



**PEL 92
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. 92 is situated on the western 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 Status

The working interests in PEL 92 at the end of this reporting period were:

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

The agreed work commitments for PEL 92 are summarized 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; 390 km reprocess seismic
Year 2 (5/11/02-4/11/03)	One well; 100km 2D seismic; reprocess 50km of existing seismic	
Year 3 (5/11/03-4/11/04)	50km 2D seismic	
Year 4 (5/11/04-4/11/05)	One well; 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.

3 Exploration Activity

3.1 Drilling.

One exploration well, Sellicks-1, was drilled in the permit during the year. It spudded on 16/07/02 and drilled to a total depth of 2242 metres. Sellicks-1 intersected an Eromanga section overlying a partially eroded and sub-cropping Patchawarra Formation. The well successfully tested oil from two sandstones within the basal Patchawarra Fm and was cased, completed and flow-tested prior to releasing the rig.

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

The Sellicks-1 well is currently undergoing an extended production test prior to evaluation of further field development options.

3.2 Seismic Data Acquisition

A total of 296km of seismic data (part of the "Nautilus" survey) were acquired during 2002. This total compares with a commitment program of 200km in Year 1 and 100km in Year 2.

3.3 Seismic Data Processing/ Reprocessing

In addition to processing the Nautilus survey data, the Joint Venture also re-processed a total of 390 km of existing seismic data. This total compares with a commitment program of 300km in Year 1 and 50km in Year 2.

3.4 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 Sellicks-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 table below.

<u>Title</u>
Sellicks-1 Well Proposal
Sellicks-1 Drilling Program
Sellicks-1: Proposal for Production Testing

4.3 Planned Exploration Program for Year 2

One exploration well (nominally "Brighton-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 seismic work commitment for Licence year 2 has already been 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 \$320,000. The program aims to further detail leads in the Sellicks-Lycium region and to improve definition of Jurassic leads to the west and southwest of Sellicks.

In addition, a total of 250km of seismic reprocessing is also proposed, mainly in the Lycium and Lhotsky areas of the permit.

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 92
Annual Report - Licence Year 1
5th November 2001 to 4th November 2002

Statement of Expenditure

Commercial in confidence

Enclosures :

Annual Compliance report for PEL 92 – Year 1

- Appendix 1
- Appendix 2

ANNUAL
COMPLIANCE
REPORT

FOR

PEL 92 - YEAR 1

(NOVEMBER 2001 - OCTOBER 2002)

COOPER BASIN, SOUTH AUSTRALIA



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,
- 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

There were no instances of non-compliance with either the 2000 Petroleum Act or the terms of the Licence during Year 1 of PEL 92.

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 Sellicks-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 field operations** in PEL 92.

The 2002 Nautilus Seismic Survey included 296 kilometres of survey lines in PEL 92. Recording of the Nautilus 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 in Permit Year 2.

Work commitments for Year 1 of PEL 92 called for the **reprocessing** of 300 kms of archive seismic data. To achieve optimum results when merging the reprocessed data with the newly acquired data from the 2002 Nautilus Survey, it is necessary that both the new and old data sets be processed together. For further efficiency, the processing of the PEL 92 data needed to be combined with the data processing required to satisfy the work commitments for PELs 91, 94 and 95.

The combined project involves the processing of over 2,064 kilometres of data. Completion of this work is not expected until the second quarter of 2003.

In the course of the field operations for the Nautilus Survey, there was one incidence of non-compliance with the SEO under which the operations were conducted. The circumstances relating to this incident and the subsequent action to rectify the non-compliance are reported in the following section of this Report ("SEO-Seismic").



Record of Non - Compliance with Regulations

Permit : PEL 92 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 is 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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Sellicks-1 Digital Wireline Data - Late submission	28/08/2002	Digital log data submitted 19 / 12 / 02	Final header information (survey location) was not available until the end of the 4 - well program.
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Seismic			
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SEO Non Compliance	Date	Incident Date & Description	Resolution
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Exclusion Zone Incursion		On 3rd July 2002, a seismic line preparation crew accidentally drove two heavy vehicles onto a claypan which had previously been identified as an area to be excluded from exploration or production activities.	Beach invited representatives of the NDK to a Meeting to apologise for the incident and discuss methods for improving communications systems with the field personnel. An extensive Report was prepared and submitted to PIRSA.
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Report Non Compliance	Date Due	Report Name	Resolution
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No seismic Reports are 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 92 Year 1 : *5 November 2001 - 4 November 2002*

Well Name : **Sellicks -1** Commenced Drilling Operations : 17th July 2002 Completed Drilling Operations : 2nd 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	12-Jun-02	28-Feb-02	Exploration Manager	Updated version
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	26-Jun-02	8-Apr-02	Exploration Manager	
		National Parks;	21 days prior to proposed start date	26-Jun-02	Not Required		
		Native Title Claimant(s);	21 days prior to proposed start date	26-Jun-02	8-Apr-02		
		other PEL or PL licensees as appropriate.	21 days prior to proposed start date	26-Jun-02	Not Required		

CHECKLIST FOR SUBMISSION OF DRILLING REPORTS TO PIRSA

Permit : PEL 92 Year 1 : 5 November 2001 - 4 November 2002

Well Name : **Sellicks -1** Commenced Drilling Operations : 17th July 2002 Completed Drilling Operations : 2nd 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.	2-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.	2-Feb-03	Not due until Permit Year 2	Exploration Manager		
Well Completion Report		PIRSA	Within 6 months of rig release.	2-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 92 Year 1 : 5 November 2001 - 4 November 2002

Geophysical Data	Specifics	Format	Transmittal	Sent to	Time Period	Due Date	Comments
Survey Name : 2002 Nautilus Seismic Survey							
Completed Recording 19th October 2002							
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			Within 6 months of completion of recording of the data (19th October)	19-Apr-03	<i>No Data or Reports for the Nautilus Survey are required to be submitted until after the end of Permit Year 1</i>
Geophysical Data - Seismic	Seismic Field Data				Same time as associated Operations Reports	19-Apr-03	
Geophysical Data - Seismic	Obs Logs	GDA 94				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					19-Apr-03	
Geophysical Interpretation Reports		Hardcopy, PDF			Within 6 months of completion of processing of data	Processing of data from Nautilus Survey will not be completed until Year 2 of the Licence.	
Geophysical Data - Seismic	Processed 3D data vols and velocities					N / A	No 3D surveys recorded during Permit Year
Geophysical Data - Seismic	Processed 3D time slices (if they have been produced)					N / A	No 3D surveys recorded during Permit Year
Geophysical Data	Any other field acquisition data!!!!					N / A	
Reprocessing of 390 kms							
Geophysical Operations Reports - reprocessing		Hardcopy, PDF			Within 2 months of completion of reprocessing data	19-Apr-03	Reprocessing will be completed at the same time as the processing of the new data from the Nautilus survey. Reports relating to the reprocessing will be included with Operations and Interpretation Reports for the Nautilus Survey.
Geophysical Interpretation Reports		Hardcopy, PDF			Within 6 months of completion of reprocessing data	19-Apr-03	
Geophysical Data - Seismic	Reprocessing - transcribed copy of field data				Same time as associated Operations Reports	19-Apr-03	
Geophysical Data - Seismic	Reprocessing - field tape transcription log					19-Apr-03	
Geophysical Data - Seismic	Reprocessing - tape & file listing of field data that has been copied & reprocessed					19-Apr-03	

Statements of Environmental Objectives.

A) Drilling Operations

Government approval for Beach to drill the Sellicks-1 well 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 “.

The Sellicks-1 well was successful in discovering a commercial oil reservoir, with production commencing in early December, 2002 (Year 2 of the Licence).

Rehabilitation of the well site will not commence until production operations cease. 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 : SELLICKS-1

PEL No. : 92

DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<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 Ngayana Dieri Karna Native Title Claimant group which specifies the requirements for scouting proposed well sites and access tracks to identify and avoid areas of heritage value and archaeological significance. ▪ Joint site visits were carried out with the Native Title Claimant group. The proposed drilling location and access route were agreed and given heritage clearance. ▪ An area of significance was identified, recorded and marked as an exclusion zone. ▪ Prior to the commencement of drilling operations, a subcontractor associated with nearby seismic survey operations mistakenly drove two vehicles into an exclusion zone which had been identified adjacent to the well site. Beach investigated and prepared a report on the incident to the satisfaction of the Native Title Claimant group.
<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 presented no danger of 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 : SELLICKS-1 PEL No. : 92 DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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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 wellsites 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"> ▪ Wellsite access used an existing station track which passed within 50 metres of the well location. No new access route needed to be cleared. ▪ The wellsite area contained only sparse grassy vegetation. No trees or shrubs needed to be cleared. ▪ As the well is now successfully producing oil, the well site will not be 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 <i>Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia</i>, to attain the highest
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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 : SELLICKS-1

PEL No. : 92

DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
		legislation on dangerous substances.	feasible GAS rating. <ul style="list-style-type: none"> ▪ 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.
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. ▪ Detection of exotic weed species as a consequence of industry activities. 	<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 Sellicks well.

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

WELLNAME : SELLICKS-1

PEL No. : 92

DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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 a number of borrow pits alongside the access track. ▪ As the well is now successfully producing oil, the well site will not be 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 <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. ▪ The access track will remain as a station track for hauling cattle road trains as requested by the landowner.
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. ▪ Gibber mantle on access tracks has not 	<ul style="list-style-type: none"> ▪ There are no gibber pavements along the proposed access track or at the Sellicks well site.

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

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

PEL No. : 92

DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
		<p>been removed, only rolled to allow vehicle and equipment access.</p> <ul style="list-style-type: none"> ▪ 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; ▪ Mackunda formation; ▪ Coorikiana sandstone; ▪ Cadna-owie 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. <p><u>Producing Wells</u></p> <ul style="list-style-type: none"> ▪ Monitoring programs, carried out in accord 	<ul style="list-style-type: none"> ▪ The Sellicks 1 well has been completed for production. When production operations are completed, the well will be plugged and abandoned in accordance with the requirements of the Cooper Basin Drilling Operations SEO. ▪ Cement plugs will be placed to isolate any aquifers penetrated below surface casing, and any zones of pressure differential, to ensure no likelihood of crossflow.

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

WELLNAME : SELLICKS-1

PEL No. : 92

DATE : AUGUST 2002

OBJECTIVE	COMMENT	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
	<ul style="list-style-type: none"> ▪ Nam ur 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>with company approved procedure(s), demonstrate no crossflow or fluid migration occurring behind casing.</p> <ul style="list-style-type: none"> ▪ 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> 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. 	
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.	<ul style="list-style-type: none"> ▪ Oil well producing operations shut in during periods of flood inundation. ▪ Upon completion of drilling, mud pits 	<ul style="list-style-type: none"> ▪ Sellicks well site is located in an interdunal floodplain, and is approximately 4 kms from any significant drainage

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
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	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>allowed to dry out and then backfilled level with the surrounding landscape.</p> <ul style="list-style-type: none"> ▪ Access tracks have been designed and located to avoid any diversion of water during flood inundation. 	<p>features.</p> <ul style="list-style-type: none"> ▪ The access track does not cross any significant watercourses or drainage features. ▪ There was no rainfall during the period of the drilling operations. ▪ Subsequent local flooding has occurred since the drilling operations were completed. There have been no observed impacts on surface water or drainage patterns due to the site facility.
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 sites and access tracks.	<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 on a private station track, 80 kilometres from the nearest public road (Moomba to Adelaide). ▪ At the conclusion of production operations, 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>
11. Minimise risks to the safety of the public and	The criteria for assessing the achievement of this objective have been developed on the	<p><u>Drilling & Completion Activities</u></p> <ul style="list-style-type: none"> ▪ Casing design (including setting depths) 	<ul style="list-style-type: none"> ▪ There were no incidents during the drilling operations where the safety of the public or

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

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<p>other third parties.</p>	<p>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 third party safety.</p>	<p>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.</p> <ul style="list-style-type: none"> ▪ 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 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. 	<p>third parties was in question.</p> <ul style="list-style-type: none"> ▪ The Sellicks 1 well has 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. 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 <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. ▪ Appropriate signage and fencing has been installed at the facility to isolate it from third parties. The facility is permanently manned. ▪ An Emergency Response Plan has been developed for the Sellicks Production Operations.

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		<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 after Final Cleanup" objective listed in Appendix 2. <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 	<ul style="list-style-type: none"> ▪ All hard waste was removed from the Sellicks well site in accordance with Beach's policy set out in the company's

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		Appendix 2. <ul style="list-style-type: none"> ▪ 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. 	Drilling Operations Manual. <ul style="list-style-type: none"> ▪ 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 level with the surrounding landscape. 	<ul style="list-style-type: none"> ▪ The Sellicks 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. ▪ The production facility at Sellicks is suitable fenced to protect any cattle from injury.
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;	<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 Sellicks well is well removed (approximately 4km) from the nearest drainage system (the main channel of the Cooper Creek).

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	<p>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 into sensitive environments such as creeks and wetlands.</p>		
<p>15. In the event of an oil spill, minimise the impacts on fauna, flora, soil, livestock and surface and ground water.</p>	<p>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 effect⁴.</p>	<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 	<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

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		<p>undertaken promptly by the licensee.</p> <ul style="list-style-type: none"> ▪ 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). 	

B) Seismic Operations

Government approval for Beach to undertake its Seismic Operations in PEL 92 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 are outlined below.

Beach is satisfied it achieved each of the objectives listed in the SEO, with the exception of one incident which contravened Goal 3.1 of Objective 3 : “.... *no significant impact on cultural sites* “.

An extensive report on this incident concluded that, to avoid a recurrence, communications with the various field contractors needed to be upgraded, particularly with regard to the locations of areas identified in Work Area Clearances as areas to be excluded from field operations.

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.*

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. The report 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 on cultural heritage issues for this area, with particular emphasis on identification and avoidance of significant cultural material.

Several of the seismic lines crossed the Cooper Creek. However, due to the flat terrain in this region, the Creek is, in most places, a broad stretch of shallow, braided washaways, rather than definitive steep sided channels. Accordingly, the access tracks crossing the Cooper Creek will have negligible disturbance to the natural flow of the 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.

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 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). Two of these EMPs, (4) and (6), are located in PEL 92. EMP – 4 is in a dunefield environment, and EMP – 6 is in a floodplain 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 recently 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 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.

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

An incident occurred near the Sellicks well site on 3rd July 2002 which constituted a non-compliance with Objective 3 (Goal 3.1) –
...no significant long-term impact oncultural sites.

While camped near the Sellicks well site, contractors engaged to prepare the seismic lines for the Nautilus survey drove two heavy vehicles on to a nearby claypan to turn them around, unaware the claypan had been identified as an “exclusion zone” by an earlier Work Area Clearance survey.

The incident was thoroughly investigated to determine why the line clearing crew were unaware that the claypan was part of the “exclusion zone”. A detailed report was prepared and submitted to the Ngayana Dieri Karna (NDK) Native Title Claimant Group and PIRSA, and a meeting convened with representatives of the NDK to express the company’s regret for the incident and its proposals to improve internal communications to reduce the chances of a similar reoccurrence.

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.