



# Eni Australia

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## BLACKTIP OPERATIONS

## OFFSHORE ENVIRONMENT PLAN SUMMARY

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## ACRONYMS

ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
AQIS	Australian Quarantine and Inspection Service
DA	Designated Authority
DEWHA	Department of Environment, Water, Heritage and the Arts
DMP	Department of Mines and Petroleum
DRDPIFR	Department of Regional Development, Primary Industry, Fisheries and Resources (Northern Territory)
Eni	Eni Australia Limited
EP	Environment Plan
MEG	Monoethylene Glycol
NORM	Naturally Occurring Radioactive Material
NPF	Northern Prawn Fishery
NRETAS	Natural Resources, Environment, The Arts and Sport
NT	Northern Territory
OCNS	Offshore Chemical Notification Scheme
OGP	Onshore Gas Plant
P(SL)(MoE)R	Petroleum (Submerged Lands)(Management of the Environment) Regulations
PW	Produced Water
SCEs	Safety Critical Elements
SCSSV	Surface-controlled subsurface safety valve
SIMOPs	Simultaneous Operations
SPM	Single Point Mooring
SSIV	Subsea Isolation Valve
T	Tonne
TJ	Tera Joule
WA	Western Australia
WHP	Wellhead Platform



## 1. INTRODUCTION

Eni Australia Limited (Eni) operates the Blacktip facility southwest of Darwin in the Northern Territory (Figure 1.1). The gas field lies approximately 100km offshore in the Joseph Bonaparte Gulf (centre point co-ordinates: 128° 28' 30"E and 13° 54'S) and has estimated reserves of 950 billion cubic feet of gas and associated condensate. The production life of the field is 25 years. Facility infrastructure (Figure 1.2) consists of a:

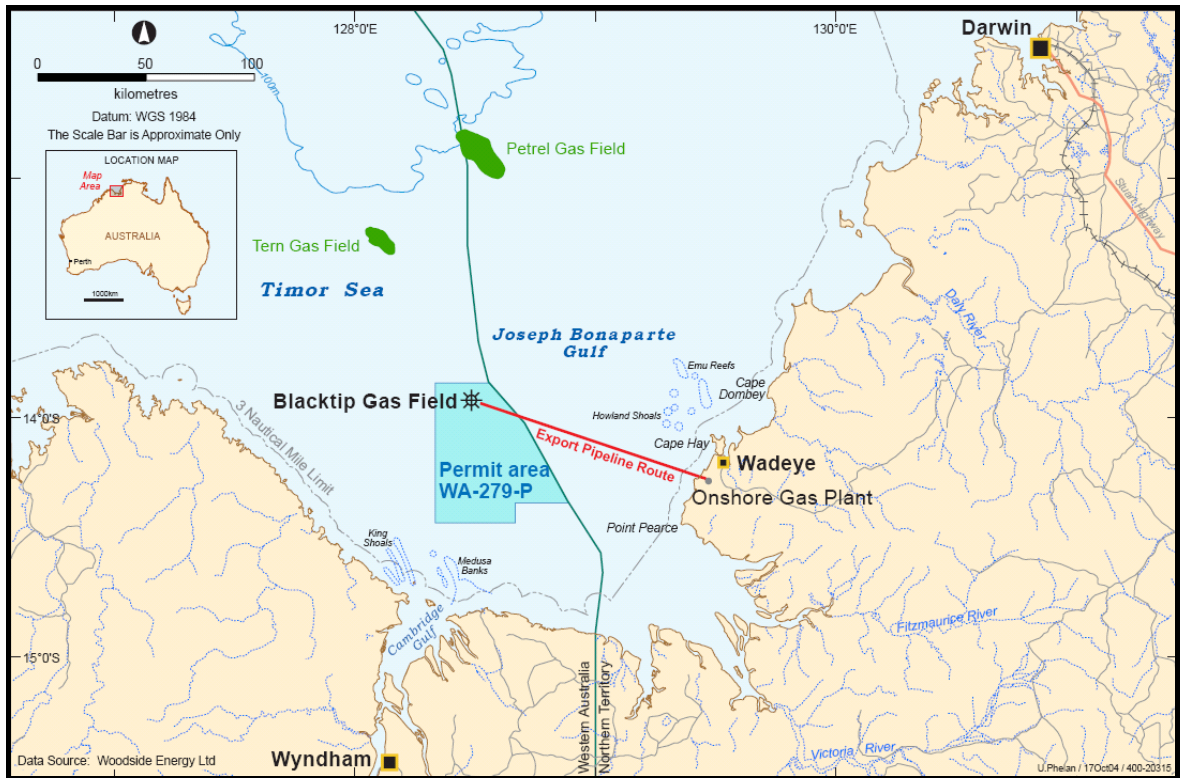
- a small, normally unattended, wellhead platform (WHP);
- an 18" carbon steel, multi-phase, subsea export pipeline bringing produced fluids to shore;
- an onshore gas processing plant (OGP), consisting of separation, gas dehydration, compression, condensate storage and produced water treatment facilities; and
- a condensate export system comprising an export pipeline and a tanker mooring and offloading system.

Un-odorised natural gas meeting agreed specifications is delivered to the fence line of the onshore gas plant for onward transmission (by others) to Darwin via an onshore buried pipeline measuring approximately 275km in length and at a maximum delivery rate of 191TJ/day.

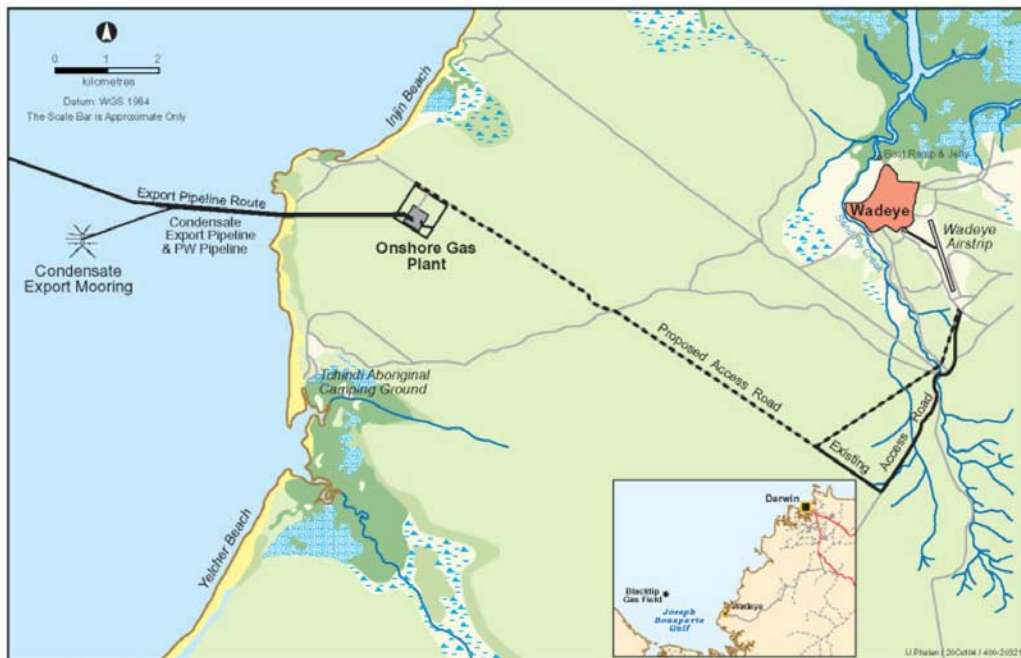
Stabilised condensate is stored on site at the OGP before being exported via sub-sea pipeline to the Single Point Mooring (SPM), located approximately 7km offshore, for loading to tankers and transport to market.

This document provides a summary of the Offshore Operations Environment Plan (EP), which was submitted and subsequently approved by the Designated Authorities (DAs), in accordance with the provisions of the Petroleum (Submerged Lands)(Management of Environment) Regulations 1999 (P(SL)(MoE)R). The overall aim of the EP is to demonstrate to Stakeholders that Eni has a sound understanding of how its operations interact with the environment and to demonstrate that it has implemented environmental safeguards to reduce the risks to as low as reasonably practicable (ALARP).





**Figure 1.1: Blacktip Field Location**



**Figure 1.2: Onshore Gas Plant**

## 2. DESCRIPTION OF THE RECEIVING ENVIRONMENT

Joseph Bonaparte Gulf is a large embayment on the northwestern continental margin of Australia. Several large rivers enter the gulf along its shoreline. The WHP is located in the upper (outer) reaches of the Gulf, in an area of relatively flat and featureless seabed. Sediments consist of very soft, grey-green, gravelly sand clays. The gulf is characterised by large tidal currents and high turbidity, particularly during the wet season. The marine fauna of northern Australia is part of the Indo-West Pacific biogeographical province. The majority of species are widely distributed in this region, with the northern part of the Australian continent being a small part of the wider ranges of most species.

Studies conducted on the infauna within the Blacktip Permit area found infauna to be diverse and abundant, with two major phyla, *Arthropoda* (crustaceans) and *Annelida* (polychaete worms) contributing over 80% of the total number of individuals. Whales and dugongs are not expected to be common inhabitants of the Gulf. Marine reptiles known to occur include:

- turtles;
- saltwater crocodiles; and
- sea snakes.

A number of fisheries can operate within waters of the Gulf, however, it appears that fishing effort is limited in all fisheries except for the Northern Prawn Fishery (NPF). Traditional and subsistence fishing is generally limited to shorelines, creeks and nearshore reefs. There is no major commercial shipping and no known Aboriginal or European heritage or archaeological sites of significance in the vicinity of the Blacktip infrastructure.

## 3. EXTERNAL CONSULTATION

During the development of the project, extensive consultation was undertaken with various stakeholders to identify potential environmental issues and management requirements. Relevant stakeholders for the offshore jurisdiction include:

- Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA);
- Western Australia (WA) Department of Mines and Petroleum (DMP);
- Northern Territory (NT) Department of Regional Development, Primary Industry, Fisheries and Resources (DRDPIFR);
- NT Department of Natural Resources, Environment, The Arts and Sport (NRETAS)
- Northern Lands Council;
- Australian Fisheries Management Authority
- Cth Fisheries Association
- Western Australian Northern Trawl Owners Association
- Northern Fishing Companies Association.
- A Raptis and Sons.



- Northern Prawn Fishery (NPF) Trawl Association Inc.
- NPF Industry Pty Ltd.
- Northern Territory Trawler Owners Association.
- Northern Territory Seafood Council.
- WA Department of Fisheries
- WA Fishing Industry Council
- Australian Marine Oil Spill Centre (AMOSOC); and
- Australian Maritime Safety Authority (AMSA).

## **4. HAZARD IDENTIFICATION AND RISK ASSESSMENT**

### **4.1 OVERVIEW**

Table 4.1 presents a summary of the environmental risks for Blacktip Operations. Thirty potential hazards were identified. With management measures in place, 24 of these hazards were ranked as low risk and six as moderate. There were no high risks. Low risks are deemed tolerable with no further management control required. Moderate risks are also deemed tolerable but require on-going verification that risk management controls are effective. The following sections summarise the controls in place for the moderate ranked risks.

### **4.2 PRODUCTION CHEMICALS**

Process chemicals planned for the development are: corrosion inhibitor; methanol, monoethylene glycol (MEG) and demulsifier/coagulant.

- Chemicals have been selected based on having a minimum overall effect on environment (including ecotoxicity and dosing requirement characteristics).
- The Corrosion Inhibitor is ranked gold under the Offshore Chemical Notification Scheme (OCNS) meaning that it is suitable for discharge and will not cause harm to the marine environment.
- Similarly, MEG and methanol pose little or no long term risk to the environment.
- Use of production chemicals will be minimised as far as is practicable.

### **4.3 BALLAST WATER - INTRODUCTION OF MARINE PESTS**

- Ballast water exchange procedure will be in place.
- Offload tanker to operate in accordance with guidelines provided by the Australian Quarantine and Inspection Service (AQIS).

### **4.4 MEDIUM SPILLS (1 - 10T) - LARGE TRADING TANKER FAILURE**

- Vetting of trading tankers and support vessels to ensure that no substandard vessels are used.
- The Terminal Handbook will be provided to offtake tankers and local pilots will be used.

**Table 4.1: Summary of risk ranking for hazards related to Blacktip offshore operations**

Event ID	Risk Category/ Environmental Aspect	Risk
<i>Physical presence</i>		
1.01	Presence of Wellhead Platform and pipeline.	Low
1.02	Presence of nearshore pipelines and Single Point Mooring.	Low
1.03	Noise	Low
1.04	Light	Low
1.05	Manoeuvring of vessels including offtake tankers and supply vessels visiting WHP	Low
1.06	Antifouling paints	Low
<i>Waste water discharges</i>		
1.07	Hydrotest fluid discharge	Low
1.08	Produced Water (PW)	Low
1.09	Production Chemicals	Moderate
1.10	Deck drainage	Low
1.11	Ballast water - Localised impact on the water column	Low
1.12	Ballast water - Introduction of marine pests	Moderate
1.13	Maintenance wastes	Low
1.14	Naturally Occurring Radioactive Materials (NORMs)	Low
<i>Atmospheric emissions</i>		
1.15	Exhaust gas	Low
1.16	Vented gas and fugitive emissions	Low
<i>Physical presence causing social disturbances</i>		
1.17	Interference with commercial fishing	Low
1.18	Interference with shipping	Low
1.19	Interference with recreational vessels	Low
<i>Spills</i>		
1.20	Small hydrocarbon spills (<1t) - Leak of condensate from connections and fittings	Low
1.21	Small hydrocarbon spills (<1t) - Leak of condensate from SPM	Low
1.22	Small hydrocarbon spills (<1t) - Refuelling incidents	Low
1.23	Small hydrocarbon spills (<1t) - Leak of hydraulic fluids	Low
1.24	Medium Spills (1 - 10t) - Release of condensate from offloading	Low
1.25	Medium Spills (1 - 10t) - Large trading tanker failure	Moderate
1.26	Large spills (>10t) - Well integrity failure, Errant vessel collision, Well head damage in severe weather	Moderate
1.27	Large spills (>10t) - Pipeline integrity failure from trawlers, dropped objects or anchoring vessels	Moderate
1.28	Large spills (>10t) - Catastrophic failure of trading tanker	Low
1.29	Chemical spills	Moderate
1.30	Decommissioning	Low

#### **4.5 LARGE SPILLS (>10T) - WELL INTEGRITY FAILURE, ERRANT VESSEL COLLISION, WELL HEAD DAMAGE IN SEVERE WEATHER**

- Well fluids mainly gas
- Robust well design and completion.
- Installation design life is 30-years.
- Structural reliability capable of sustaining a 2000 year return period wave event.
- The platform is designed for 100 year storm return period.
- Surface-controlled subsurface safety valve (SCSSV) installed.
- Exclusion zones gazetted.
- AMSA notified of well location.

#### **4.6 LARGE SPILLS (>10T) - PIPELINE INTEGRITY FAILURE FROM TRAWLERS, DROPPED OBJECTS OR ANCHORING VESSELS**

- Eni has consulted with fishing peak bodies on the Blacktip pipeline proposals.
- The concrete weight coating (which has been tested for its impact protection capability) provides significant resistance to impact damage from typical otter board trawling gear. The concrete weight coating should also provide protection against damage caused by recreational fishing gear or boat anchors.
- At the WHP there will be periodic supply boat visits. The WHP layout has accounted for these and the WHP crane and laydown areas are arranged on the opposite side of the platform from the riser and tie-in spool. The maximum crane arc does not reach the pipeline. The crane will not be routinely lifting any tubular objects that might be able to fly through the water to reach the pipeline. The riser and tie-in spool have a higher wall thickness to account for various service loads.
- The SSIV is located sufficiently far away as to be safe from any dropped object from the platform. It is also protected by a frame. The water depth helps to minimise the chances of a WHP dropped object travelling any significant lateral distance from the drop point.
- The primary dropped object threat to the riser and pipeline at the WHP will arise during drilling/construction simultaneous operations (SIMOPs). This has been accounted for in the WHP layout design. The jack-up will approach from the opposite side of the platform from the riser. Once the jack-up is set up and starts to drill ahead, there will be no lifting over the WHP. Rig supply boats will not operate over the pipeline.

#### **4.7 CHEMICAL SPILLS**

- Transfers will be undertaken only during periods of calm weather and in daylight hours.
- Transfer operations will be overseen by the vessel's Master or First Officer.
- Chemicals are stored in dedicated fit for purpose tanks on board the WHP. The tanks are defined as safety critical elements (SCEs) so are subject to rigorous inspection and maintenance routines. Once tanks are filled the chance of a leak are small.

- Tank levels for MEG and Corrosion Inhibitor can be monitored remotely from the OGP.
- Bunding and drip pans provided under all hazardous liquid inventories and potential leak sources (sampling points and pumps) to contain leaks.
- Operational procedures for filling chemical storage tanks.

## 5. ENVIRONMENTAL MANAGEMENT STRATEGIES

Management of the environmental hazards and risks are addressed through Environmental Management Strategies for.

- Marine Discharges
- Hydrocarbon and Chemical Spill
- Produced Water Discharge
- Hydrotest Water Discharge
- Atmospheric Emissions
- Social and Economic
- Marine Pests
- Marine Waste
- Naturally Occurring Radioactive Material (NORM)
- Marine Wildlife

All hazards will be reviewed regularly. The results of monitoring and auditing programmes will be used to evaluate risk management performance and to identify areas where further risk reduction may be required.

## 6. CONTACT DETAILS

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