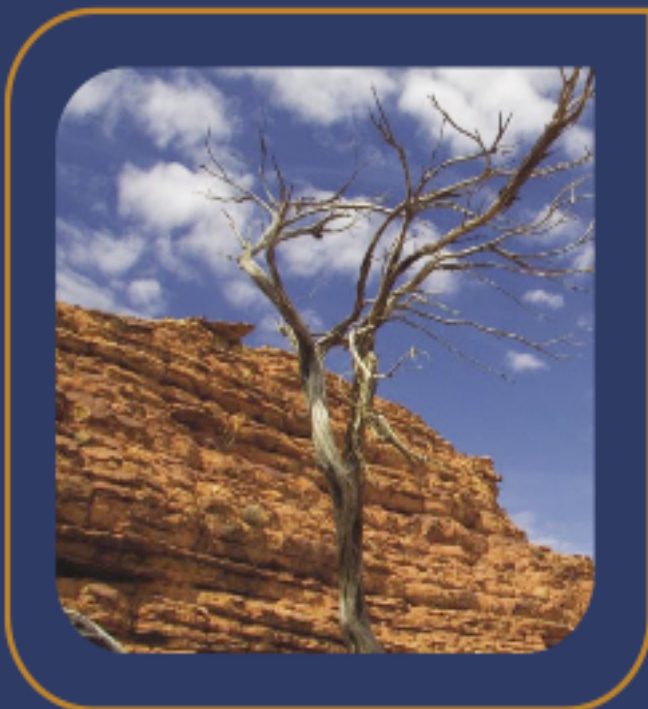


## Environment Plan Summary:

Bass Strait Oil Company - 2008 Targa Seismic  
Acquisition Survey (T/42P and T/43P Bass Basin)



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## Revision history

Rev.	Date	Description	By	Chkd	App.
0	9 May 2008	Submission to DA	JB	LC	KJ
B	8 May 2008	Issued for Client Review	JB	LC	KJ
A	6 May 2008	Internal Review	JB	LC	

# Summary

## Introduction

Bass Strait Oil Company Limited (BSOC) is proposing to undertake a 2-dimensional (2D) seismic acquisition survey (i.e. 'Targa' survey) in Exploration Permits T/42P and T/43P located in Commonwealth waters in Central Bass Strait offshore from northern Tasmania.

An Environment Plan (EP) for this survey has been prepared in accordance with the requirements of the *Petroleum (Submerged Land) (Management of Environment) Regulations 1999* (as amended). This summary document has been prepared to comply with the requirements of Regulation 11(7) and (8) of those regulations.

It is expected that the planned activities will occur in late May-early June 2008 for a period of approximately 10 days depending on weather conditions and down-time due to cetacean interaction.

## Project Location

BSOC is the titleholder of Exploration Permits T/42P and T/43P located in Central Bass Strait offshore of Northern Tasmania (Figure 1).

Figure 1: Location Map

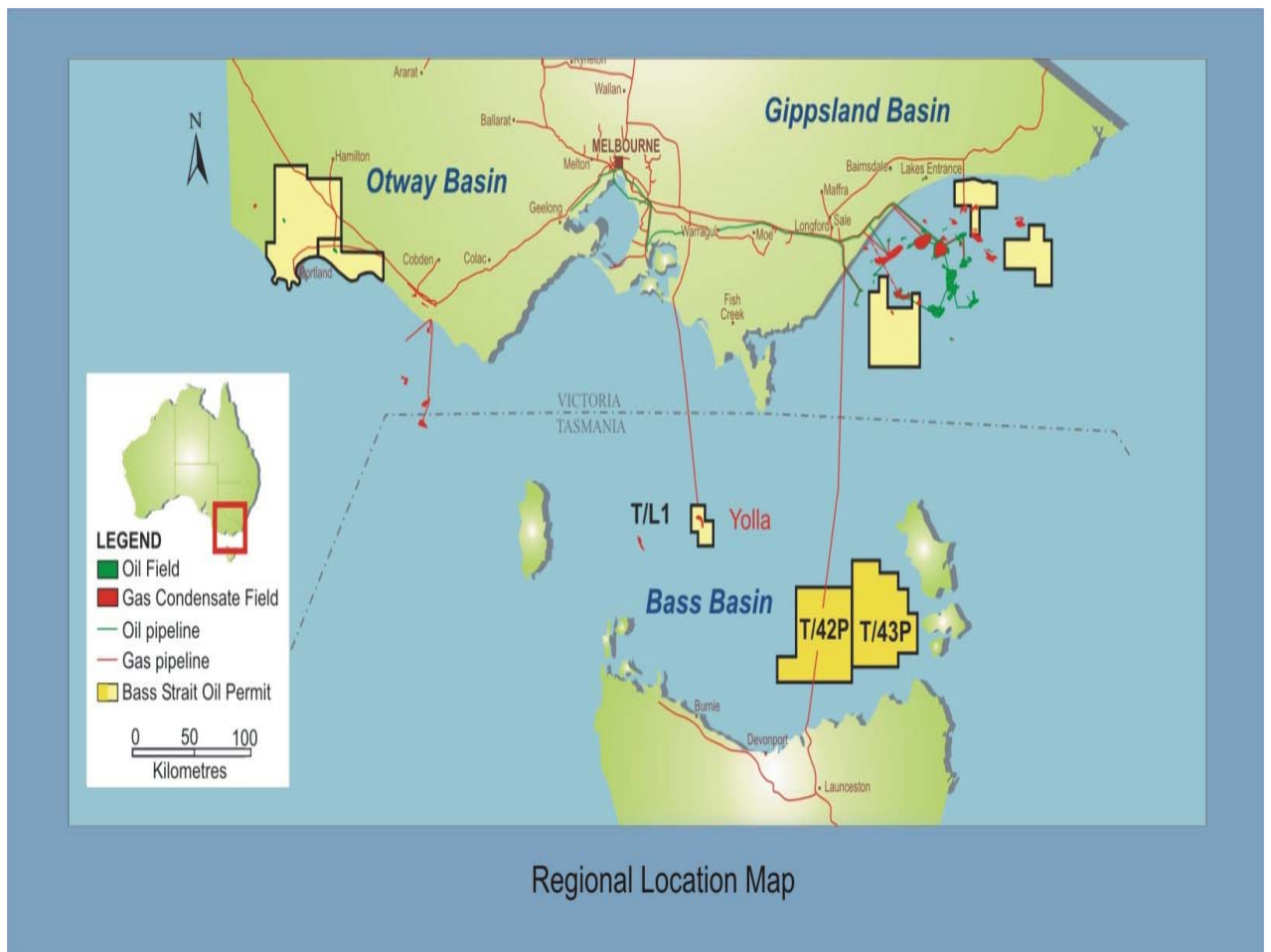


Figure 2: Seismic Lines

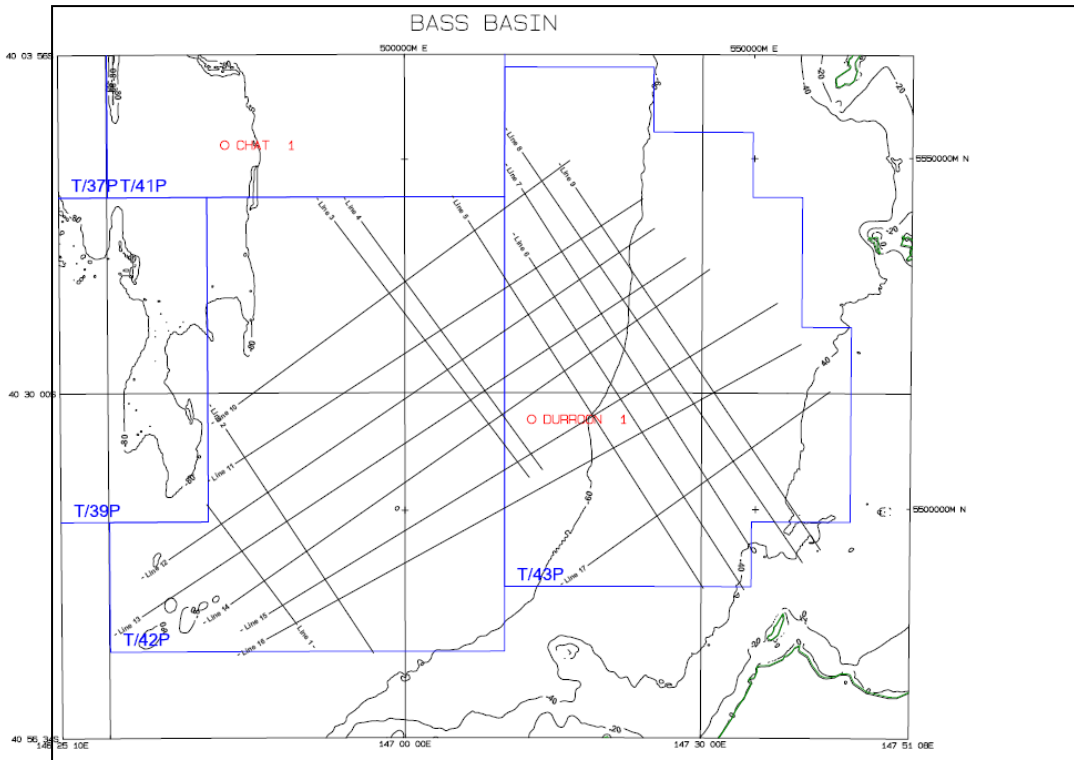


Table 1: Permit Co-ordinates

LONGITUDE	LATITUDE
146 30' E	40 50' S
147 10' E	40 50' S
147 10' E	40 45' S
147 35' E	40 45' S
147 35' E	40 40' S
147 45' E	40 40' S
147 45' E	40 25' S
147 40' E	40 25' S
147 40' E	40 15' S
147 35' E	40 15' S
147 35' E	40 10' S
147 25' E	40 10' S
147 25' E	40 05' S
147 10' E	40 05' S
147 10' E	40 15' S
146 40' E	40 15' S
146 40' E	40 40' S
146 30' E	40 40' S

## Description of Activity

The *Pacific Titan* is a specialist seismic acquisition vessel operated by CGG Veritas contracted for the survey. The vessel is flagged in Singapore and was built in Japan in 1982 with a further rebuild in 2000. Table 2 provides the vessel specification for the *Pacific Titan*.

The *Pacific Titan* will tow one streamer measuring approximately 6000m in length with hydrophone intervals located at 12.5m intervals at a depth of 8m below sea level (bsl). The vessel will acquire seismic data at an average speed of between 4-8knots. The hydrophone streamer will be gel filled (solid). One single source tuned airgun array will be towed astern of the vessel at a depth of 6mbsl offset at 150m. The array will consist of 3040 in<sup>3</sup> bolt guns operating at 2000psi which will release acoustic pulses into the water column on average every 10-12 seconds. The reflected acoustic signals are recorded by hydrophones towed behind the vessel located in the streamer. Data collected by the hydrophones is stored in onboard computers for processing and analysis allowing the underlying geological strata to be determined.

At a vessel cruising speed of about 4.5 knots, the vessel and its passive trailing gear will transit over any one spot in about 45 minutes.

The survey location and shot-lines are provided in Figure 2 with the coordinates of the permit boundary detailed in Table 1. The area to be surveyed is approximately 6120km<sup>2</sup> with the survey traversing approximately 1100km.

Table 2: Vessel Specification

Aspect	Pacific Titan
Dimensions	
Length overall	64.5 m
Breadth	18.5 m
Draft	5.2 m
Gross Registered Tonnage	3211 tonnes
Capacities	
Vessel Speed (cruising)	10 knots
Fuel- diesel	1300 m <sup>3</sup>
Accommodation	56 persons
Seismic Equipment	
Number of Streamers	1
Maximum streamer length	6 km
Maximum source volume	3040 cubic inches

Figure 2: CGG Pacific Titan



## Description of Receiving Environment

### Physical Environment & Areas of Environmental Significance

The 2008 Targa 2D seismic survey area is not in proximity to, nor does it impact on any World/National Heritage properties, RAMSAR wetlands, threatened ecological communities, Commonwealth conservation reserves/parks or critical habitats. The nearest Commonwealth marine reserves are 'Boags' which lies more than 120km west from the Permit T/42P and 'Beagle' which lies more than 50km north of T43P. The physical environment of Central Bass Strait is provided in Table 4 below.

Table 3: Central Bass Strait Physical Environment

Mesoscale Region	Data Description	Description
Central Bass Strait	Climate	Cool temperate climate, with cool wet winters, and cool summers.
	Oceanography	Tidal velocities vary from $< 0.05 \text{ ms}^{-1}$ in the central area to as high as $0.5 \text{ ms}^{-1}$ at the margins where the islands and promontories form the western and eastern entries to Bass Strait. Water mass characteristics are complex and vary seasonally representing the mixing of the different water masses present on the western and eastern sides of the Strait. Mean water temperature is $19^{\circ}\text{C}$ in summer and $13^{\circ}\text{C}$ in winter. Sub maximal wave exposure.
	Geology & Geomorphology	Large marine basin contained within the continental shelf, with water depth varying from about 80 m at its centre to 50 m around the margins. Seabed consists of soft sediment substratum (silts and muds). The proposed survey area ranges from approximately 20 to 60m (water depth) on flat/undulating seabed.

## Biological Environment

Migratory and resident fauna present in the vicinity of the T/42P and T/43P permit areas include cetaceans, fish, seals and marine invertebrates. Up to thirteen (13) EPBC-listed cetacean species (refer Table 4), including 2 endangered species (Blue Whale, Southern Right Whale) and one vulnerable species (Humpback Whale) may migrate or forage through the permit area during certain periods of the year. Humpback and Southern Right Whales may be encountered during the survey period as the survey timing coincides with their migration through Bass Strait. The permit area itself is not a recognised aggregation area for breeding, feeding or resting of these species. There are no threatened EPBC-listed ecological communities in the vicinity of the survey area.

The Australian Fur-seal occurs throughout Bass Strait. There are numerous breeding colonies near Wilson’s Promontory, Deal Island (Judgement Rock) and Tenth Island. The nearest breeding colony to the seismic area is at 10<sup>th</sup> Island Reserve which is about 12km south of Permit T/42P. The breeding season is from October 1 to January 31. Tenth Island is reserved as an important Australian fur seal breeding colony with 408 pups being counted in the 1998 census.

Great White Sharks (*Carcharodon carcharias*) have been recorded in Bass Strait. This species is listed under the EPBC Act as occurring in the region, and has a threatened (vulnerable) and migratory status. Great White Sharks are known to frequent waters around seal colonies, particularly during seal pupping season (October to January).

Seventeen species of EPBC-listed migratory birds may occur in proximity to the Permit Areas. Of the seventeen migratory marine birds listed, 14 are albatross species, two are Giant-petrels and one is a Great Skua. Bird species listed as threatened include 13 species of albatross and 3 species of petrel. These birds, protected by international agreements (BONN Convention, CAMBA, JAMBA) are mostly oceanic seabirds and seldom come to land unless breeding.

Table 4: Cetaceans

Species	Threatened Status	Migratory Status	Listed Marine
<b>Mammals</b>			
Blue Whale	Endangered	✓	
Humpback Whale	Vulnerable	✓	
Southern Right Whale	Endangered	✓	
Pygmy Right Whale		✓	
Dusky Dolphin		✓	
Killer Whale, Orca		✓	
Bryde’s whale		✓	
Minke Whale			✓
Common dolphin			✓
Short-finned Pilot Whale			✓
Risso’s Dolphin			✓
Bottlenose Dolphin			✓
Curvier’s Beaked Whale			✓

While no roosting grounds, breeding grounds or important/limiting habitats exist for bird species within the area proposed for seismic acquisition, species may frequent the area. Islands and rocky outcrops in Bass Strait support breeding populations of Australian seabirds. The nearest island is 10<sup>th</sup> Island which is approximately 12km to the south of permit T/42P. This is a breeding ground for approximately 20 pairs of black-faced cormorants. Bird species are considered to not have a high likelihood of impact due to the nature of the seismic activities, and temporary nature of activity in any one area.

There are numerous species of fish in Bass Strait, including a number of important recreational (Tuna, Marlin, and Australian Salmon) and commercial species (Orange Roughy, Flathead, Flake, and Trevalla).

## Other Marine Users

There is a wide range of human activities occurring in Bass Strait including fishing, commercial oil and gas fields, shipping as well as recreation activities.

Commonwealth fisheries which may operate in the general vicinity of the permit areas include the following (AFMA, 2007):

- the Southern and Eastern Scalefish and Shark fishery;
- Bass Strait Central Zone Scallop Fishery;
- Southern Squid Jig Fishery;
- Southern Bluefin Tuna Fishery;
- Eastern Skip Jack (Tuna) Fishery;
- Eastern Tuna and Billfish; and
- Small Pelagic Fishery.

In addition, significant state fisheries in the region include the Abalone Fishery and the Rock Lobster Industry.

All fishery total catch figures for the permit area indicate that commercial fishing is of low intensity (NOO, 2002).

Petroleum permits have been issued for exploration and production within the central Bass Strait (Bass Basin) region. The nearest petroleum production field is Yolla located in Permit T/L1 approximately 50km north-west of Permit T/42P. The Tasmanian Gas Pipeline (Lfd-Bell Bay) also traverses the T/42P permit area.

Commercial vessels sailing to northern Australian ports (Sydney, etc) from Burnie and Devonport traverse the permit areas. The permits lie east of the Melbourne-Devonport ferry service.



## Major Environmental Hazards and Control

An environmental risk analysis has been undertaken for the Targa 2D Seismic Survey activities in accordance with the requirements of AS/NZ4360:2003 (Risk Management) and HB203: 2006 Environmental Risk Management Guidelines (2006). The qualitative risk assessment for the seismic activities indicates that with the proposed/management and mitigation measures implemented, no significant environmental impacts are expected and the activities carry a medium/low environmental risk.

Details of key environmental activities and associated impacts, together with their risk control measures and residual risk ranking are provided in Table 5.

## Management Approach

BSOC, the operator of the permit areas T/42P and T/43P, is responsible for assuring that the proposed seismic survey is managed in accordance with the approved Environment Plan. The seismic contractor (CGG Veritas and Swire Pacific) will undertake the operations on BSOC's behalf and, under contractual arrangements with BSOC, will implement and comply with all environmental constraints and procedures nominated in the approved Environment Plan.

Specific responsibilities for the environmental commitments (controls, inspections, etc) made in the BSOC Targa 2D Seismic Acquisition Survey Environment Plan are detailed within the Plan.

## Consultation

BSOC has consulted with regulatory agencies, fishery groups and fishing industry groups in preparation for the Targa seismic operations.

Regulatory agencies consulted include the Tasmanian Mineral Resources Tasmania (MRT) (Designated Authority), the Commonwealth Department of Environment, Water, Heritage & the Arts (DEWHA), the Tasmanian Department of Primary Industries & Water (Wild Fisheries Section), the Victorian Department of Primary Industries (Fisheries & Aquaculture), Tasmanian Department of Primary Industries & Water (Wild Fisheries Section) (DPIW) and the Australian Fisheries Management Authority (AFMA).

Fishery groups consulted with details associated with the Targa T/P42 & T/P43 seismic survey include the following:

- Lakes Entrance Fishing Cooperative Ltd (LEFCOL);
- Twofold Bay Fishing Cooperative;
- San Remo Fishing Cooperative;
- South-east Trawl Fishing Industry Association (SETFIA);
- South East Fishing Association (SEFA);
- Seafood Industry Victoria (SIV);
- Tasmanian Fishing Industry Council (TFIC);
- TASfish; and
- VR Fish.

There have not been any issues raised by the organisations contacted. BSOC will continue to communicate with fisheries associated with any changes to the seismic program which may affect commercial fishing operations.

## Nominated Liaison Contact

Further information associated with the environmental aspects of the Targa (T/P42 & T/P43) 2D Seismic survey may be obtained from Bass Strait Oil Company by writing to:

Keith Jackson  
Exploration Manager  
Bass Strait Oil Company  
Level 1, 99 William St  
Melbourne, Victoria, Australia  
Phone (+61 3) 99273000  
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Table 5: Environmental Risk Assessment Summary

Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Physical presence of vessel-interference with other user activities	Potential social impact on other users eg collision, damage to fishing gear etc.	Advise fishing industry of expected timing, and location  Conduct on-going consultation with relevant fishing groups  Recover lost streamer if practicable	1	D	Low
Physical presence of vessel- collision or grounding leading to oil spill	Potential oiling of sea birds, fish tainting, shoreline pollution, disruption of fishing activities.	Issue Notice to Mariners for Survey Duration  Ship Collision Avoidance/Grounding Procedures in Place  Solid streamers in use  SOPEP and Emergency Response Procedures in place  Crew awareness and exercises in Oil Spill and Emergency response  Incident investigation & corrective action monitoring requirements  Functioning navigation lights, radar and radio communication	3	E	Moderate

Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Spillage or liquid discharge (oil and chemicals)	Toxic effects on marine life including fish, plankton, benthos, marine mammals and turtles.	Secure containment areas for oils and chemicals Use of safe liquid management procedures eg. shore to ship fuel transfer Availability and use of appropriate materials, eg absorbents, for cleanup Use of drip trays whilst decanting Cleanup of spills as soon as practicable MSDSs available Training of personnel in safe handling procedures	1	E	Low
Seismic acquisition	Acoustic disturbance to marine fauna	Comply with DEWHA EPBC Act Policy Statement 2.1- Interaction between offshore seismic exploration and whales, May 2007 MMO On-Board Ongoing consultation with fishing industry Distance of permit from sensitive habitat.	1	C	Low



Aspects (Activities/ Emissions)	Description of Potential Impacts on the Environment	Proposed Management Measures	Consequence Severity Rating	Likelihood/ Frequency	Residual Risk
Waste Disposal (including sewage and food scraps discharge)	Increased nutrient availability increased BOD, potential toxic effects on marine life.	<p>Compliance with MARPOL and all laws and regulations.</p> <p>Wastes will be segregated, labelled and stored in secure areas prior to removal to the shore for appropriate disposal</p> <p>Personnel will be trained to ensure compliance with the waste management requirements</p> <p>Treated effluent and food scraps to be disposed in accordance with MARPOL</p> <p>Dry waste will be incinerated onboard the vessel</p> <p>Wastes disposed to approved sites onshore</p> <p>Minimize quantities of waste generated</p> <p>Wastes to be disposed to approved sites onshore</p>	1	D	Low
Seismic acquisition-damage seismic streamer	Potential oiling of sea birds, fish tainting, shoreline pollution, disruption of fishing activities.	<p>Solid seal streamers will be used</p> <p>Maintenance procedures for streamer</p> <p>Recover lost segments where practicable</p>	2	D	Low