, and it examines low level elements of the WMS and HSE Process (such as the POSC's listed in Table 4.1).

Woodside is required by various pieces of legislation and accompanying regulations to report to government regulators. In particular, recordable and reportable incidents as defined by the Operations EP are reported on the 15th of the following month in the case of recordable incidents, or within 2 hrs (verbally) for recordable incidents (e.g. a significant spill of hydrocarbons).

A detailed review of operational HSE performance will be carried out by management annually. This review will identify any issues, and recommend any updates required to the WMS, Operations Process, HSE Process, standards, procedures, guidelines, resources, etc. for continual improvement.

4.4 Emergency Response

For the Otway facility there are specific emergency plans which detail the actions to be taken in the event of various incident scenarios. The principle scenarios relevant to offshore include various HSE related issues such as escape and rescue techniques, fire fighting, breathing apparatus, oil spill response, rescue and first aid components. The key plans for the offshore facilities are the:

- South East Australia Oil Spill Contingency Plan ERP3230; and
- Medivac Procedure ERP3500.

The facility readiness and competency to respond to incidents and emergencies is maintained by conducting fortnightly emergency drills involving all personnel. The drills schedule is designed to ensure personnel on each shift are involved in each emergency scenario at least once every year. As part of these drills, the Emergency Team regularly participate in exercises designed to develop and test procedures, skills and teamwork.

After each exercise, the team holds a debrief session during which the Emergency Team Leader documents and reports to the Emergency Commander and the Operations Superintendent. Details of lessons learnt and suggestions for improvement are fed back to the Otway Operations Manager for incorporation into emergency procedures where appropriate.

5 CONSULTATION

Woodside undertakes significant consultation with the community and government departments as part of the approval process for the construction and operation of new assets. There have been numerous meetings between Woodside and a wide range of government, non-government organisations and community stakeholders throughout all phases of design and construction of the Otway Gas Project. A Technical Reference Group was in place in 2002-03 to guide the planning of the Project and a Community Reference Group (CRG) has been in place since April 2004. CRG meetings have been conducted on a regular basis in Port Campbell to provide feedback to Woodside on current project issues. The CRG has been an integral element of the review and finalisation of the Operations Environment Plan. Participants on the CRG include government regulators, non-government organisations (such as the Heytesbury District Landcare Network and Port Campbell Environment Group) and local landowners.

In addition, consultation and communication has been undertaken with local residents (via project update newsletters) and industry bodies (e.g. Seafood Industry Victoria and the Port Campbell and Warrnambool Professional Fishermen's Associations) through consultatative meetings and information exchange.

6 FURTHER INFORMATION

Further information regarding this Summary Environment Plan or the Otway facility more generally can be obtained by contacting:

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Information of a more general nature can be found on the Woodside website: www.woodside.com.au.