PEL 92
Cooper/Eromanga Basin
South Australia

Annual Report
Permit Year 3

5th November 2003 to 4th November 2004

Contents

1 Introduction

Petroleum Exploration Licence No. 92 is situated on the western margin of the Cooper/Eromanga Basin, South Australia. The third year of the licence covers the period 5th November 2003 to 4th November 2004.

This report details the work performed by the Joint Venture during this third 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 92 at the end of this reporting period were:

Beach Petroleum Ltd (Operator)	**75%**
Cooper Energy NL	**25%**

The agreed work commitments for PEL 92 are summarised as follows:

Licence Year	Minimum Work Program	Actual Work
Year 1 (5/11/01-4/11/02)	One well; 200km 2D seismic; reprocess 300km of existing seismic	One well; 296 km 2D seismic; 390km reprocess seismic
Year 2 (5/11/02-4/11/03)	One well; 100km 2D seismic; reprocess 50km of existing seismic	Two wells ; 36 km 2D seismic; 30km^2 3D seismic;412km reprocess seismic
Year 3 (5/11/03-4/11/04)	50km 2D seismic	Two wells; (25 km^2 3D seismic in PPL 204)
Year 4 (5/11/04-4/11/05)	One well; 50km 2D seismic	
Year 5 (5/11/05-4/11/06)	One well	

A Petroleum Production Licence (PPL 205) covering the Christies Oilfield was granted on 12 October 2004.

3 Exploration Activity

3.1 Drilling.

Two wells were drilled in the permit during the year.

- **Christies-2**, an appraisal well southwest of the Christies-1 discovery, successfully appraised oil in the Birkhead Formation, and discovered two new oil pools in the Namur Formation. The well was subsequently completed and tied into an expanded Christies Field production facility.

- **Christies-3**, located approximately 400m south of Christies-1, also successfully appraised the Christies Field by confirming productive reservoirs in the Namur and Birkhead/Hutton Formations.

Well Completion Reports for both wells will be submitted in due course.

3.2 Seismic Data Acquisition

There was no exploration seismic acquired during the permit year primarily due to flooding of the Cooper Creek (which traverses the permit area). However, a 25 km^2 3D seismic survey was acquired over the Sellicks Oilfield in PPL 204 (formerly part of PEL 92). Refer to a forthcoming PPL 204 report for details of this survey.

To the end of permit year 3, the Joint Venture has acquired a total of 332 km of 2D seismic and 30 km^2 of 3D seismic in the permit, as compared to the guaranteed work program of 350 km of 2D seismic. An extension for submission of the Albus Survey Final Operations Report, originally due on 2-Apr-04, was granted and the final report submitted on 8-Oct-04.

3.3 Seismic Data Processing / Reprocessing

There was no seismic reprocessing program during the permit year 3. At the end of year 3, the total reprocessed seismic was 452km in excess of the licence commitment.

3.4 Geological, Geophysical & Engineering Studies.

Technical studies during this second permit term were directed toward interpretation of exploration seismic and the Christies 3D seismic acquired in the previous year. This work resulted in the drilling of the Christies-2 and Christies-3 wells, and the downgrading of small prospects south of the field.

Following the success of appraisal drilling at Christies, a substantial expansion of the production facility is underway. This upgrade includes a new road, water-handling facilities, more storage capacity, and plans to construct evaporation ponds. The largest restriction on production rate, however, is the availability of trucking resources. The JV has therefore decided to build a pipeline from Christies to Tantanna. A more detailed description of development projects will be contained within a forthcoming report for PPL 205.

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 agreed Statements of Environmental Objectives governing field operations undertaken during the permit term.

4.2 Data submissions.

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

Table 1 **PEL 92**
Annual Report
Licence Year 3
5th November 2003 to 4th November 2004

List of Reports Generated

Title	**Date Submitted to PIRSA**
Christies-1 Well Completion Report	12-Jan-04
Brighton-1 Well Completion Report	26-Feb-04
Application for Petroleum Production Licence – Christies Field	21-Jun-04
Nautilus Seismic Survey Interpretation Report	15-Jul-04
Environmental Monitoring Reports for Albus Seismic Survey and Christies 3D seismic survey - PEL 92	16-Feb-04
Albus Seismic Survey Final Operations Report (including PEL 92)	8-Oct-04
Christies 3D Seismic Survey Final Operations Report	1-Nov-04
Christies-2 Well Proposal	22-Jun-04
Christies-2 Drilling Program	22-Jun-04
Christies-3 Drilling Program	20-Sept-04
Sellicks 3D Seismic Survey – Investigation of grader excursion from cleared lines	9-Jun-04
Geochemical Surveys in PEL92 and PEL110, Cooper/Eromanga Basin, SA	3-Aug-04

4.3 Planned Exploration Program for Year 3

The Joint Venture is considering up to three exploration wells for drilling in 2005. The final choice of prospects and locations is subject to review, but is likely to include the "Hilden" prospect in the far northwest of the permit and at least one prospect 'on-trend' to the north or south from Christies.

The acquisition of an additional 450km of 2D seismic data is also proposed, mostly in areas to the west and north of Christies (see Figure 1). This program is designed to mature prospects near to the

Christies field development where exploration success can take advantage of the expanded production facilities at Christies.

5 Expenditure statement

A licence expenditure summary for the period 5th November 2003 to 4th November 2004 is presented as Table 2.

Not included in this table are the operating expenditures and royalty payments associated with the Sellicks and Christies production facilities, which will be detailed separately under reports for PPLs 204 and 205.

Table 2

PEL 92
Annual Report
Licence Year 3
5th November 2003 to 4th November 2004

Statement of Expenditure

Commercial in confidence

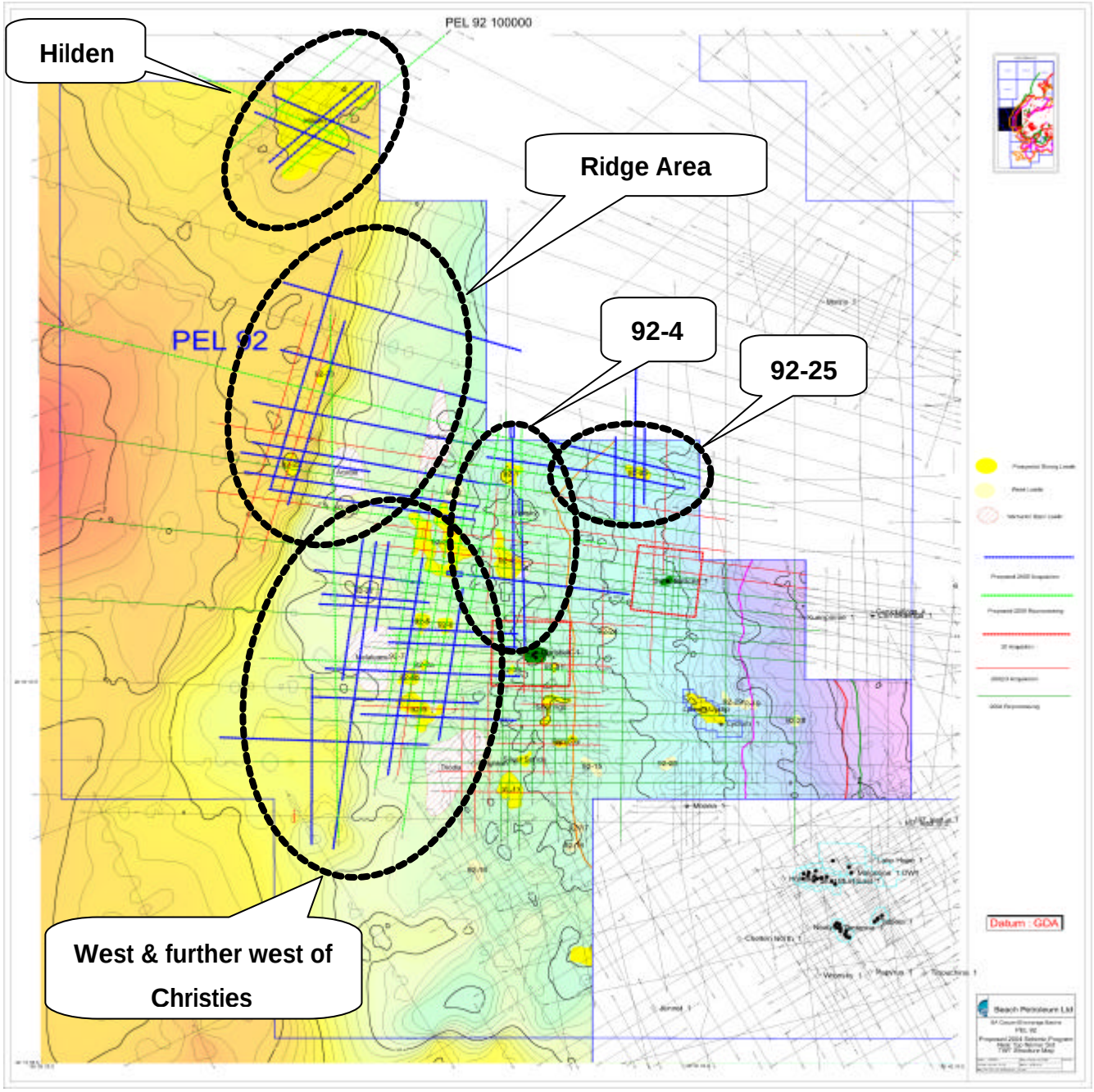

FIGURE 1
PEL 92
Proposed Seismic Program Yr 4

ANNUAL

COMPLIANCE

REPORT

FOR

PEL 92 - YEAR 3

(NOVEMBER 2003 - OCTOBER 2004)

COOPER BASIN, SOUTH AUSTRALIA

BEACH PETROLEUM

Introduction

Pursuant to Regulation 33 (2) of the 2000 Petroleum Act, Beach Petroleum, as operator of PEL 92 in the Cooper Basin, South Australia, herewith submits its report on compliance with :

- the Petroleum Act and the PEL 92 Licence conditions (*Section 1*),
- the Regulations of the Petroleum Act (*Section 2*), and
- the various Statements of Environmental Objectives (SEOs) to which Beach Petroleum was committed in conducting its work programs for Year 3 of the Licence (*Section 3*).

A table is attached summarizing any instances during Year 3 of the Licence where Beach Petroleum failed to comply either with the Regulations of the Act, or with the requirements of the relevant SEOs under which its operations were conducted.

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

Section 1 :

Compliance with the Petroleum Act and PEL Licence Conditions

There were no instances during Year 3 of the PEL 92 Licence in which Beach failed to comply with the 2000 Petroleum Act.

Although the work program for the Licence did not require the **drilling** of any wells in Year 3, two appraisal wells, Christies-2 and Christies-3, were drilled in close proximity to Christies-1.

The Year 3 work program for the Licence called for 50 km of **2D seismic** to be recorded . A 2D program was proposed on the western side of the Cooper Creek, however access to this area was prevented for most of the permit year by floodwaters along the Cooper Creek. Due to a surplus of 2D seismic being recorded in the first two Years of the Licence, the cumulative total of 2D recorded up until the end of Year 3 is 18 kilometres short of the committed cumulative total of 350 line kilometres.

There was no requirement for any **reprocessing of archive seismic data** in the work program for Year 3, and none was undertaken. The cumulative total of data reprocessing up until the end of Year 3 of the Licence was 802 kilometres, which represents a significant surplus over the commitment (total) of 350 line kilometres. A 3D seismic survey, covering 25 square kilometers, was conducted over the Sellicks field in PPL 204, located within PEL 92. The 3D survey was also excess to the work program commitments.

Summary of Non - Compliance

Permit : PEL 92 Year 3 : 5 November 2003 - 4 November 2004

Drilling

SEO Non Compliance :

Field Operation	Date		Description of Incident	Resolution
No incidents of Non - Compliance				

Notification or Report Non Compliance :

Name of Report	Date Due	Date Submitted	Cause of Overdue Submission	Resolution
Notification to PIRSA of proposal to drill Christies-3	29-Aug-04	8-Sep-04	PIRSA were notified only 10 days prior to commencement of drilling, rather than the required 21 days. Decision to drill Christies #3 could only be made after the results of the adjacent Christies #2 well were known. Christies #2 was drilled immediately prior to Christies #3.	Commercially unrealistic to remobilise drilling rig at a later date (after expiry of 21 days notice period).

Data Submission Non Compliance :

Data Type	Date Due	Date Submitted	Cause of Overdue Submission	Resolution
No incidents of Non - Compliance				

Seismic

SEO Non Compliance :

Field Operation			Incident Date & Description	Resolution
Incursion into a restricted area by a grader during preparation of access tracks for the Christies 3D survey lines.			On May 26th, 2004, a grader driver became disorientated and inadvertently drove into an area previously classified as a "no go" zone.	Grader driver issued with a more detailed map which better illustrated the locations of the exclusion zones. Native Title Claimant Group were notified and presented with a report on the incident.

Report Non Compliance :

Name of Report	Date Due	Date Submitted	Cause of Overdue Submission	Resolution
Christies 3D Survey - Final Operations Report	10-Oct-04	1-Nov-04	Delays in receiving component Reports (Processing Report, Survey Report, etc) from contractors.	

Data Submission Non Compliance :

Data Type	Date Due	Date Submitted	Cause of Overdue Submission	Resolution
No incidents of Non - Compliance				

Summary of Non - Compliance

Permit : PEL 92 Year 3 : *5 November 2003 - 4 November 2004*

Production

SEO Non Compliance :

Field Operation	Date		Description of Incident	Resolution
Damge to aboriginal cultural heritage at Christies production facility	3-Sep-04		A grindstone artifact was found broken in pieces in the south-east corner of the Christies production lease area. It appears the grindstone had been recently removed in tact from the restricted area to the north of the production pad.	To prevent a recurrence of this incident, it is proposed to fence off the perimeter of the area available for production operations and associated development at the Christies facility. The induction process for contractors will also be further tightened, particularly in respect of their obligations towards the protection of cultural heritage.

Notification or Report Non Compliance :

Name of Report	Date Due	Date Submitted	Cause of Overdue Submission	Resolution

No incidents of Non - Compliance

Data Submission Non Compliance :

Data Type	Date Due	Date Submitted	Cause of Overdue Submission	Resolution

No incidents of Non - Compliance

Section 2 :

Compliance with the Regulations of the 2000 Petroleum Act

A) Drilling

- **Reports for Year 2 wells**

Well Completion Reports for two Year 2 wells, Christies-1 and Brighton-1,were submitted during Year 3 of the Licence. Both Reports were submitted prior to (or on) the due date.

- **Data for Year 3 wells**

There were no instances of non-compliance associated with the submission of logging data for the Christies-2 and Christies-3 wells. All Reports associated with these wells are due to be submitted in Year 4 of the Licence.

B) Seismic

- ***Submission of Reports from the 2002 (Permit Year 1) Nautilus Survey :***

A 2D seismic survey was conducted in PEL 92 during **Year 1** of the Licence, as part of the 2002 Nautilus Seismic Survey. Processing of the data from these lines was completed during Year 2 (August 2003).

The Interpretation Report for this survey was consequently due to be submitted in August 2004, twelve months after the processing was completed. The Report was submitted in July, 2004.

- ***Submission of Data and Reports from the 2003 (Permit Year 2) 2D Albus Seismic Survey :***

A short 2D seismic survey was conducted in PEL 92 during **Year 2** of the Licence, as part of the 2003 Albus Seismic Survey.

The survey recorded 35 kilometers of seismic data over two days, finishing on 2nd October, 2003. The Operations Report for this survey was due to be submitted on 2nd October, 2004, twelve months after the recording was completed. The Report and associated data was submitted on 8th October 2004.

- ***Submission of Reports from the 2003 (Permit Year 2) Christies 3D Seismic Survey :***

The Christies 3D seismic survey was conducted during Year 2, requiring four days of recording, and finishing on 10th October, 2003.

The Operations Report for this survey was consequently due to be submitted on 10th October, 2004, twelve months after the recording was completed. The Report and associated data were submitted three weeks late, on 1st November, 2004.

- ***Submission of Data and Reports from the 2004 (Permit Year 3) Sellicks 3D Seismic Survey :***

The Sellicks 3D seismic survey was conducted during Year 3, requiring seven days of recording, and finishing on 1st July, 2004.

The Operations Report and associated data for this survey are due to be submitted in Year 4 of the Licence, on 1st July, 2005, twelve months after the recording was completed.

CHECKLIST FOR NOTIFICATIONS OF DRILLING OPERATIONS

Permit : PEL 92 Year 3 : *5 November 2003 - 4 November 2004*

Well Name : Christies -2 **Commenced Drilling Operations : 24th August 2004 Completed Drilling Operations : 15th September 2004**

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	21 days prior to proposed start date	3-Aug-04	22-Feb-04	Exploration Manager	Notification reduced to 21 days as a result of PIRSA granting Beach Low Supervision classification.
Notification of proposed commencement of earthworks – preparation of access tracks and well leases		PIRSA / Tony Wright	2 days prior to proposed start date	Not Required		Exploration Manager	Lease pad for the Christies # 2 well was adjacent to the existing access track to Christies # 1.
Notification to landowner (s)		Pastoral Lessee;	21 days prior to proposed start date	3-Aug-04	6-Feb-04	Exploration Manager	G.Betts - Mungeranie Station
		National Parks;	21 days prior to proposed start date	Not Required		Exploration Manager	
		Native Title Claimant(s);	21 days prior to proposed start date	3-Aug-04	6-Feb-04	Exploration Manager	Ngayana Dieri Karna & ALRM
		other PEL or PL licensees as appropriate.	21 days prior to proposed start date	Not Required		Exploration Manager	

Well Name : Christies - 3 **Commenced Drilling Operations : 19th September 2004 Completed Drilling Operations : 14th October 2004**

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	21 days prior to proposed start date	29-Aug-04	8-Sep-04	Exploration Manager	Non - compliance. Decision to drill Christies #3 could only be made after the results of the adjacent Christies #2 well were known.
Notification of proposed commencement of earthworks – preparation of access tracks and well leases		PIRSA / Tony Wright	2 days prior to proposed start date	Not Required		Exploration Manager	Lease pad for the Christies #3 well was adjacent to the existing access track to Christies #2.
Notification to landowner (s)		Pastoral Lessee;	21 days prior to proposed start date	29-Aug-04	6-Feb-04	Exploration Manager	G.Betts - Mungeranie Station
		National Parks;	21 days prior to proposed start date	Not Required			
		Native Title Claimant(s);	21 days prior to proposed start date	29-Aug-04	6-Feb-04		Ngayana Dieri Karna & ALRM
		other PEL or PL licensees as appropriate.	21 days prior to proposed start date	Not Required			

CHECKLIST FOR SUBMISSION OF DRILLING REPORTS TO PIRSA

Permit : PEL 92 **Year 3 :** ***5 November 2003 - 4 November 2004***

Well Name : Christies -2 **Commenced Drilling Operations : 24th August 2004** **Completed Drilling Operations : 15th September 2004**

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 2 months of acquisition of data.	7-Nov-04	6-Oct-04	Exploration Manager	Logs recorded on 7th September 2004. Transmittal Note : 04_0210
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.	14-Mar-05	Not due until Year 4	Exploration Manager	
Well Completion Reports	Refer Note below	PIRSA	Within 6 months of rig release.	14-Mar-05		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	
Note : Well Completion Reports contain Borehole Deviation data ; Surveyed Location of well ; and other technical reports associated with the well.							

Well Name : Christies - 3 **Commenced Drilling Operations : 19th September 2004** **Completed Drilling Operations : 14th October 2004**

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 2 months of acquisition of data.	29-Nov-04	6-Oct-04	Exploration Manager	Logs recorded on 29th September 2004. Transmittal Note : 04_0210
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.	13-Apr-05	Not due until Permit Year 4	Exploration Manager	
Well Completion Reports		PIRSA	Within 6 months of rig release.	13-Apr-05		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	
Note : Well Completion Reports contain Borehole Deviation data ; Surveyed Location of well ; and other technical reports associated with the well.							

CHECKLIST FOR SUBMITTING GEOPHYSICAL DATA AND REPORTS TO PIRSA

Permit : PEL 92 Year 3 : 5 November *2003* - *4 November 2004*

Geophysical Data	Specifics	Format	Transmittal	Sent to	Time Period	Due Date	Comments
Survey Name : 2004 Sellicks 3D Seismic Survey (25 sq. kms)					***Completed Recording 1st July 2004***		
Geophysical Progress Reports		Word or PDF		email or fax : cockshell.david@saugov.sa.gov.au	Periodic basis determined after consultation with Minister		
Geophysical **Operations Reports** - recording and processing		Hardcopy, PDF	NOT REQUIRED UNTIL YEAR 4 OF THE LICENCE		Within **12 months** of completion of **recording** data	1-Jul-05	NOT REQUIRED UNTIL YEAR 4 OF THE LICENCE
Geophysical Data - Seismic	Seismic Field Data				Same time as associated Operations Reports	1-Jul-05	
Geophysical Data - Seismic	Obs Logs			CD-ROM		1-Jul-05	
Geophysical Data - Seismic	Nav data including elevations & bathymetry	GDA 94		CD-ROM		1-Jul-05	
Geophysical Data - Seismic	Field statics			CD-ROM		1-Jul-05	
Geophysical Data - Seismic	Processed 3D data volumes and velocities					1-Jul-05	
Geophysical Data - Seismic	Processed 3D time slices (if available)					1-Jul-05	
Geophysical Data	Any other field acquisition data!!!!					1-Jul-05	
Geophysical **Interpretation Report**		Hardcopy, PDF			Within **12 months** of completion of **processing** of data	TO BE DETERMINED	

Section 3.

Compliance with the relevant Statements of Environmental Objectives

A) Drilling Operations

Government approval for Beach to drill the **Christies-2** and **Christies-3** wells in PEL 92 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 (November 2003)".

Both wells were completed as production wells, with production from Christies-2 and Christies-3 commencing on October 19th. PIRSA granted a Petroleum Production Licence over the Christies field on October 12th.

The assessment of Beach's performance in achieving the objectives of the Drilling SEO cannot be completed until both these well sites have been rehabilitated, when production operations have ceased.

Beach was satisfied that it met all the other objectives required by the SEO for the drilling operations on **Christies-2** and **Christies-3**. Attached is a spreadsheet summarising the strategies that were employed to achieve this compliance.

During Year 3 of the permit, the Department of Water Land Biodiversity and Conservation (DWLBC) advised PIRSA that Beach's abandonment program for the **Brighton -1** well, drilled during **Year 2** of the permit, was in breach of the guidelines specified in the SEO for Cooper Basin Drilling and Well Operations (PIRSA, August 2000). Brighton -1 was drilled in November 2003, prior to the introduction of the current (Santos) Drilling SEO.

The breach relates to the number of cement plugs that were set in the well to prevent future cross-flow of groundwaters between the formations which have aquifer potential. DWLBC advised that, in their view, an additional plug should have been placed in the Brighton -1 well to seal off the basement section.

Beach undertook a review of its Plug and Abandonment procedures in relation to the current (Santos) SEO which resulted in some updates to Beach's Drilling Operations Manual (DOM)..,

For future wells to be drilled by Beach in the Cooper Basin, DWLBC will be notified prior to the commencement of the abandonment program if the program does not include a plug to seal off basement.

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

WELLNAME : ***CHRISTIES – 2 & 3*** ***PEL No. :*** ***92*** ***SPUD DATE :*** ***AUGUST 2004***

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
1. Avoid disturbance to known sites of Aboriginal and European heritage significance.	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.	▪ 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. *Note:* Where a negotiated agreement or determination for heritage clearance is in place, compliance to this agreement or determination takes precedence over the above criteria.	▪ Beach have an agreement with the Ngayana Dieri Karna 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 Ngayana Dieri Karna Native Title Claimant group. The proposed drilling locations and access routes were agreed and given heritage clearance.
2 Avoid disturbances which have long term impact on biological or wilderness values of a particular area.	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.	▪ 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.	▪ The wells were not located in or near the areas of high biological or wilderness values shown in Figure 1 of the SEO. The drilling operations presented 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 : ***CHRISTIES – 2 & 3*** ***PEL No. :*** ***92*** ***SPUD DATE :*** ***AUGUST 2004***

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
3. Minimise disturbance to native vegetation and wildlife habitat.	Well site and access track construction has been shown to have an insignificant impact on native vegetation and wildlife habitat by a number of studies[1]. 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. The aim of this objective is to also maximise the potential for revegetation success.	▪ 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 wellsites and access tracks" objective listed in Appendix 2. ▪ Hazardous material stored, used and disposed of in accordance with relevant	▪ The route for the drilling equipment to access the two well sites was via the existing haul road to the Christies production facility. ▪ Very little clearing was required. The wellsite areas contained only sparse grassy vegetation. No significant trees or shrubs were removed. ▪ 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. ▪ As both wells are now successfully producing oil, the well sites will not be

[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.

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		legislation on dangerous subs tances.	rehabilitated until the end of production. At that stage the well site will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's *Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia*, to attain the highest feasible GAS rating. ▪ The landowner of Mungeranie station has requested Beach not to rehabilitate any access tracks that are prepared for facilitating exploration and production activities.
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 *National Parks and Wildlife Act, 1972*	▪ 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. ▪	▪ 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	▪ All vehicles and equipment appropriately cleaned prior to entering the Cooper–Eromanga Basins.	▪ All vehicles involved with the drilling operation were already in service in the Cooper Basin prior to commencing work at

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	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.	▪ Cleaning carried out in accordance with specified company procedures and accepted practices. ▪ Records of vehicle and equipment cleaning are kept and available for auditing. ▪ Detection of exotic weed species as a consequence of industry activities.	the Christies-2 and Christies-3 wells.
6. Minimise impacts to soil.	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. Another potential impact to soil is soil contamination from accidental spillages of chemicals or hazardous during construction and operation.	▪ 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.	▪ For the upgrade of the haul road and the construction of the well pads, 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 *Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia*, 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.	It is recognised that the removal of the overlying gibber mantle inevitably leads to severe gully erosion on the gibber plains with a	▪ The attainment of 0, +1 or +2 GAS Criteria for "Minimise Visual Impact of Abandoned	▪ There are no gibber pavements along the existing access track or at the Christies-2

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	slope greater than 2 degrees in the Cooper Basin[2] . It is therefore important to avoid removal of gibber stones in the construction of well sites and access tracks.	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. ▪ 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.	and Christies-3 well sites.
8. Minimise loss of reservoir and aquifer pressures and contamination of freshwater aquifers.	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. 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	<u>Drilling & Completion Activities</u> ▪ 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	▪ The Christies-2 and Christies-3 wells have been completed for production. When production operations are terminated, the well will be plugged and abandoned in accordance with the requirements of the Cooper Basin Drilling Operations SEO. ▪ Cement plugs will be placed downhole during the well adandonment program to isolate any aquifers and any zones of pressure differential to ensure no

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

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	a case by case basis and procedures implemented to isolate these formations. 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): ▪ Eyre formation; ▪ Winton formation; ▪ 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);	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. <u>Producing Wells</u> ▪ 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. <u>Inactive Wells</u> In the case where a well is suspended for a prolonged period of time: ▪ 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. <u>Well Abandonment Activities</u>	likelihood of crossflow.

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	▪ Basement reservoirs.	▪ 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.	
9. Minimise Impact on Surface Water and Drainage Patterns.	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.	▪ 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.	▪ Christies-2 and Christies-3 well sites were located in an inter-dunal floodplain, approx. 4 kms from any significant drainage features (Cooper Creek). ▪ The access track to the Christies-2 and Christies-3 well sites crosses the Cooper Creek. At the crossing, the channels in the Creek are typically only 30 cms deep. ▪ There was no significant rainfall during the period of the drilling operations.
10. Minimise visual impacts on the natural landscape.	The major impact of well sites and access tracks is their visual impact[3]. Location, construction and restoration practices can significantly reduce the visual impact of well	▪ 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	▪ The wells were drilled alongside the existing Christies production facility which is located some 8 kilometres from the nearest station track.

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

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	sites and access tracks.	Access Tracks" objective listed in Appendix 2.	▪ The station track carries only very occasional tourist traffic. Tourists require permission from the landowner to use the road. The well site is over 120 km from the nearest public road (Moomba to Adelaide). ▪ The Christies facility is located on a clay pan hidden from view between two sand dunes.
11. Minimise risks to the safety of the public and other third parties.	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. 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	<u>Drilling & Completion Activities</u> ▪ 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.	▪ There were no incidents during the drilling operations at Christies 2 and Christies -3 where the safety of the public or third parties was in question. ▪ An Emergency Response Plan was developed for the Christies -2 and Christies – 3 Drilling Operations. ▪ The Christies -2 and Christies -3 wells have been completed for production. When production operations are terminated, the well will be plugged and abandoned in accordance with the requirements of the Cooper Basin Drilling Operations SEO.

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	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 third party safety.	Producing Wells ▪ Adequate signage and precautions taken for warning third parties of the potential danger and to keep away from producing or suspended wells. ▪ 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. Well Abandonment Activities ▪ Downhole abandonment of a well is carried out in accord with company approved procedures to satisfy worst case expected loads and downhole environmental conditions. Well Site Restoration Activities ▪ 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	Plugs will be inserted to isolate potential aquifers penetrated below surface casing as required by the SEO for downhole abandonment. ▪ The well site will also be rehabilitated and restored in accordance with the guidelines set down in PIRSA's *Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia*, to attain the highest feasible GAS rating.

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		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 after Final Cleanup" objective listed in Appendix 2. 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.	
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 *Environment Protection Act 1993*.	▪ 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.	▪ All hard waste was removed from the Christies –2 and -3 well sites 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.	▪ 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	▪ The Christies -2 and Christies -3 well sites were sufficiently distant from any cattle watering point that any threat to the cattle's safety was insignificant, particularly

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
		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 level with the surrounding landscape.	when combined with the low density of cattle in the area.
14. Avoid spills of oil or hazardous material **outside** of impermeable sumps or other areas designed to contain such spills.	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. 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. 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	▪ 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.	▪ 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 Christies-2 and Christies-3 wells are located a substantial distance (approximately 4 kilometres) from the nearest drainage system (the main channel of the Cooper Creek).

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	LEVEL OF ACHIEVEMENT
	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 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].	▪ 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).	▪ 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

A 3D seismic survey, covering 25 square kilometers, was conducted over the Sellicks field in PPL 204, located within PEL 92.

Government approval for Beach to undertake these operations 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's strategies for achieving each of the SEO objectives during the seven days of recording the Sellicks 3D survey 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.**

Goal 1.1 : *Identify important or sensitive environmental and cultural components.*

Beach has an Agreement with the Ngayana Dieri Karna (NDK) Claimant Group, whose Claim Area covers PEL 92. Prior to the commencement of line preparation, a Work Area Clearance was undertaken by representatives of the NDK under the terms of the Agreement. The scouting party inspected a representative sample of the proposed lines.

A report was prepared by the accompanying anthropologist, documenting the locations where deviations would be required to the proposed seismic lines to avoid sites of cultural significance.

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

The western boundary of the Sellicks 3D survey ran roughly parallel to the main channel of the Cooper Creek.

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. A 2D seismic survey was undertaken in the same area during Year 2 of the Licence with no long term environmental impacts evident.

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 92 comprises two land systems : dunefield and floodplain. 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 Sellicks 3D Seismic Survey have been audited against these criteria and the results are presented in the attached tables.

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.

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 Sellicks 3D survey, an assessment of the impacts was undertaken against the first set of GAS criteria. The results of the GAS audit are presented in the attached table, and a report is in preparation.

As part of the assessment, two locations were selected as Environmental Monitoring Points (EMPs) for on going monitoring. The two EMPs, SEL3D04-EMP-01 and SEL3D04-EMP-02, are both situated in a dunefield environment.

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

The seismic recording activities undertaken in the Sellicks 3D survey were similar to many previous seismic surveys undertaken in thes dune field and floodplain environments of the Cooper Basin.

The GAS auditing for this survey showed that line preparation was carried out according to best practice techniques of minimal blading and minimal clearing of vegetation. Previous experience in this area has shown that, by adhering to these line preparation techniques, the combination of wind action and occasional rainfall will revegetate the lines to the point where they will be indiscernible within a few years. There was no indication of any likely long-term adverse impacts.

The technique of weaving the routes of the seismic lines had also been practiced extensively, allowing significant tress to be left standing, which will minimize the visual impact from these operations during the natural rehabilitation process.

The Sellicks production facility, at the centre of the survey, is permanently manned by Beach staff. Progress on the natural rehabilitation of the survey lines surrounding the facility can be monitored on a regular basis.

Non - Compliance with Goal 3.1 of Objective 3 : – Protection of Cultural Heritage Sites.

An incident occurred during the preparation of the survey grid lines, which constituted a non-compliance with Objective 3 (Goal 3.1) –.
…no significant long-term impact on …..cultural sites.

A grader driver working with the line preparation crew became disorientated when attempting to drive his grader from one section of the 3D survey area to another. Extensive local flooding from heavy rainfall during the previous days had prevented the driver from taking the regular route along established tracks.

After becoming disoriented, the driver inadvertently drove the grader a short distance into an area that had previously been classified by a scouting team from the Ngayana Dieri Karna (NDK) as off limits to exploration activities.

The incident was thoroughly investigated to determine why the grader driver was not fully aware of the exact boundaries of this "no go" zone.

A detailed report was prepared and submitted to the NDK, and a meeting was held with their representatives to express Beach's regret for the incident and to discuss proposed modifications to field operational procedures to reduce the likelihood of a similar reoccurrence.

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

Beach Petroleum Limited.: 2004 Sellicks 3D Seismic Survey: Recorded June 26th – 29th, 2004: 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) SEL3D04- EMP-01; Line S580/R144 2) SEL3D04- EMP-02; Line R112/S580	*Impact on infrastructure* 2.6			• N/A	•	•
	Visual impact 2.5, 2.7	•	•	1), 2)	•	•
	Uphole site restoration 2.3, 2.5[e]	•	•	N/A	•	•
Note: GAS scores refer to the area 500m either side of the EMP location	*Pollution or litter* 2.1, 2.2, 2.3, 2.5	1)2)	•		•	•
Dunefield	*Impact on vegetation* 2.1, 2.2[f]	•	1)2)		•	•
	Disturbance to land surface 2.2, 2.3[e]	•	1)2)		•	•

(…/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]	• 1),2)		•	•	•
	Disturbance to land surface 2.2, 2.3, 2.4, 2.5[e]	• 1),2)		•	•	•
Gibber plain and tableland	*Impact on vegetation* 2.1, 2.2	•	•	• **N/A**	•	•
	Disturbance to land surface 2.2, 2.3, 2.5[e]	•	•	• **N/A**	•	•
Salt lake	*Disturbance to land surface* 2.3, 2.5[e]	•	•	• **N/A**	•	•

(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.

C) Production Operations

- ***Sellicks Field***

During Year 2 of the PEL 92 Licence , PIRSA granted Petroleum Production Licence 204, covering the area of the anticipated production field at Sellicks.

Government approval was conditional on Beach committing to achieving the objectives defined in Beach's " Statement of Environmental Objectives – Cooper Basin Petroleum Production Operations (November 2003) ".

Beach is satisfied that the production operations at the Sellicks facility during Year 3 of the PEL 92 Licence have met the objectives required by the SEO, and the spreadsheet below summarises the strategies that were employed to achieve this compliance.

- ***Christies Field***

During **Year 2** of the PEL 92 Licence, Beach was given approval by PIRSA to undertake production testing of the **Christies-1** well. During **Year 3** of the Licence, PIRSA granted Petroleum Production Licence 205, covering the area of the anticipated production field at Christies.

Both these approvals were conditional on Beach committing to achieving the objectives defined in Beach's " Statement of Environmental Objectives – Cooper Basin Petroleum Production Operations (November 2003) ".

Non - Compliance with Goal 3.1 of Objective 3 : – Protection of Cultural Heritage Sites.

An incident occurred during the construction of the Christies production facility, which constituted a non-compliance with Objective 3 (Goal 3.1) –.
…no significant long-term impact on …..cultural sites.

A grindstone artifact was found broken in pieces in the south-east corner of the Christies production lease area. It appears the grindstone had been recently removed in tact from the restricted area to the north of the production pad.

A scouting team from the Ngayana Dieri Karna (NDK) Claimant Group conducted a field investigation shortly after the discovery, and a report was prepared by their accompanying anthropologist. Beach has made inquiries of all its contractors, but has been unable to ascertain who was responsible for this breach of the SEO .

To prevent a recurrence of this incident, it is proposed to fence off the perimeter of the area available for production operations and associated development at the Christies facility. The induction process for contractors will also be further tightened, particularly in respect of their obligations towards the protection of cultural heritage.

Beach is satisfied that, with the exception of the above incident, the production operations at the Christies facility have met the objectives required by the SEO, and the spreadsheet below provides comments on the strategies that were employed to achieve this compliance.

Annual Report for PPL 204 (Sellicks)

The Annual Report for Year 1 of Petroleum Production Licence 204 (Sellicks field) was not submitted by the due date of 11th November, 2004.

Following discussions with PIRSA, it has been decided that the Annual Reports for all Beach Petroleum's PPLs in the Cooper Basin will be combined and submitted as a single document.

The attached spreadsheet provides an assessment of the production operations at Sellicks during Year 1 of the PPL in terms of achieving the environmental objectives required by Beach's Production SEO.

ACHIEVEMENT OF ENVIRONMENTAL OBJECTIVES DURING PRODUCTION FROM SELLICKS (PPL 204) AND CHRISTIES (PPL 205) FIELDS IN PEL 92

LICENCE YEAR 3 : 5th NOVEMBER 2003 TO 4th NOVEMBER 2004

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
1. To avoid unnecessary disturbance to 3rd party infrastructure, landholders or land use	1.1 To minimise disturbance or damage to infrastructure / land use and remediate where disturbance cannot be avoided	Timely notification to adjacent landholders / 3rd party prior to & during new or significant works. Procedures in the POM, EMS and PIRSA guidelines address removal of waste products, re-instatement of soil profiles and rehabilitation. Incident reports	Where disturbance is unavoidable or accidental, infrastructure or land use is restored to as is reasonably appropriate to the original undisturbed condition or as agreed with the landholder	Rehabilitation of the Sellicks and Christies production site to be undertaken in consultation with the landowner when production ceases. No additional land disturbance required outside of the area cleared initially for production.
	1.2 To minimise disturbance to landholders	Records of communications with adjacent landholders / 3rd parties Record of disturbance management through appropriate documentation	No unresolved reasonable landholder/3rd party complaints Landholder activities not restricted or disturbed as a result of activities unless by prior arrangement	The facilities are at least 10 kms from the nearest dwelling.
2. To maintain soil stability / integrity	2.1 To remediate erosion as a result of production operations in a timely manner	Inspections undertaken as part of regular patrols or following specific works or following significant storm events to look at evidence of erosion, subsidence, vegetation loss & compare to adjacent land Preventative measures implemented and monitored in susceptible areas (eg. monitor for salinisation/erosion effects)	The extent of soil erosion is consistent or less than surrounding land	No significant erosion has been reported either at the facilities or along the access roads.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
	2.2 To prevent soil inversion	Inspections undertaken as part of regular patrols to look for soil discolouration and the success of vegetation return as an indicator Contractor to indicate top soil/subsoil are stockpiled separately and soil profiles appropriately reinstated following the rehabilitation of earthworks/excavations	Vegetation cover is consistent with surrounding land No evidence of significant subsoil on surface (colour)	Topsoil was stockpiled when the sites were originally cleared for the drilling operations. Rehabilitation of the Sellicks and Christies production sites will be undertaken when production ceases.
	2.3 To minimise and remediate soil disturbance	Restrict activities (including vehicle access) to production areas and associated infrastructure and easements Minimise area required for safely undertaking activities in accordance with procedures Planning and assessment of proposed activities to minimise impact Design and construct road with drainage features (e.g. culverts and offtakes) to minimise erosion and sedimentation Rip areas of compacted soil (except on gibber plains and tableland environments Restored borrow pits have topsoil / overburden replaced and pit re-profiled where necessary to prevent erosion Contractor to indicate that soil profiles appropriately reinstated following the rehabilitation of earthworks/excavations	No production activities undertaken on salt lakes, steep tableland land systems or wetlands land systems (as defined in the EIR) Abandoned areas (e.g. borrow pits) are remediated and rehabilitated to be reasonably consistent with the surrounding area 0, +1 or +2 GAS criteria for borrow pit construction and rehabilitation are attained (Appendix B)	All vehicle movements are restricted to the designated access roads and the production facility areas. Sellicks and Christies production sites and access track are located in a dunefield environment. The clay surface on the access road minimises disturbance to the soil beneath. No significant drainage channels are traversed by either the access roads or the production sites. Rehabilitation of the Sellicks and Christies production sites and access tracks will be undertaken in consultation with the landowner when production ceases.
3. To minimise disturbance to native vegetation	3.1 To maintain regrowth of native vegetation on reinstated areas to be consistent with surrounding area	Disturbance management to facilitate regrowth in rehabilitated areas Follow-up rehabilitation work was undertaken where natural regeneration was inadequate	Species abundance and distribution on the reinstated areas was consistent with the surrounding area Note: assessment of the consistency with surrounding areas will take into account that regrowth is a time and rainfall dependent process 0, +1 or +2 GAS criteria for borrow pit construction and rehabilitation are attained (Appendix B)	Rehabilitation of the Sellicks and Christies production sites will be undertaken in consultation with the landowner when production ceases.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
	3.2 To minimise additional clearing of native vegetation as part of production activities	Planning and assessment of proposed activities to minimise impact which may include consultation with Native Vegetation Council Avoid significant or priority vegetation and ensure proposed routes have been scouted for significant vegetation and wildlife habitats by appropriately trained and experienced personnel Use existing cleared areas for laydowns and turn-arounds Consideration of sensitive vegetation during vegetation trimming and / or clearing activities Vegetation trimmed rather than cleared where possible Minimise area required for safely undertaking activities in accordance with procedures	Vegetation clearing is limited to previously disturbed areas or areas assessed to be of lowest sensitivity No rare, vulnerable or endangered flora removed without appropriate permits No production activities undertaken on salt lakes, steep tableland land systems or wetlands land systems (as defined in the EIR) 0, +1 or +2 GAS criteria for borrow pit construction and rehabilitation are attained (Appendix B)	No vegetation clearing was undertaken during the reporting period. Vegetation along the access tracks , and in the area of the facilities , is quite sparse.
	3.3 To ensure production activities are planned and conducted in a manner that minimises impacts on native fauna	Planning and assessment of proposed activities to minimise impact In event of earthworks, open trenches are monitored daily and not left open for more than 72 hours	Vegetation clearing is limited to previously disturbed areas or areas assessed to be of lowest sensitivity No rare, vulnerable or endangered fauna removed without appropriate permits 0, +1 or +2 GAS criteria for borrow pit construction and rehabilitation are attained (Appendix B)	No record of rare, vulnerable or endangered fauna in either areas.
	3.4 To minimise disturbance of aquatic habitats (specifically wetlands, permanent waterholes and flowing water courses)	Obtain regulatory approval prior to undertaking disturbance in aquatic habitat (contact should be initially made with PIRSA during the planning process) Planning and assessment of proposed activities to minimise impact	Works in aquatic habitats (e.g. flowing watercourses) has been approved by PIRSA	Sellicks and Christies facilities are both approx. 4 kms from the nearest significant watercourse (Cooper Creek) which flows only during large flood events (1 in 5 years)

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
4. To prevent the introduction or spread of weeds, pathogens and pest fauna	4.1 To ensure that weeds, pathogens and pest fauna are controlled at a level that is at least consistent with adjacent land	Regular patrols undertaken to look for evidence of weeds on production site and adjacent land (if weeds on production facility or easement but not adjacent land must implement control to prevent spread) Records of outbreaks found, weed control activities and photo-monitoring of significant outbreaks	The presence of weeds and pathogens was consistent with or better than adjacent land No new outbreak or spread of weeds reported	No new outbreak or spread of weeds reported.
5. To minimise the impact of the production operations on water resources	5.1 To maintain current surface drainage patterns	Regular patrols undertaken to look for evidence of erosion, abnormal vegetation growth or death Observations are also to be undertaken following significant storm events	For excavations, surface drainage profiles restored to as is reasonably consistent with surrounding area For existing easements, drainage is maintained similar to pre-existing conditions	No water courses in the vicinity of the production facilities, nor crossing the access roads.
	5.2 To minimise impact to aquifers / groundwater volumes and flow patterns	The volume/flow of water extracted is monitored and recorded Water usage is to be reviewed annually and management strategies implemented to reduce overall water usage where practical	Volume of water produced recorded No uncontrolled flow to the surface (i.e. no free flowing bores) Note: the drilling and well operations SEO provides detail on aquifer issues	The volume of water extracted in the production operations is monitored and recorded.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
6. To avoid land or water contamination	6.1 To prevent spills occurring and if they occur minimise their impact	All production facilities and flowlines are designed and constructed in accordance with relevant standards Containment of all hazardous substances including hydrocarbons and liquid waste in appropriate vessels and bunds Tanker load-out in lined area, with appropriate bunding to contain spills Roads and causeways designed to minimise risk of vehicle accident and appropriate safety signage installed (e.g. at access to public roads) Fuel and chemical handling and emergency response procedures included in staff training, implemented and reviewed periodically Transport procedures and restrictions to achieve compliance with POM and EMS (including no transport in wet conditions and no wet wheel fording) Implement POM procedures for temporary product storage pits Prevention program including inspection, maintenance and pigging where appropriate Patrols to look for evidence of soil discolouration, vegetation or fauna death Production operations will cease in event of flood inundation. In floodplain land systems, the following will be undertaken: ▪ Storage tanks and flowlines drained, purged and filled with water to reduce buoyancy ▪ Interceptor pit skimmed to remove oil ▪ Fuel tanks drained, engines and all hydrocarbons (e.g. fuel and lubricants) removed off-site Fencing of contaminated areas if threat is posed to stock or wildlife Incident record system (preventative and post incident review)	No evidence of any spills or leaks to areas not designated to contain spills In the event of a spill, the spill was: ▪ Contained ▪ Reported ▪ Cleaned-up ▪ Cause investigated and corrective and/or preventative action implemented Compliance with the Environment Protection Act, Australian Standard 1940 and the Australian Dangerous Goods Code.	No spills outside of bunded areas during the reporting period.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
	6.2 To remediate and monitor areas of known contamination arising from production activities (salinisation, hydrocarbons, other production chemicals)	Incident record system (preventative and post incident review) Active remediation methods implemented where it is determined that contamination is spreading or level of contamination is not decreasing Use of groundwater monitoring bores. The number and positioning of monitoring bores will be in accordance with relevant industry practice to ensure adequate coverage of any potential underground water contamination and movement. Use of soil farms for remediation where appropriate	Contamination restricted to known areas and remediation strategies investigated and implemented where practical. Level of hydrocarbon contamination continually decreasing, ultimately to meet Environment Protection Authority (EPA) guidelines[1]	
	6.3 To ensure that rubbish and waste material is disposed of in an appropriate manner	Minimise generation of waste where practicable Provide suitable bins for the collection and storage of wastes and collect all waste in one area at each camp site Design and operation of any domestic waste disposal facility in accordance with EPA licence and guidelines Regular patrols undertaken to look for evidence of rubbish, spills (soil discolouration) Appropriately licensed contractors used for any hazardous waste disposal and records are maintained for all hazardous waste disposal All transported waste is adequately secured to the vehicle	No evidence of rubbish or litter on easements or at facilities No evidence that waste material is not contained and disposed of in accordance with Beach approved procedures Evidence of waste tracking certificates for prescribed wastes Evidence of compliance with any waste disposal licence conditions (e.g. EPA permits)	All waste material was disposed of in accordance with Beach approved procedures.

[1] Soil Health Index (SHI) study is currently being undertaken by Santos, in consultation with PIRSA and EPA. The results of this study will provide a proforma for establishing site-specific bench marks for soil remediation.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
	6.4 To prevent impacts as a result of hydrotest water and waste water (e.g. washdown water) disposal	Water disposed of in a manner that prevented discharge or runoff to watercourses or environmentally sensitive areas Water discharged onto stable ground, with no evidence of erosion as a result of discharge Records on source of water and discharge method/location Use of biocides and toxic chemicals are kept to a minimum and where practicable UV-degradable biocides (e.g. TPHS) shall be used Appropriate assessment of hydrostatic test water quality to determine disposal method Inspection of water disposal sites for evidence of water entering a watercourse or environmentally sensitive area	No evidence of impacts to soil, water and vegetation as a result of water disposal (i.e. soil erosion, dead vegetation, water discoloration)	
	6.5 To ensure the safe and appropriate disposal of grey water (sullage, sewage)	Compliance with the relevant local government regulations or relevant health and sanitation regulations	No evidence of non-compliance with local or state government regulations	Grey water disposed of in accordance with state government regulations.
	6.6 To minimise impacts as a result of produced formation water treatment and disposal and restrict to defined areas	Produced formation water treatment and disposal in accordance with Beach approved procedures in POM and EMS Site ponds appropriately[2] to minimise potential impacts Fence contaminated areas if threat is posed to stock or wildlife Monitor evaporation pond water and sludge annually Monitor ponds for surrounding upwelling of PFW Undertake appropriate water quality monitoring where shallow groundwater exists in the vicinity of PFW ponds Records of volumes of produced formation water maintained and reported annually	Water monitoring results indicated levels of Total Petroleum Hydrocarbons (TPH) below 30mg/L in bunded holding ponds and 10mg/L in bunded and / or freeform evaporation ponds No evidence of overflow of product from interceptor pit No evidence of hydrocarbon contamination immediately adjacent to bunded ponds	Produced water from the Sellicks-1 well is separated through a skimmer pond, then disposed into an evaporation pond, all within the fenced compound of the facility. Hydrocarbon levels in the disposed water were monitored and found to be within the industry standard limits. Integrity of the Sellicks evaporation pond is checked regularly by the operators based at the Sellicks field. Water produced at the Christies field is disposed into a bunded pond. Water handling facilities at Christies are to be substantially upgraded during the first quarter of 2005.

[2] Appropriately manage means to take into consideration and assess relevant environmental factors (including location of surface water, shallow groundwater, potential flooding, location of vegetation, etc.) and take measures to reduce the potential impact on these factors through the use of best practice.

Objective	Goal	Measure / How	Objective Achieved	Performance Against Objectives
	6.7 To minimise impacts as a result of land treatment units and restrict to defined areas	Land treatment areas constructed and operated in accordance with procedures Records of soil added to land treatment areas to be maintained and reported annually (including quantity, location of source) Monitoring of surrounding soil and groundwater for contaminants annually as required by licence Monitoring and reporting of remediation	Periodic reports as required detail quantity, level of contamination and proposed ongoing operation of the LTU	There are no land treatment units at either Sellicks or Christies. In the event that soil becomes contaminated, it is taken to a registered soil treatment area.
7. To minimise the risk to public health and safety	7.1 To adequately protect public safety during normal production operations	Risk Assessments and inspections of facilities Use of signage, bunting and traffic management practices to identify all potentially hazardous areas Records of regular emergency response training for employees and review of procedures Incident record system (preventative and post incident review) Development, implementation and periodic review of Emergency Response Plan (ERP) All production facilities and flowlines are designed and constructed in accordance with relevant standards Safety, testing, maintenance and inspection procedures are implemented Personnel are trained to supervise and instruct individuals entering area to conduct work Safe work permits must be obtained to ensure only individuals with proper clearance can conduct works	No injuries or incidents involving the public Demonstrated compliance with relevant standards Emergency procedures implemented and personnel trained	No incidents of risk to public health and safety during the reporting period.

	7.2 To avoid fires associated with production activities	Incident record system (preventative and post incident review) Regular fire safety and emergency response training for all operations personnel and review of procedures Established procedures for minimising fire risk during operations All production facilities are designed and constructed in accordance with relevant standards Appropriate fire fighting equipment on site	No uncontrolled operations related fires Emergency procedures implemented and personnel trained	No fires occurred at either facility during the reporting period. Landowner (and government) have given approval that , in the event of a fire at either facility, if the first attack on the fire fails, it can be left to burn itself out.
	7.3 To prevent unauthorised access to production facilities	Use of signage, bunting to identify all potentially hazardous areas Communications with landholders All reports of unauthorized activity are reported and investigated	No unauthorised activity	No incidents of unauthorised entry to either the Sellicks or Christies facility.
8. Minimise impact of emergency situations	8.1 To minimise the impact as a result of an emergency situation or incident	Incident record system (preventative and post incident review) Emergency response trials and associated documentation Records of regular emergency response training for all personnel and review of procedures	Emergency response procedures are effectively implemented in the event of an emergency Emergency response exercises are aligned with credible threats and consequences identified in the risk assessment	No emergency situations arose at either the Sellicks or Christies facilities during the reporting period. Beach HSE system includes periodic simulation of Emergency situations at production facilities.
	8.2 To restore any damage that may occur as a result of an emergency situation	Refer to previous criteria (Objective 1, 2, 3 & 6)	Refer to previous criteria (Objective 1, 2, 3 & 6)	
9. To minimise noise due to operations	9.1 To take reasonable practical measures to comply with noise standards	Incident record system (preventative and post incident review) Monitoring results, where deemed necessary (e.g. frequent complaints)	Operational activities have taken reasonable practical measures to comply with noise regulations, under the Environment Protection Act 1993 No unresolved reasonable complaints	Sellicks and Christies facilities are both at least 10 kilometres from the nearest dwelling.
10. To minimise atmospheric emissions	10.1 To minimise uncontrolled atmospheric emissions	Conduct all production activities in accordance with procedures Identify and implement strategies to minimise volume s if needed	Reasonable practical measures implemented in design and operation to minimise emissions	The only source of atmospheric emissions at both Sellicks and Christies are the diesel engines driving the beam pumps on the well heads.

	10.2 To minimise controlled atmospheric emissions	Conduct all production activities in accordance with procedures Identify and implement strategies to minimise volumes if needed Record and report annual emission volumes	Reasonable practical measures implemented in design and operation to minimise emissions Annual report includes atmospheric emissions data	
	10.3 To minimise the generation of dust.	Incident record system (preventative and post incident review) Compliance with procedures (vehicle movement, dust suppression, etc.)	No reasonable complaints received No dust related injuries recorded	Sellicks and Christies facilities are approximately 10 kms from nearest dwelling. Traffic along the joint access road is typically up to a maximum of four road tanker per day.
11. To adequately protect cultural heritage sites and values during operations and maintenance	11.1 To ensure that identified cultural sites are not disturbed	Consultation with relevant heritage groups if operations occurring outside known surveyed areas Surveys / cultural heritage monitoring before excavations Records of site locations within information systems Site examined by relevant aboriginal claimant group for cultural heritage material prior to work on areas not previously cleared	Proposed construction areas and access tracks surveyed by relevant cultural heritage group Any new sites identified are recorded and reported to appropriate authority No impact to identified sites	A grindstone artifact was found broken in pieces in the south-east corner of the Christies production lease area. It appears the grindstone had been recently removed in tact from the restricted area to the north of the production pad. A scouting team from the Ngayana Dieri Karna (NDK) Claimant Group conducted a field investigation shortly after the discovery, and a report was prepared by their accompanying anthropologist. Beach has made inquiries of all its contractors, but has been unable to ascertain who was responsible for this breach of the SEO . To prevent a recurrence of this incident, it is proposed to fence off the perimeter of the area available for production operations and associated development at the Christies facility. The induction process for contractors will also be further tightened, particularly in respect of their obligations towards the protection of cultural heritage.