



**PEL 94
Cooper/Eromanga Basin
South Australia**

**Annual Report
Permit Year 1**

5th November 2001 to 4th November 2002

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1 Introduction

Petroleum Exploration Licence No. 94 is situated on the southern margin of the Cooper/Eromanga Basin, South Australia. The first year of the licence covers the period 5th November 2001 to 4th November 2002.

This report details the work performed by the Joint Venture during this first year of the licence, in accordance with the requirements of Section 33 of the Petroleum Regulations 2002.

2 Permit Summary

The working interests in PEL 94 at the end of this reporting period were:

Beach Petroleum NL (Operator) 50%
Magellan Petroleum (NT) Pty Ltd 50%

The agreed work commitments for PEL 94 are summarised as follows:

Licence Year	Minimum Work Program	Actual Work
Year 1 (5/11/01-4/11/02)	One well 260km 2D seismic reprocess 200km existing seismic	One well 310km 2D seismic* 133km reprocess seismic**
Year 2 (5/11/02-4/11/03)	One well; 90km 2D seismic	
Year 3 (5/11/03-4/11/04)	One well	
Year 4 (5/11/04-4/11/05)	50km 2D seismic	
Year 5 (5/11/05-4/11/06)	One well	

* A request is being prepared to credit actual work in excess of the minimum Year 1 program to future permit commitments.

** An application to substitute 67km of seismic reprocessing with new seismic acquisition (on an equivalent cost basis) has been submitted.

3 Exploration Activity

1.1 Drilling.

One exploration well (Maslins-1) was drilled in the permit during the year. It spudded on 10/08/02 and drilled to a total depth of 1358metres. Maslins-1 intersected an Eromanga section overlying a large basement high that is bald of Cooper Basin Permo/Triassic sediment. The well was plugged and abandoned after testing and log analysis indicated that only sub-commercial oil was evident in the well.

A Well Completion Report for Maslins-1 is currently in preparation and will be submitted in due course.

1.2 Seismic Data Acquisition

A total of 310km of seismic data (part of the "Nautilus" survey) were acquired during 2002.

1.3 Seismic Data Processing/ Reprocessing

In addition to processing the Nautilus survey data, the Joint Venture also re-processed a total of 133km of existing seismic data.

1.4 Geological and Geophysical Studies.

Technical studies during this first permit term were chiefly directed toward the regional interpretation of seismic structure, and preparations for the drilling of the Maslins-1 commitment well.

4 Administration

4.1 Regulatory Compliance

A Compliance Report is attached which details the operator's compliance with the 2000 Petroleum Act, its Regulations, the terms and conditions of the Licence, and the various Statements of Environmental Objectives governing the field operations undertaken during Year 1.

4.2 Data submissions.

A list of the items submitted during the report period is contained in the table below.

Table 1

**PEL 94
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List of documents submitted

<u>Title</u>
Maslins-1 Well Proposal
Maslins-1 Drilling Program

4.3 Planned Exploration Program for Year 2

One exploration well (nominally "Waitpinga-1") is planned for 2003. However, the final choice of prospect and location is subject to the results of seismic data acquired but not yet processed and interpreted.

The minimum 90km seismic work commitment for Licence year 2 has already been partially met by seismic acquired during Year 1 (reference letter to Director Petroleum 26/9/02). Nonetheless, a total of 100 km of 2D seismic data is proposed at an estimated cost of \$300,000. The program aims to further detail leads in the Somerton region in the north of the permit and to improve structural control along the northern margin of the Maslins horst.

5 Expenditure statement

A licence expenditure summary for the period 5th November 2001 to 4th November 2002 is presented as Table 2.

Table 2

**PEL 94
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Statement of Expenditure

Commercial in confidence

ANNUAL
COMPLIANCE
REPORT

FOR

PEL 94 - YEAR 1

(NOVEMBER 2002 - OCTOBER 2003)

COOPER BASIN, SOUTH AUSTRALIA



Introduction

Pursuant to Regulation 33 (2) of the 2000 Petroleum Act, Beach Petroleum, as operator of PEL 94 in the Cooper Basin, South Australia, herewith submits its report on compliance with :

- the Petroleum Act,
- its Regulations,
- the PEL License conditions, and
- the various Statements of Environmental Objectives to which Beach Petroleum was committed in conducting its work commitments for Year 1 of the Licence.

A table is attached summarizing the instances during Year 1 of the Permit where Beach Petroleum did not comply with the Regulations or the requirements of the relevant SEO under which it conducted its operations.

Further details of the circumstances surrounding the non-compliances are outlined below.

Petroleum Act and PEL Licence Conditions

There were no instances of non-compliance with either the 2000 Petroleum Act or the terms of the Licence during Year 1 of PEL 94.

Regulations of the 2000 Petroleum Act

- **Drilling**

There was one instance of non-compliance with the Regulations of the 2000 Petroleum Act.

Beach failed to comply with Regulation 39 when submitting the wireline log data for the Maslins-1 well. Beach submitted a complete set of digital log data to PIRSA within the specified time period. However, there were two deficiencies in the data set submitted.

Firstly, the data was submitted in .LAS format, rather than the required .LIS (or DLIS) format. Secondly, the header section of this log data set did not include the surveyed coordinates of the well, as this data could not be supplied to Beach by the surveying contractors until well after the due date for submitting the digital log data.

A replacement digital log data set (in the correct .LIS format) was subsequently submitted when the location survey information became available.

From an operational viewpoint, it will be difficult to avoid a recurrence of this non-compliance when submitting log data for future wells. Accordingly, Beach will request from PIRSA an extension of the time allowed for submitting digital log data from each of its future wells. Beach will request that the period of one month, as specified in the Regulations, be extended to three months.

- **Seismic**

There were no instances of non-compliance with the Regulations in regard to Beach's **seismic operations** in PEL 94.

The 2002 Nautilus Seismic Survey included survey lines in PEL 94. Recording of this survey finished only three weeks prior to the end of Permit Year 1.

The attached Geophysical Reports Checklist shows that the dates on which the various data sets and Reports from the Nautilus Survey are due to be submitted to PIRSA are all during Permit Year 2.



Record of Non - Compliance with Regulations

Permit : PEL 94 **Year 1 :** **5 November 2001 - 4 November 2002**

Drilling			
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SEO Non Compliance	Date	Incident Date & Description	Resolution
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Report Non Compliance	Date Due	Report Name	Resolution
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Well Completion Report for Maslins was not required to be submitted to PIRSA until after the end of Year 1 of the Licence.

Data Submission Non Compliance	Date Due	Data Type	Resolution
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Maslins-1 Digital Wireline Data - Late submission	18/09/2002	Digital log data submitted 19/12/02	Final header information (survey location) not available until end of 4-well program. Digital data w/o final surveyed well location supplied to PIRSA within 1 day.
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Seismic			
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SEO Non Compliance	Date	Incident Date & Description	Resolution
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Report Non Compliance	Date Due	Report Name	Resolution
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No seismic Reports were required to be submitted to PIRSA until after the end of Year 1 of the Licence.

Data Submission Non Compliance	Date Due	Data Type	Resolution
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No seismic data sets are required to be submitted to PIRSA until after the end of Year 1 of the Licence.

CHECKLIST FOR **NOTIFICATIONS** OF DRILLING OPERATIONS

Permit : PEL 94 Year 1 : *5 November 2001 - 4 November 2002*

Well Name : **Maslins -1** Commenced Drilling Operations : 9th August 2002 Completed Drilling Operations : 21st August 2002

REQUIREMENT	Format	Person / agency to whom Notification is to be provided	Period required for Notification	Due Date for Notification	Actual Date of Notification	Beach officer responsible for compliance	Comments
Notification of proposed drilling activity including demonstration of the suitability of an existing SEO.		PIRSA / Mike Malavazos	35 days prior to proposed start date	5-Jul-02	28-Feb-02	Exploration Manager	Updated Version. PIRSA approval received 6 May 2002.
Notification of proposed commencement of earthworks – preparation of access tracks and well leases		PIRSA / Tony Wright	2 days prior to proposed start date		22-Apr-02	Exploration Manager	
Notification to landowner (s)		Pastoral Lessee;	21 days prior to proposed start date	19-Jul-02	9-Apr-02	Exploration Manager	Revised version
		National Parks;	21 days prior to proposed start date	19-Jul-02	9-Apr-02		Revised version
		Native Title Claimant(s);	21 days prior to proposed start date	19-Jul-02	9-Apr-02		Revised version
		other PEL or PL licensees as appropriate.	21 days prior to proposed start date	19-Jul-02	Not Required		

CHECKLIST FOR SUBMISSION OF DRILLING REPORTS TO PIRSA

Permit : PEL 94 Year 1 : 5 November 2001 - 4 November 2002

Well Name : **Maslins -1** Commenced Drilling Operations : 9th August 2002 Completed Drilling Operations : 21st August 2002

REPORT / DATA SET	Format	Person / agency to whom information is to be provided.	Period allowed for Submitting data.	Date Due	Date Submitted	Beach officer responsible for compliance	Comments	
Daily Drilling Reports		PIRSA	Within 12 hrs of report period.	During Drilling Operations	During Drilling Operations	Exploration Manager		
Wireline logs		PIRSA	Within 1 month of acquisition of data.	21-Sep-02		Exploration Manager		
Mud logging data		PIRSA	Included with Daily Drilling Reports, then subsequently with the Well Completion Report.	During Drilling Operations	During Drilling Operations	Exploration Manager		
Well samples		PIRSA	Within 6 months of rig release.	21-Feb-03	Not due until Permit Year 2	Exploration Manager		
Well Completion Reports		PIRSA	Within 6 months of rig release.	21-Feb-03		Exploration Manager	Refer note below	
Reportable Incidents.		PIRSA	Serious incidents must be reported immediately (within 24 hrs), with a written report following within 3 months.	No Reportable Incidents		Exploration Manager		
<i>Note : Well Completion Reports contain Borehole Deviation data ; Surveyed Location of well ; and other technical reports associated with the well.</i>								

CHECKLIST FOR SUBMITTING GEOPHYSICAL DATA AND REPORTS TO PIRSA

Permit : PEL 94 **Year 1 :** **5 November 2001 - 4 November 2002**

Survey Name : **2002 Nautilus Seismic Survey**

Completed Recording 19th October 2002

Geophysical Data	Specifics	Format	Transmittal	Sent to	Time Period	Due Date	Comments
Geophysical Progress Reports		Word or PDF		email or fax : cockshell.david@saugov.sa.gov.au	Periodic basis determined after consultation with Minister		<i>No Data or Reports for the Nautilus Survey are required to be submitted <u>until after the end of Permit Year 1</u></i>
Geophysical Operations Reports - recording and processing		Hardcopy, PDF			Within 6 months of completion of recording data	19-Apr-03	
Geophysical Operations Reports - reprocessing		Hardcopy, PDF			Within 2 months of completion of reprocessing data	N / A	
Geophysical Interpretation Reports		Hardcopy, PDF			Within 6 months of completion of recording/reprocessing data	19-Apr-03	
Geophysical Data - Seismic	Seismic Field Data					19-Apr-03	
Geophysical Data - Seismic	Obs Logs			GDA 94	Same time as associated Operations Reports	19-Apr-03	
Geophysical Data - Seismic	Nav data including elevations & bathymetry			GDA 94		19-Apr-03	
Geophysical Data - Seismic	Field statics					19-Apr-03	
Geophysical Data - Seismic	Processed 2D seismic sections						
Geophysical Data - Seismic	Processed 3D data vols and velocities					N / A	
Geophysical Data - Seismic	Processed 3D time slices (if they have been produced)					N / A	
Geophysical Data	Velocity survey						
Geophysical Data - Seismic	Reprocessing - transcribed copy of field data					N / A	
Geophysical Data - Seismic	Reprocessing - field tape transcription log					N / A	
Geophysical Data - Seismic	Reprocessing - tape & file listing of field data that has been copied & reprocessed					N / A	
Geophysical Data	Any other field acquisition data!!!!					N / A	

Statements of Environmental Objectives.

A) Drilling Operations

Government approval for Beach to drill the Maslins-1 well in PEL 94 was conditional on Beach committing to achieving the objectives defined in the “Statement of Environmental Objectives for Drilling and Well Operations in the Cooper / Eromanga Basins – South Australia “.

Rehabilitation of the Maslins-1 well site and access track will not commence until after the Waitpinga-1 well has been drilled during Year 2 of the Licence. Accordingly, it will not be possible to assess Beach’s performance in achieving the SEO objectives relating to site rehabilitation until that time.

Beach is satisfied that all the other objectives required by the SEO were met, and the spreadsheet below summarises the strategies that were employed to accomplish this compliance.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : **MASLINS-1**

PEL No. : **94**

SPUD DATE : **SEPTEMBER 2002**

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
<p>1. Avoid disturbance to known sites of Aboriginal and European heritage significance.</p>	<p>The aim of this objective is to ensure that any sites of Aboriginal and European heritage significance are identified and protected. Sites can be identified during the planning stages of well site and access track construction or can be discovered during construction activities. To ensure the achievement of this objective personnel must be appropriately trained and experienced in identifying and protecting sites of Aboriginal and European heritage significance at both the planning and construction stages.</p>	<ul style="list-style-type: none"> ▪ Proposed well site and access track locations have been scouted by appropriately trained and experienced personnel for sites of Aboriginal and European heritage significance before commencement of construction. ▪ Records of scouting are kept and available for auditing. ▪ The operator has a mechanism in place to appropriately report and respond appropriately to any sites discovered during construction and operation activities. ▪ Any sites identified have been flagged and subsequently avoided. <p><i>Note:</i> Where a negotiated agreement or determination for heritage clearance is in place, compliance to this agreement or determination takes precedence over the above criteria.</p>	<ul style="list-style-type: none"> ▪ Beach have an agreement with the Yandruwandha / Yawarrawarkka Native Title Claimant group which specifies the requirements for scouting proposed wells and access tracks to identify and avoid areas of heritage value and archaeological significance. ▪ A site visit was carried out by a scouting team from the Yandruwandha / Yawarrawarkka Native Title Claimant group. The proposed drilling location and access route were agreed and given heritage clearance.
<p>2. Avoid disturbances which have long term impact on biological or wilderness values of a particular area.</p>	<p>A number of areas which are considered to have high biological or wilderness values are shown in Figure 1. Also included are any activities that are assessed to be of significant risk to the Cooper Creek system.</p>	<ul style="list-style-type: none"> ▪ No activities that are assessed to be located in the regions described in the scope above are to be carried out without the prior specific approval of the Minister. 	<ul style="list-style-type: none"> ▪ The well is not located in or near the areas of high biological or wilderness values shown in Figure 1 of the SEO. The drilling operations present no long term impact on the biological or wilderness values of this particular area.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : MASLINS-1 PEL No. : 94 SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
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<p>3. Minimise disturbance to native vegetation and wildlife habitat.</p>	<p>Well site and access track construction has been shown to have an insignificant impact on native vegetation and wildlife habitat by a number of studies¹. This is due to the small and confined area impacted on by the well site and access track. Nevertheless, due to the significance of native vegetation and fauna it is important to monitor the achievement of this objective.</p> <p>The aim of this objective is to also maximise the potential for revegetation success.</p>	<ul style="list-style-type: none"> ▪ Proposed well site and access track locations have been scouted by appropriately trained and experienced personnel for native vegetation and wildlife habitats. ▪ Vegetation clearance has been minimised and has taken into account the conservation needs of particular species. ▪ Records of vegetation clearance are kept and available for auditing. ▪ The attainment of either 0, +1 or +2 GAS criteria for "Re-establish natural vegetation on abandoned well sites and access tracks" objective listed in Appendix 2. ▪ Hazardous material stored, used and disposed of in accordance with relevant 	<ul style="list-style-type: none"> ▪ Only one kilometre of new access route needed to be cleared. The wellsite was located one kilometre west of the ROW adjacent to the Moomba – Adelaide gas pipeline. ▪ The wellsite area contained only sparse grassy vegetation. No significant trees or shrubs needed to be cleared. ▪ Beach's Rig Site Representative reported no instances of the spillage of hazardous chemicals during Drilling Operations.. ▪ Topsoil was stockpiled for subsequent respreading when restoration activities are conducted. ▪ Rehabilitation of the Maslins -1 well pad will after the water in the sump pit has
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¹ Leigh, J.H. and Briggs, J.D (Eds), 1994. *Threatened Australian Plants: Overview and Case Studies*. Australian National Parks and Wildlife Service, Canberra;
 Garnett, S., 1992a. *The Action Plan for Australian Birds of Australia*, Australian National Parks and Wildlife Service. Endangered Species Program, Project 121.
 Garnett, S. (Ed.), 1992b. *Threatened and Extinct Birds of Australia*. Royal Australian Ornithologists Union. Report, 82.
 Wager, R. and Jackson, P., 1993. *The Action Plan for Australian Fresh Water Fishes*. Australian Nature Conservation Agency. Endangered Species Program, Project 147.
 Lee, A.K., 1995. *The Action Plan for Australian Rodents*. Australian Nature Conservation Agency. Endangered Species Program, Project 130.
 Kennedy, M., 1992. *Australian Endangered Marsupials and Monotremes: An Action Plan for their Conservation*. IVCN, Gland, Switzerland.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : MASLINS-1

PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		legislation on dangerous substances.	<p>evaporated. It is anticipated this will be during the second quarter of 2003.</p> <ul style="list-style-type: none"> ▪ The access track will be rehabilitated as part of the rehabilitation of the access track to the Waitpinga well (early 2004) unless the landowner requests that it be left open for future use as a station track.
4. Avoid disturbance to rare, vulnerable and endangered flora and fauna species.	Rare, vulnerable and endangered flora and fauna species are defined by Schedule 7, 8 and 9 of the <i>National Parks and Wildlife Act, 1972</i>	<ul style="list-style-type: none"> ▪ Proposed well site and access track locations have been scouted for rare, vulnerable and endangered flora and fauna species by appropriately trained and experienced personnel before the commencement of construction. ▪ Any sites of rare, vulnerable and endangered flora and fauna have been identified, flagged and subsequently avoided. ▪ Records of such scouting are kept and available for auditing. ▪ 	<ul style="list-style-type: none"> ▪ National Parks and Wildlife flora / fauna databases contain no records of vulnerable or endangered species within 20km of the site and the closest record of a rare species is on a floodplain approximately 10km from the site (database search March 2003).
5. Prevent the introduction and establishment of exotic weed species.	The major potential source of weed introduction is from vehicles and equipment brought in from other regions of the state or interstate for the various well activities. The most effective way of preventing weed introduction is by thoroughly cleaning vehicles and equipment prior to entering the Cooper–Eromanga Basins.	<ul style="list-style-type: none"> ▪ All vehicles and equipment appropriately cleaned prior to entering the Cooper–Eromanga Basins. ▪ Cleaning carried out in accordance with specified company procedures and accepted practices. ▪ Records of vehicle and equipment cleaning are kept and available for auditing. 	<ul style="list-style-type: none"> ▪ All vehicles involved with the drilling operation were already in service in the Cooper Basin prior to commencing work at the Maslins well.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
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WELLNAME : MASLINS-1

PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		<ul style="list-style-type: none"> ▪ Detection of exotic weed species as a consequence of industry activities. 	
6. Minimise impacts to soil.	<p>The main impact to soil is caused by the removal of existing soil and / or the importation of foreign material for the construction of the well sites and access tracks. This creates a visual impact and can also alter the soil characteristics which can, in turn, impact on the effective re-establishment of native species.</p> <p>Another potential impact to soil is soil contamination from accidental spillages of chemicals or hazardous during construction and operation.</p>	<ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS Criteria for "Minimise Visual Impact of Abandoned Wellsites" objective listed in Appendix 2. ▪ The attainment of 0, +1 or +2 GAS Criteria for "Minimise Visual Impact of Abandoned Access Tracks" objective listed in Appendix 2. ▪ The attainment of either 0, +1 or +2 GAS criteria for "Re-establish natural vegetation on abandoned wellsites and access tracks" objective listed in Appendix 2. ▪ Hazardous material stored, used and disposed of in accordance with relevant legislation on dangerous substances. 	<ul style="list-style-type: none"> ▪ For the upgrade of the station track and the construction of the well pad, clay material was extracted from several borrow pits along the access route. ▪ The well site will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's <i>Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia</i>, to attain the highest feasible GAS rating. ▪ Beach's Rig Site Representative reported no instances of the spillage of hazardous chemicals during Drilling Operations.
7. Avoid initiating erosion on gibber pavements.	<p>It is recognised that the removal of the overlying gibber mantle inevitably leads to severe gully erosion on the gibber plains with a slope greater than 2 degrees in the Cooper Basin². It is therefore important to avoid removal of gibber stones in the construction of well sites and access tracks.</p>	<ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS Criteria for "Minimise Visual Impact of Abandoned Wellsites" objective listed in Appendix 2. ▪ The attainment of 0, +1 or +2 GAS Criteria for "Minimise Visual Impact of Abandoned Access Tracks" objective listed in Appendix 2. 	<ul style="list-style-type: none"> ▪ There are no gibber pavements along the proposed access track or at the Maslins well site.

² Refer to Fatchen and Woodburn in the references section of this Statement of Environmental Objectives.

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OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		<ul style="list-style-type: none"> ▪ Gibber mantle on access tracks has not been removed, only rolled to allow vehicle and equipment access. ▪ Gibber mantle removal on well sites confined to the mud pit, cellar and turkey's nest areas. ▪ Gibber mantle removed from such areas is respread and rolled over the disturbed area during restoration. 	
<p>8. Minimise loss of reservoir and aquifer pressures and contamination of freshwater aquifers.</p>	<p>This objective seeks to protect the water quality and water pressure of aquifers that may potentially be useful as water supplies, and to maintain pressure in sands that may host petroleum accumulations elsewhere.</p> <p>To address this objective, the risks of crossflow between formations known to be permeable and in natural hydraulic isolation from each other, or where there is insufficient information to determine that they are permeable or in hydraulic communication, must be assessed on a case by case basis and procedures implemented to isolate these formations.</p> <p>The following geological formations in the Cooper-Eromanga Basins may contain permeable sands (aquifers) which may be in natural hydraulic isolation from each other (from shallowest to deepest):</p> <ul style="list-style-type: none"> ▪ Eyre formation; ▪ Winton formation; 	<p><u>Drilling & Completion Activities</u></p> <ul style="list-style-type: none"> ▪ Casing design (including setting depths) have been carried out in accordance with company defined procedures which satisfy worst case expected loads and environmental conditions determined for the particular well. ▪ Casing set in accord with design parameters and company approved procedures. ▪ Sufficient isolation between any of the formations listed in the adjacent column – where present – is substantiated (eg through well logs, pressure measurements or casing integrity measurements). ▪ For cases where isolation of these formations is not established, sufficient evidence is available to demonstrate that they are in natural hydraulic communication. 	<ul style="list-style-type: none"> ▪ Cement plugs were placed downhole during the well abandonment program to isolate any aquifers and any zones of pressure differential to ensure no likelihood of crossflow.

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WELLNAME : MASLINS-1

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OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	<ul style="list-style-type: none"> ▪ Mackunda formation; ▪ Coorikiana sandstone; ▪ Cadna-owie formation; ▪ Namur sandstone; ▪ Adori sandstone; ▪ Hutton sandstone; ▪ Poolowanna formation; ▪ Cuddapan formation; ▪ Nappamerri Group formations, Walkandi and Peera Peera formations (multiple sands); ▪ Toolachee formation (multiple sands); ▪ Daralingie formation (multiple sands); ▪ Epsilon formation (multiple sands); ▪ Patchawarra, Mt Toodna or Purni formations (multiple sands); ▪ Tirrawarra sandstone or Sturat Range formation; ▪ Merrimelia Boorthanna and Crown Point formations (multiple sands); ▪ Basement reservoirs. 	<p><u>Producing Wells</u></p> <ul style="list-style-type: none"> ▪ Monitoring programs, carried out in accord with company approved procedure(s), demonstrate no crossflow or fluid migration occurring behind casing. ▪ Casing integrity and corrosion monitoring programs, carried out in accordance with company approved procedure(s), show adequate casing condition to satisfy the objective. <p><u>Inactive Wells</u></p> <p>In the case where a well is suspended for a prolonged period of time:</p> <ul style="list-style-type: none"> ▪ Monitoring methods for detecting fluid migration, carried out in accord with company approved procedures for this purpose, are in place and show no fluid migration. <p><u>Well Abandonment Activities</u></p> <ul style="list-style-type: none"> ▪ Plugs set to isolate aquifers through the well bore, designed and set in accord with defined procedures to satisfy worst case expected loads and downhole environmental conditions. ▪ Plugs have been set to isolate all aquifers which are present which are not in natural hydraulic communication nor have been isolated by cement behind casing. 	

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
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OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
<p>9. Minimise Impact on Surface Water and Drainage Patterns.</p>	<p>Due to the small and confined area impacted on well sites, there should be minimal impact to surface water drainage patterns in the region. The only foreseeable threat to drainage patterns could arise from long and wide access tracks which could divert a portion of the natural water flow. The main threat to the surface water is contamination from spills during times of major flooding. Potential spills can originate from the well while the well is producing or from the mud pits during drilling.</p>	<ul style="list-style-type: none"> ▪ Oil well producing operations shut in during periods of flood inundation. ▪ Upon completion of drilling, mud pits allowed to dry out and then backfilled level with the surrounding landscape. ▪ Access tracks have been designed and located to avoid any diversion of water during flood inundation. 	<ul style="list-style-type: none"> ▪ Maslins well site is located in an interdunal floodplain, and is approx. 10 kms from any significant drainage features (Strzelecki Creek). ▪ The access track does not cross any significant watercourses or drainage features. ▪ There was no rainfall during the period of the drilling operations.
<p>10. Minimise visual impacts on the natural landscape.</p>	<p>The major impact of well sites and access tracks is their visual impact³. Location, construction and restoration practices can significantly reduce the visual impact of well sites and access tracks.</p>	<ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS criteria for "Minimise Visual Impact of Abandoned Wellsites" objective listed in Appendix 2. ▪ The attainment of 0, +1 or +2 GAS criteria for "Minimise Visual Impact of Abandoned Access Tracks" objective listed in Appendix 2. 	<ul style="list-style-type: none"> ▪ The wellsite is located at the end of a one km long purpose – built access track and lies on a clay pan between two sand dunes. ▪ The access track to the wellsite turns off the ROW adjacent to the Moomba – Adelaide gas pipeline, which carries only occasional traffic of maintenance crews. The well site is 20 kms (by road) from the nearest public road (Moomba to Adelaide). ▪ The access track to the Maslins well will be used as the starting section for the access track to the proposed Waitpinga-1 well located a further 20 kms to the west.

³ Refer to Fatchen and Woodburn in the references section of this Statement of Environmental Objectives.

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PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
			<ul style="list-style-type: none"> ▪ Rehabilitation of the Maslins well pad will coincide with the construction of the Waitpinga access track, scheduled for mid 2003, and will be in accordance with the guidelines set down in PIRSA's <i>Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia</i> ▪ Unless requested otherwise by the landowner, the access track to the Maslins well will be rehabilitated as part of the rehabilitation of the access track to the proposed Waitpinga –1 well.
<p>11. Minimise risks to the safety of the public and other third parties.</p>	<p>The criteria for assessing the achievement of this objective have been developed on the basis of the current understanding of the risks of wells to third party safety.</p> <p>The key to achieving the third party safety objective in relation to both downhole abandonment and surface well site restoration is to ensure that the visual prominence of the abandoned well site and its access track(s) is minimised to the extent where it is difficult for third parties to detect and therefore access these sites. Also, in the case where a third party encounters an abandoned well site, adequate signage of the well location needs to be displayed to hinder any third party interference with the abandoned well bore. Similarly, the backfilling of the well cellar and the removal of rubbish from the restored well site needs to be carried out to further facilitate</p>	<p><u>Drilling & Completion Activities</u></p> <ul style="list-style-type: none"> ▪ Casing design (including setting depths) carried out in accordance with company approved procedures to satisfy worst case expected loads and environmental conditions determined for the specific geology intercepted by the well. ▪ Casing set in accord with design parameters and company approved procedures. ▪ Blow out prevention precautions in place and operational in accordance with defined procedures and appropriate to the expected loads and downhole environmental conditions. <p><u>Producing Wells</u></p> <ul style="list-style-type: none"> ▪ Adequate signage and precautions taken for warning third parties of the potential 	<ul style="list-style-type: none"> ▪ An assessment was undertaken of the risks associated with the temporary increase in heavy vehicle traffic alongside and crossing over the Moomba-Adelaide gas and liquids pipelines. A Traffic Management Plan was prepared and implemented to ensure the risks were minimised. ▪ An Emergency Response Plan was developed for the Maslins Drilling Operation.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : MASLINS-1

PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	third party safety.	<p>danger and to keep away from producing or suspended wells.</p> <ul style="list-style-type: none"> ▪ Casing integrity and corrosion monitoring programs, carried out in accord with the company approved procedure(s), show adequate casing condition to satisfy the objective. ▪ Effective emergency response plan and procedures are in place in the event of a blow out. ▪ Hazardous material stored, used and disposed of in accordance with relevant legislation on dangerous substances for occupational, health and safety. <p><u>Well Abandonment Activities</u></p> <ul style="list-style-type: none"> ▪ Downhole abandonment of a well is carried out in accord with company approved procedures to satisfy worst case expected loads and downhole environmental conditions. <p><u>Well Site Restoration Activities</u></p> <ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS criteria for "Minimise Visual Impact of Abandoned Wellsites" objective listed in Appendix 2. ▪ The attainment of 0, +1 or +2 GAS criteria for "Minimise Visual Impact of Abandoned Access Tracks" objective listed in Appendix 2. ▪ The attainment of 0 GAS criteria for "Site left in a Clean, Tidy and Safe Condition 	

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : MASLINS-1

PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		<p>after Final Cleanup” objective listed in Appendix 2.</p> <p>The undertaking of a risk assessment study to assess the threats to third party safety from drilling, well completion, well production, downhole abandonment and from inactive and abandoned wells.</p>	
12. Minimise the impact on the environment of waste handling and disposal.	Waste refers to all wastes with the exception of the Listed Wastes in Schedule 1 Part B of the <i>Environment Protection Act 1993</i> .	<ul style="list-style-type: none"> ▪ The attainment of 0 GAS criteria for “Site left in a Clean, Tidy and Safe Condition after Final Cleanup” objective listed in Appendix 2. ▪ All wastes generated on a well site (except sewage) to be disposed at an EPA licensed facility. ▪ Records show that sewage at drilling camps was stored and disposed of in a manner which posed no risk to the human health and hygiene. 	<ul style="list-style-type: none"> ▪ All hard waste was removed from the Maslins well site in accordance with Beach's policy set out in the company's Drilling Operations Manual. ▪ Putrescible waste was disposed of in the mud pit prior to backfilling.
13. Avoid adverse impacts on livestock.	The main risk posed to livestock is injury from open drill sumps, open well cellars and moving beam pump oil wells.	<ul style="list-style-type: none"> ▪ In the likely presence of livestock, the mud pits and/or flare pits and moving beam pumps are fenced off. ▪ In the case of a producing well, the well cellar, rat hole and mouse hole are made safe for livestock either through appropriate covering or fencing. ▪ In the case of an abandoned restored well site, the cellar has been backfilled to a 	<ul style="list-style-type: none"> ▪ The Maslins well site was sufficiently distant from any cattle watering point that any threat to the cattle's safety was insignificant, particularly when combined with the low density of cattle in the area.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : **MASLINS-1**

PEL No. : **94**

SPUD DATE : **SEPTEMBER 2002**

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
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<p>14. Avoid spills of oil or hazardous material outside of impermeable sumps or other areas designed to contain such spills.</p>	<p>The main potential for spills to occur is around the well head. Spills that occur around the well head can normally be contained within the cellar and/or confined to the pad area of the well site.</p> <p>As specified under objective 9, any threat to surface waters are avoided as a result of ceasing oil production during periods of inundation. Similarly, it has been found that in the Cooper Basin, threats to ground water as a result of surface spills are avoided as a result of a) the depth of the underground aquifers; and b) the entrapment of any contamination in the first 1 to 2 meters of soil. The major threat of spills is the threat to soil and vegetation directly impacted on by the spill. Therefore, the achievement of this objective also consequently contributes to the achievement of objectives 3 and 6 in relation to minimising the impacts on natural vegetation and soil respectively.</p> <p>As spills in the Cooper Basin will tend to be contained by the soil within the area of the spill, any wide scoping environmental threat is considered very unlikely. However, the focus of assessing this objective will primarily be on reducing the number of spills over time. Avoidance of spills will be paramount in areas where the spill can be potentially spread beyond the immediate confines of the spill area</p>	<p>level with the surrounding landscape.</p> <ul style="list-style-type: none"> ▪ Cumulative number and volume of spills at any point in time during the year is less than the cumulative spills for the same period from the previous year and a general declining trend in number and volume of spills over the long term. ▪ No spills which pose a significant threat to the Cooper Creek system. 	<ul style="list-style-type: none"> ▪ There were no periods of flood inundation during the drilling operations. ▪ There were no spills of oil or hazardous materials of any significance during the drilling operations. ▪ The location of the Maslins well is well removed (approximately 10 km) from the nearest drainage system (the main channel of the Strzelecki Creek).
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELLNAME : MASLINS-1

PEL No. : 94

SPUD DATE : SEPTEMBER 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
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	into sensitive environments such as creeks and wetlands.		
15. In the event of an oil spill, minimise the impacts on fauna, flora, soil, livestock and surface and ground water.	In the case of an oil spill, it has been shown that in the Cooper Basin active bio-remediation of the contaminated soil is an effective way for remediating the site to an acceptable level which leaves no environmental adverse effect ⁴ .	<ul style="list-style-type: none"> ▪ In the event of an oil spill, contingency plan implemented after the spill event. ▪ Results of emergency response procedures carried out in accord with Regulation 31 show that oil spill contingency plan in place in the event of a spill is adequate and any necessary remedial action needed to the plan is undertaken promptly by the licensee. ▪ Bio-remediation is undertaken on the affected soil, either on site or offsite. ▪ All oil spill bio-remediation meets end point assessment criteria developed specifically for the relevant environment (eg Santos Oil Spill Remediation End Point Criteria project, to be completed by December 2000). 	<ul style="list-style-type: none"> ▪ There were no spills of oil or hazardous materials of any significance during the drilling operations.

⁴ Megalos, N.P. 1994, *Bioremediation of Oil Contaminated Soil*, South Australian Department of Mines and Energy, Report Book No. 94/4

B) Seismic Operations

Government approval for Beach to undertake its Seismic Operations in PEL 94 was conditional on Beach committing to the objectives defined in the “Statement of Environmental Objectives for Seismic Operations in the Cooper / Eromanga Basins – South Australia “.

Beach is satisfied it achieved each of the objectives listed in the SEO, and it’s strategies for achieving these objectives are outlined below.

SEO Objective 1 :	Ensure that the potential impacts of the proposed seismic operations on biological diversity and cultural requirements of the environment are assessed within a planning process and incorporated into field management procedures.
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Goal 1.1 : Identify important or sensitive environmental and cultural components.

PEL 94 is covered in part by the Ngayana Dieri Karna (NDK) and the Yandruwandha / Yawarrawarrka Native Title Claim Claim areas. Prior to the commencement of line preparation, Work Area Clearances were undertaken by representatives of both Native Title Claimant groups under the terms of their Agreements. The scouting parties inspected a representative sample of the proposed lines.

Reports were prepared by the accompanying anthropologists, documenting the locations where deviations would be required to the proposed seismic lines to avoid sites of cultural significance. The reports further documented general guidelines to assist the line preparation crew on appropriate deviation procedures where further sites of cultural significance were identified along the proposed lines that had not been inspected by the Scouting Team.

All field crews associated with the seismic program attended an induction course on cultural heritage issues for this area, with particular emphasis on identification and avoidance of significant cultural material.

Goal 1.2 : Identify threatening processes and activities

No processes or activities associated with the survey operations were considered to be threatening to the subject environment.

Goal 1.3 : Assess any adverse impact on biological diversity likely to arise from the proposed operation on a regional basis.

The area covered by PEL 94 is predominantly dunefield environment with a small portion of floodplain land system on the eastern border. GAS criteria for assessing adverse impacts on biodiversity for these two land systems are provided in the Statement of Environmental Objectives (Tables A2.2. and A2.3).

The impacts of the Nautilus Seismic survey have been audited against these criteria and the results are presented in the attached table.

Goal 1.4 : *Ensure that issues raised in the planning process are incorporated into field management procedures.*

All personnel involved in the field operations were briefed at the commencement of the survey operations as to appropriate procedures for environmental management and protection of cultural heritage.

A company representative was present with the line clearing and recording crews throughout the field operations to ensure adherence to the planned field management procedures.

SEO Objective 2 :	Monitor and manage those activities that have , or are likely to have, temporary impacts on biological diversity, cultural components of the environment, groundwater, or other land users, and facilitate rehabilitation so as to minimize such impacts if they occur.
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As defined in the SEO, the goals of this objective are to **minimize** :

- clearing of native vegetation,
- disturbance to native fauna,
- impacts on soil, surface drainage , visual ambience and other land users,
- the potential for third parties to use survey tracks and sites following completion of operations.

Two sets of GAS criteria are defined in the SEO for assessing the extent of these impacts. One set of criteria relates to assessment carried out **at the completion of the field operations**. The second set relates to assessment carried out when **the lines have been left to rehabilitate for some period**.

At the completion of the Nautilus survey, an assessment of the impacts was undertaken against the first set of criteria by selecting six locations as Environmental Monitoring Points (EMPs). One of these EMPs, EMP – 5, is located in PEL 94 in a dunefield environment.

The results of the GAS audit are presented in the attached table. All GAS scores were in the range of 0 to +2.

SEO Objective 3 :	Avoid undertaking any activities which have, or are likely to have, long-term significant adverse impact(s) on biological diversity, cultural components of the environment, groundwater, or other land uses
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Shortly after completion of the field operations for the Nautilus Seismic survey (October 2002), company representatives from Beach Petroleum inspected some of the seismic lines which had been recorded, to assess the likely time frame for rehabilitation .

In the few weeks since field activities had ceased, there was already evidence that the consistent strong winds were commencing the natural rehabilitation process, particularly on the dune cuts.

The line clearing crews had used environmentally appropriate techniques that will enable the combination of wind action and occasional rainfall to revegetate the lines to the point they will be indiscernible within a few years.

The technique of weaving the routes of the seismic lines had been practiced extensively, allowing any significant tress to be left standing, which will assist the visual impact from the operations to disappear as early as possible.

There was no indication of any likely long-term adverse impacts.

GAS scores for assessing seismic lines on completion of survey in the Cooper and Eromanga Basins, South Australia

Beach Petroleum Limited: 2002 Nautilus Seismic Survey, PELs 95,94,92: Recorded May – October, 2002: Audited by: Bruce Beer

LAND SYSTEM (Locations)	MEASURE (Associated goals) ^(a)	SCORE				
		+2 ^(b, c)	+1 ^(b, c)	0 ^(b, c)	-1	-2 ^(d)
Non land system specific 1) BC-EMP-01; Line BC01-34 stn 511 2) BC-EMP-02; Line BC02-22 stn 544 3) BC-EMP-03; Line BC02-25 stn 248 4) BC-EMP-04; Line BC02-49 stn 245 5) BC-EMP-05; Line BC02-18 stn 324 6) BC-EMP-06; Line BC02-67 stn 200 Note: GAS scores refer to the area 500m either side of the EMP location	Impact on infrastructure 2.6	1)2)3)4)5)6)		•	•	•
	Visual impact 2.5, 2.7	•	•	1)2)3)4)5)6)	•	•
	Uphole site restoration 2.3, 2.5 ^(e)	•	•	1)2)3)4)5)6)	•	•
	Pollution or litter 2.1, 2.2, 2.3, 2.5	1)2)3)4)5)6)	•		•	•
Dunefield	Impact on vegetation 2.1, 2.2 ^(f)	•	•	1)2)4)5)3)6) N/A	•	•
	Disturbance to land surface 2.2, 2.3 ^(e)	•	•	1)2)4)5)3)6) N/A	•	•

(.../cont.)

(Table A2.2 cont.)

LAND SYSTEM	MEASURE (Associated goals) ^(a)	SCORE				
		+2 ^(b, c)	+1 ^(b, c)	0 ^(b, c)	-1	-2 ^(d)
Floodplain and wetlands	Impact on vegetation 2.1, 2.2 ^(f)	•	3), 6)	•	•	•
	Disturbance to land surface 2.2, 2.3, 2.4, 2.5 ^(e)	•	3), 6)	•	•	•
Gibber plain and tableland	Impact on vegetation 2.1, 2.2	•	•	•	•	•
	Disturbance to land surface 2.2, 2.3, 2.5 ^(e)	•	•	•	•	•
Salt lake	Disturbance to land surface 2.3, 2.5 ^(e)	•	•	•	•	•

(a) Goals under Objective 2:

- 2.1 Clearing or other impacts on native vegetation are minimised.
- 2.2 Disturbance or other impacts on native fauna and their habitats are minimised.
- 2.3 Impact on soil is minimised.
- 2.4 Impact on surface drainage is minimised
- 2.5 Visual impact of operations (including litter) is minimised.
- 2.6 Impact on other land users is minimised.
- 2.7 Third party use of sites, following the completion of operations, is discouraged.

(b) If any criterion (dot point) within a -1 or -2 cell occurs, then a score of -1 or -2 will be allocated.

(c) For 0,+1 and +2 cells, all relevant criteria (dot point) within the cell must be satisfied to score at that level.

(d) Some criteria at -2 level may also be subject to defined conditions, but are included in this table to ensure that they are clearly identified.

(e) All vertical measurements to be measured from normal ground surface.

(f) Priority classification refers to Wiltshire and Schmidt (1977).

(g) 'Windrows' in this context means mounding of gibbers through the action of wheel trafficking and associated dispersal of gibbers away from wheel tracks.