



## **Annual Report**

**Licence Year 4 of Term 1**

**15 April 2011 to 14 April 2012**

**Petroleum Exploration Licence (PEL) 218**

**South Australian Cooper Basin**

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## **1      Introduction**

Petroleum Exploration Licence (PEL) 218 was granted on 1 November 2007. The Licence is located within the Nappamerri Trough in the Cooper/Eromanga Basin, South Australia.

This Annual Report for PEL 218 details the work conducted during the period 15 April 2011 to 14 April 2012 which marks Licence Year 4 of the First Licence Term. This Annual Report has been prepared in accordance with Regulation 33 of *the Petroleum and Geothermal Energy Act 2000 (the Act)*.

## **2      Permit Summary**

PEL 218 was originally awarded in November 2007 to:

- Adelaide Energy Limited                    100%

Beach Petroleum Limited farmed into the Licence on 29 May 2009. The current registered interests in the Licence are:

- Adelaide Energy Limited                    10%
- Beach Energy Limited (Operator)        90%

### 2.1 Work Commitments

The original work commitments for the first Term of PEL 218 are detailed in Table 1 below.

**Table 1- Original Work Program Commitments by Licence Year (as at 1 Nov 2007)**

<b>Permit Year</b>	<b>Licence Dates</b>	<b>Minimum Work Requirements</b>
Year 1	1 November 2007 - 31 October 2008	Drill 2 wells, acquire 180 km 2D seismic plus G and G studies
Year 2	1 November 2008 - 31 October 2009	Drill 1 well, acquire 100 km 2D seismic plus G and G studies
Year 3	1 November 2009 - 31 October 2010	Drill 1 well, acquire 100 km 2D seismic plus G and G studies
Year 4	1 November 2010 - 31 October 2011	Drill two wells
Year 5	1 November 2011 - 31 October 2012	Drill two wells

Previous PEL 218 Annual Reports have summarised the variations to the original work commitments and licence years. During the current reporting period, DMITRE approved a substitution of the Year 3 work commitment. The substitution was to remove one well commitment in Year 3 and substitute for multi-zone fracture stimulation of Holdfast-1. A variation to the work program was also approved by DMITRE on 26 October 2011 to move the 2D seismic acquisition from Year 3 to Year 4 of the licence term.

The current work program commitments for the first Term of PEL 218 are detailed in Table 2. This table also reflects changes to licence dates as a result of a previous licence suspension and suspension / extension of work commitments.

Actual work completed up until the 14 April 2012 is provided in Table 3.

Table 2 - Final Work Program Commitments by Licence Year (varied 26 Oct2011)

<b>Permit Year</b>	<b>Licence Dates</b>	<b>Minimum Work Requirements</b>
Year 1 (firm)	1 November 2007 - 31 October 2008	Acquire 218 km 2D seismic; G & G studies
Year 2 (firm)	1 November 2008 – 14 April 2010	Drill 1 well; acquire plus G & G studies
Year 3 (firm)	15 April 2010 - 14 October 2011	Drill 2 wells; G & G studies Substitute third well for fracture stimulation/flow testing at Holdfast-1
Year 4 (firm)	15 April 2011 – 14 October 2012	Acquire 162 km 2D seismic; Drill two wells
Year 5	15 April 2012 – 14 October 2013	Drill two wells

Table 3 - Work Program and Work Completed by Licence Year (at 14 April 2012)

<b>Permit Year</b>	<b>Minimum Work Requirements</b>	<b>Work Completed</b>
Year 1 (firm)	Acquire 218 km 2D seismic; G & G studies	Acquired 218 km Wakefield 2D seismic, G & G studies
Year 2 (firm)	Drill 1 well; G & G studies	Drilled Wakefield-1 G & G studies
Year 3 (firm)	Drill 3 wells; G & G studies	Holdfast-1, Encounter-1, Fracture Stimulation of Holdfast-1, G & G studies
Year 4	Acquire 162 km 2D seismic; Drill 2 wells	Acquired 300 km Regius 2D seismic, Drilled Moonta-1
Year 5	Drill two wells	

## 2.2 Associated Activities Licence

An Associated Activities Licence (AAL) 170 was awarded to Beach Energy 90% and Adelaide Energy 10% effective from 20 January 2012. The AAL was granted to allow the acquisition of the Regius 2D seismic survey over adjacent permits.

## **3      Regulated Activity**

Pursuant to Regulations 33(2) (a), an Annual Report must include:

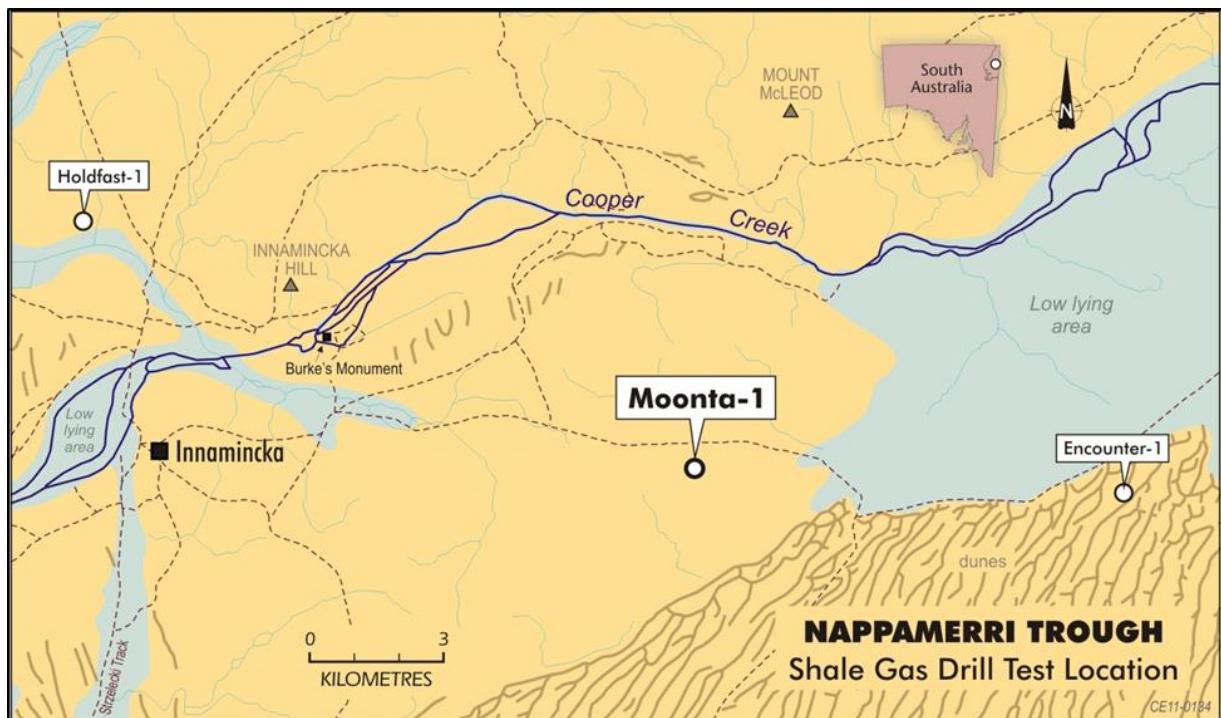
*"a summary of the regulated activities conducted during the licence year."*

### **3.1    Drilling**

Moonta-1 was drilled in the permit during Licence Year 4. Moonta-1 was drilled as a vertical exploration well largely to address the basin centred gas play in the Permian Formations within the Nappamerri Trough, a play that had been identified by Holdfast-1 and Encounter-1, but also to test the continuity of the shale targets throughout the permit.

Moonta-1 reached a depth of 2932 mRT before logging tools become stuck in the hole. Drilling continued via a side-track at kick-off of approximately 2634 mRT. Moonta-1 Side Track-1 was drilled to a total depth of 3810 mRT in the Tirrawarra Formation and has been cased and suspended. The well will be sequentially perforated, fracture stimulated and flow tested to evaluate the deliverability potential from various sand and shale intervals in the Permian section.

The PEL 218 commitments in Licence Year 4 include the drilling of two wells by 14 October 2012.



Location of Moonta-1 in PEL 218

Table 4 Summary of Well Drilled in PEL 218 During Licence Year 4 (to 14 April 2012)

<b>Well Name</b>	<b>Moonta-1 and Moonta-1ST1</b>
<b>Type of well</b>	Exploration well
<b>Contractor / Rig</b>	Ensign International - Ensign Rig 16
<b>Date Spudded</b>	23 January 2012 (Moonta-1ST1 spudded 18 March 2012)
<b>Formations Intersected</b>	Full representation of Eromanga and Cooper Basin strata was intersected. The depths at which each of the formation tops was intersected will be provided to DMITRE in the Well Completion Report.
<b>Evaluated hydrocarbon pay</b>	Preliminary log analysis indicates that the primary target formations from top Roseneath Shale to Patchawarra Formation are gas saturated. Quantification of hydrocarbon pay is currently ongoing.
<b>Status</b>	Cased and Suspended - 30 April 2012
<b>Rig release date</b>	1 May 2012
<b>Track and Pad construction</b>	Earthworks for Moonta-1 access and lease commenced on 4 December 2011
<b>Borrow Pit construction</b>	Borrow pits were constructed in accordance with the SEO for drilling and well operations.

### **3.2 Workover**

A workover rig was used to install a 4 ½" fracture stimulation tubing string in Holdfast-1 in late April 2012. In mid-August 2011, after approximately 6 weeks of flow testing, the 15,000 psi fracture stimulation wellhead was changed out for a 10,000 psi wellhead. Immediately following this, coiled tubing was also used to clean out proppant from the base of the well to enable a temperature gradient to be conducted below the lower most perforations in the Patchawarra Formation.

A 4 ½" fracture stimulation tubing string was also installed in Encounter-1 in May 2011. During pressure testing of the installed tubing a slight leak was evident and an attempt was made to recover the tubing to determine the source of the leak. However the tubing could not be removed from the packer and a further workover was undertaken in January 2012 to recover the tubing, mill out the existing packer, install a new packer and reinstate the 4 ½" fracture stimulation tubing string. The re-completion was successfully completed in late March 2012.

### **3.3 Other surveys**

#### **Holdfast-1:**

- A cement bond log was recorded on 6 May 2011.
- A permanent downhole gauge was installed in the 4 ½" tubing string at approximately 3,050 metres RT in Holdfast-1 to monitor pressure and temperature response during stimulation and production testing.
- A tiltmeter array was installed on 24 April 2011, comprising of 40 shallow buried tools (<12m deep) to monitor orientation of the implemented stimulation treatments. The tools were recovered shortly after the stimulation activity which finished in late June 2011.
- A non-toxic chemical tracer study was undertaken in the stimulation treatment to assess the recovery of stimulation fluid from each of the intervals during flowback.
- A production logging survey was conducted on 14 July 2011.
- A temperature gradient survey was conducted on 2 September 2011.

#### **Encounter-1:**

- A cement bond log was recorded on 21 May 2011.
- A cased hole caliper log survey was conducted in Encounter-1 following successful milling and recovery of the initial completion. The caliper survey identified a potential casing collar failure at 3,250 metres RT which supports evidence of a slight leak in the casing during pressure testing of the wellbore during recompletion. The re-instated packer was set below the parted casing joint and the integrity of the casing below the packer was confirmed. The leak at the casing joint is isolated behind the fracture stimulation string and is planned to be repaired once stimulation activities are completed.
- A tiltmeter array was installed initially in June 2011, comprising of 44 shallow buried tools (<12m deep) to monitor orientation of the implemented stimulation treatments. With the delays to the original completion the tools were recovered and re-run in early February 2012. The tools remain in the ground at Encounter-1 pending the stimulation of the remaining zones in the well in mid-June 2012.

### 3.4 Fracture Stimulation

#### *Holdfast-1*

The multi-zone fracture stimulation and flow testing of Holdfast-1 commenced with stimulation of the Patchawarra Formation on 11 June 2011. A total of seven stages were pumped with sand plugs placed at the end of each treatment to isolate the previous interval prior to perforation and stimulation of the next interval. The seven stage were placed, from bottom up, in the Patchawarra Formation (1 stage), Murteree shale (1 stage), Epsilon formation (3 stages), and the Roseneath shale (2 stages). At the conclusion of the fracture stimulation treatments, coiled tubing was used to circulate out the sand plugs and commence flowback. The stimulation treatments were designed to test variation in treatment fluid viscosity, proppant size and injection rate.

#### *Encounter-1*

A diagnostic fracture injection test of the Patchawarra Formation was conducted on 3 April 2012. Fracture stimulation of the main Patchawarra interval and flow testing of Encounter-1 commenced on 23 April 2012 and will therefore be reported in the subsequent Annual Report.

### 3.5 Extended Production Testing

Flow testing following fracture stimulation of Holdfast-1 was undertaken from late June to early August 2011. The maximum average daily rate of Holdfast-1 was approximately 1.8 MMscf/d. The temperature response on the production logging tool suggests all zones have variously contributed to the measured flow. Holdfast-1 was shut-in in August 2011 for change out of the wellhead. The well was cleaned out and briefly returned to production on 1 September 2011 to conduct a follow up temperature gradient survey.

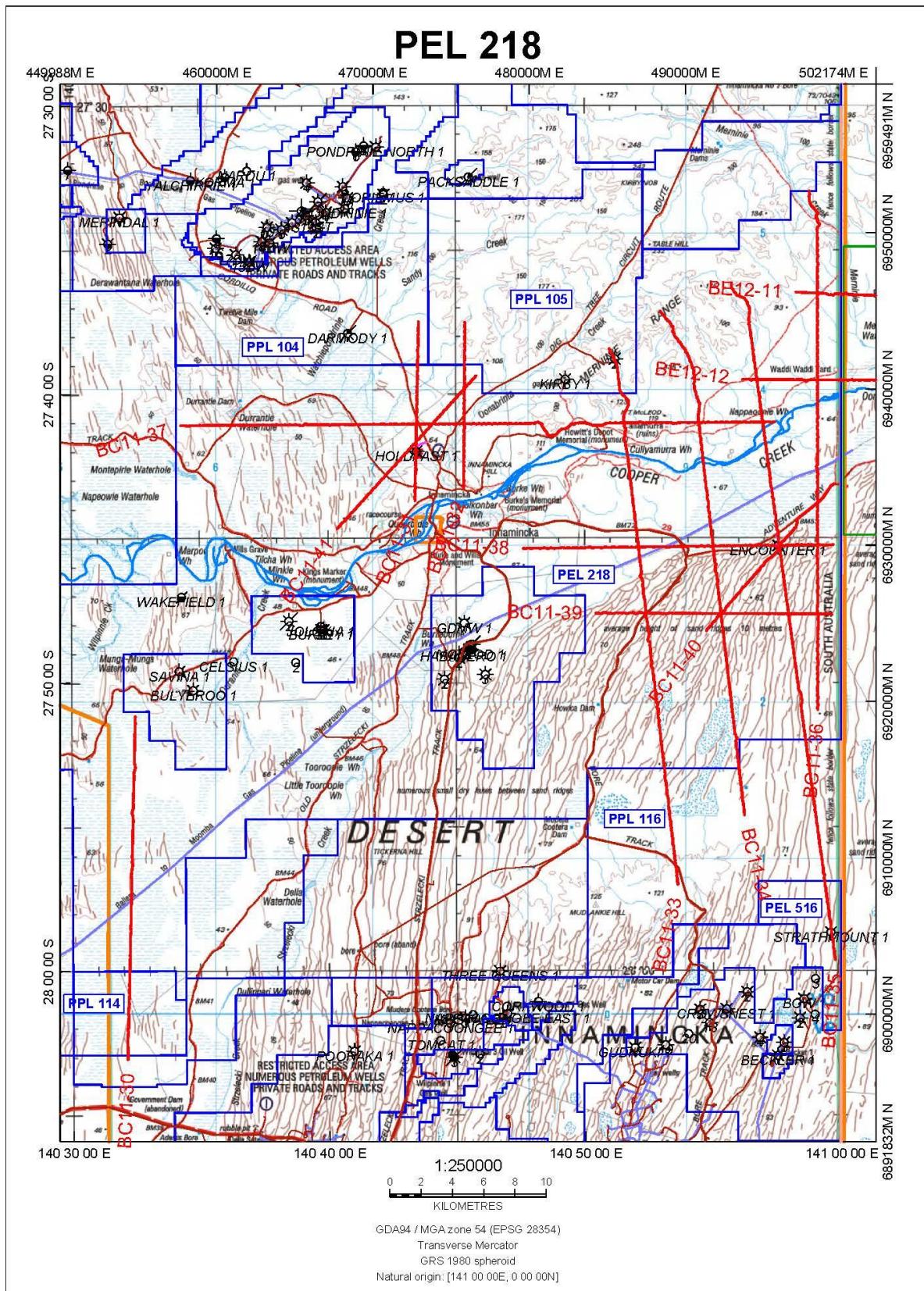
### 3.6 Seismic Data Acquisition

The Regius 2D seismic survey was acquired within PEL 218 during the reporting period and satisfies the seismic work commitment for Year 4 of the current licence term. Details of the seismic survey are summarised below.

Table 5 - Summary of Seismic Survey in PEL 218 During Licence Year 4 of Term 1

<b>Survey</b>	<b>Regius 2D</b>
<b>Contractor</b>	Terrex Seismic (crew 404)
<b>Energy Source</b>	Three (3) InputOutput AHV-IV 62000lb Peak Force 4x4 Buggy mounted Vibrators
<b>Length</b>	300.7 km
<b>Lines</b>	14 lines BC11-30 to BC11-41 and BE12-11 to BE12-12
<b>Line Preparation</b>	8 Jan 2012 to 24 Jan 2012
<b>Data Acquisition</b>	21 Jan 2012 to 18 Feb 2012

Seismic basemap (GDA94 datum) is provided, showing the recorded seismic lines (in red) with a topographic overlay.



## **4      Compliance Issues**

### **4.1    Licence and Regulatory Compliance**

Pursuant to Regulations 33(2) (b) & (c), an Annual Report must include:

*"a report for the year on compliance with the Act, these regulations, the licence and any relevant statement of environmental objectives;" and*

*"a statement concerning any action to rectify non compliance with obligations imposed by the Act, these regulations or the licence, and to minimise the likelihood of recurrence of any such non-compliances."*

There was an instance during the current reporting period in which the PEL 218 Operator failed to comply with the requirements of the Act and the Petroleum and Geothermal Energy Regulations 2000 (the Regulations).

A notice of non-compliance was issued by DMITRE on 21 April 2011 for the construction of water storage ponds at Holdfast-1 lease without provision of prior notification in accordance with Regulation 18(1). This issue was immediately rectified by submission of notification of activity to DMITRE and relevant landholders.

Non-compliances have also been reported for the submission of wireline logs for Holdfast-1 and Encounter-1. The non-compliances were due to submission of incomplete logging data. These non-compliances were due to resourcing issues and the complex nature of the logging runs/evaluations associated with the unconventional shale gas wells. The operator has since provided DMITRE with a complete data set for these wells.

There were no other instances during the current reporting period in which the PEL 218 Operator failed to comply with the requirements of the Act, Regulations or Licence.

### **4.2    Compliance with Statement of Environmental Objectives**

#### **4.2.1 Drilling**

There were four (4) cases of non-compliance with the South Australia Cooper Basin Statement of Environmental Objectives: Drilling and Well Operations (November 2009). Each of these incidents was reported to DMITRE in the relevant Quarterly Compliance Report.

These non-compliances included two separate incidents of oil/fuel spills at the Encounter-1 lease in January 2012 and the Moonta-1 lease in February 2012. In both cases the spill was contained to the clay lease pad and cleaned-up and rehabilitated. Rectification action in both cases focused on ensuring good work practices and

maintenance procedures are followed. These incidents are recorded as non-compliance with Objective 2 of the SEO for Drilling and Well Operations.

A non-compliance with the SEO was reported for the Waste Water Treatment Plant (WWTP) at Encounter-1. The WWTP did not fully conform to SA Health requirements. This incident is recorded as non-compliance with Objective 11 of the SEO for Drilling and Well Operations.

A non-compliance with the SEO was reported during May 2011 which related to the Encounter-1 well cellar not being properly covered. The non-compliance related to “close out actions” following the rig move from Encounter-1 on completion of workover operations. This incident is recorded as non-compliance with Objective 1 of the SEO for Drilling and Well Operations

A detailed report and statement of compliance against all the SEOs for Drilling and Well Operations is provided in Table 7 and Appendix 1.

#### *4.2.2 Seismic*

The Regius 2D seismic survey was acquired in PEL 218 during the reporting period. There were no instances in which the Operator failed to comply with the environmental objectives specified in the Cooper Basin Geophysical Operations Statement of Environmental Objectives (June 2006). A detailed report and statement of compliance against the relevant SEO is provided in Appendix 1.

#### *4.2.3 Production*

Extended production testing was carried out at Holdfast-1 during the reporting period. There were no instances in which the Operator failed to comply with the environmental objectives specified in the Cooper Basin Petroleum Production Operations Statement of Environmental Objectives (November 2009). A detailed report and statement of compliance against the relevant SEO is provided in Appendix 1.

### 4.3 Management System Audits

Pursuant to Regulation 33(2) (d) under the Act, an annual report must include:

*“a summary of any management system audits undertaken during the relevant licence year including information on any failure or deficiency identified by the audit and any corrective actions that has, or will be taken”.*

No Management System Audits were undertaken during the current reporting period that were specific to exploration activities in PEL 218.

#### 4.4 Report and Data Submissions

Pursuant to Regulation 33(2) (e) under the Act, an annual report must include:

*“a list of all reports and data relevant to the operation of the Act generated by the licensee during the licence year”.*

A list of the reports and data generated and samples submitted in relation to the operations undertaken during the current reporting period for PEL 218 is provided in Table 6.

Table 6      List of Report, Data and Sample Submissions to DMITRE

##### *Annual Reports*

<b>Description of Report / Data</b>	<b>Date Due</b>	<b>Date Submitted</b>	<b>Compliant / Non-compliant</b>
Submission of Annual Report for Licence Yr 3	15 July 2011	15 July 2011	<i>Complaint</i>
Resubmission of Annual Report for Licence Yr 3		10 February 2012	

##### *Quarterly Reports*

Quarterly Compliance Report for 2nd Quarter 2011	31 July 2011	29 July 2011	<i>Compliant</i>
Quarterly Compliance Report for 3rd Quarter 2011	31 October 2011	28 October 2011	<i>Compliant</i>
Quarterly Compliance Report for 4th Quarter 2011	31 January 2012	31 January 2012	<i>Compliant</i>
Quarterly Compliance Report for 1st Quarter 2012	30 April 2012	30 April 2012	<i>Compliant</i>
Quarterly Cased Hole Report for 2nd Quarter 2011	31 July 2011	29 July 2011	<i>Compliant</i>
Quarterly Cased Hole Report for 3rd Quarter 2011	31 October 2011	28 October 2011	<i>Compliant</i>

Quarterly Cased Hole Report for 4th Quarter 2011	31 January 2012	31 January 2011	<i>Compliant</i>
Quarterly Cased Hole Report for 1st Quarter 2012	30 April 2012	30 April 2012	<i>Compliant</i>

*Seismic*

Notification of Regius 2D seismic survey	18 December 2011	5 September 2011	<i>Compliant</i>
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*Wells*

Wireline logs for Encounter-1	4 March 2011 <sup>(1)</sup>	7 Feb 2011	<i>Non-Compliant Incomplete data</i>
Resubmission of Wireline logs for Encounter-1		22 June 2011	
Well Completion Report for Encounter-1	25 July 2011 <sup>(1)</sup>	26 Jul 2011	<i>Non-compliant 1 day late</i>
Resubmission Well Completion Report for Encounter-1		9 September 2011	
Well samples for Encounter-1	23 June 2011	23 June 2011	<i>Compliant</i>
Wireline logs for Holdfast-1	4 June 2011 <sup>(1)</sup>	2 June 2011	<i>Non-Compliant Incomplete data</i>
Resubmission of Wireline logs for Holdfast-1		22 June 2011	
Well Completion Report for Holdfast-1	9 October 2011	6 October 2011	<i>Compliant</i>
Well samples for Holdfast-1	9 October 2011	6 October 2011	<i>Compliant</i>
Notification of Moonta-1 access and lease construction	13 November 2011	7 November 2011	<i>Compliant</i>
Notification of Streaky-1 access and lease construction	25 December 2011	21 December 2011	<i>Compliant</i>

Notification of Boston-1 access and lease construction	<sup>(2)</sup> 21 days before activity commences	21 December 2011	Compliant
Notification of Marble-1 access and lease construction	<sup>(2)</sup> 21 days before activity commences	21 December 2011	Compliant
Notification of Moonta-1 drilling	13 November 2011	16 December 2012	Compliant
Notification of Streaky-1 drilling	22 April 2012	3 February 2012	Compliant
Wireline logs for Moonta-1	3 May 2012	13 April 2012	Compliant

*Other*

EIR for Fracture Stimulation in the Cooper Basin, SA		5 April 2012	
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(1) Extension to submission date provided by DMITRE

(2) Regulated activity not commenced as at 15 April 2012

#### 4.5 Incidents

Pursuant to Regulation 33(2) (f), an annual report must include:

*"in relation to any incidents reported to the Minister under the Act and these Regulations during the relevant licence year –*

- (i) an overall assessment and analysis of the incidents, including the identification and analysis of any trends that have emerged; and*
- (ii) an overall assessment of the effectiveness of any action taken to rectify non-compliance with obligations imposed by the Act, these regulations or the licence, or to minimise the risk of recurrence of any such non-compliance*

Reportable Health, Safety and Environmental incidents are formally reported to DMITRE through quarterly compliance reporting. A total of eight (8) reportable incidents occurred in PEL 218 during the reporting period. These incidents are summarised in Table 7.

**Table 7 List of Incidents in PEL 218 During Licence Year 4 of Term 1**

Fields	Date	Quantity / Area Affected	Incident Description	Root Cause	Steps taken for clean-up and rehabilitation	Steps taken for prevention of recurrence
Holdfast-1	16/04/2011	60x50m	Construction of a water holding pond without prior approval.	Work Practice	Project activities were suspended until approvals were finalised.	Beach has issued a Hazard Alert to remind Project Managers of the correct procedure and their responsibilities to ensure that approvals are in place prior to commencement of activities.
Encounter-1	Wk. Beg 2/05/2011		Well cellar not covered	Communication Work Practice	Cover installed	Reiterate the procedure for rig super to ensure that outstanding 'close out actions' after rig move are communicated to head office to be followed up.
Encounter-1	Wk. Beg 2/05/2011		Oil/chemical container stored in an unbunded area.	Work Practice	Container removed	Reinforced the need for all chemicals to be stored in appropriate bunds and have purchased portable plastic bunds to prevent further instances.

Regius 2D	14/02/2012	50m <sup>2</sup>	While grading access track 2km west of line 34, operator observed fire starting behind grader	Design	Alarm was raised. The fire monitor used extinguisher and grader cut a fire break. Fire was contained. Crew monitored for 30mins before moving on.	This risk was identified in the risk assessment for this job. The system put in place i.e. fire monitor walking behind dozer was effective.
Regius 2D	13/01/2012	50m <sup>2</sup>	Dozer travelling north on line 35. Fire monitor observed fire start around grouser of dozer	Design	Immediately notified dozer operator. Dozer reversed back and covered small fire with dirt. Area was observed for 20 mins before moving on.	This risk was identified in the risk assessment for this job. The system put in place i.e. fire monitor walking behind dozer was effective.
Encounter-1	7/01/2012	1000 L	The WWTP at Encounter does not conform to SA health requirements and is in Breach of SEO.	Design	Enviroflow hooked up correctly, tanks and pit pumped out by licenced waste handler.	Ensure Waste Water is handled with system run to satisfaction of SA Health as per SEO.

Encounter-1	17/01/2012	4 Litres	Crew went to remove the tubing tongs from the tubing stump to do some repairs to the tongs. When pulling back on the tongs to set back on the rig floor, a hydraulic hose got caught and when they came down on the winch to lower the tongs onto the ground it pulled on the hose breaking a 1" NPT fitting off of the valve bank.	Work practice	Immediately shut off the hydraulic pump and the crew cleaned up the spill by using soaker pads and removing the contaminated dirt.	Tong hoses were re-routed to eliminate them snagging and prevent this from happening again.
Moonta-1	16/02/2012	50 Litres	Cranes top deck engine was engaged to start using crane hydraulics. Fluid was seen to be spraying from the fluid cooler radiator area. top deck was disengaged to stop hydraulics working which stopped the fluid spray	Monitoring and Maintenance	The affected area was rehabbed. The fluid did not penetrate far into the dirt. The area was excavated to an approx. depth of 150mm and backfilled with material from the adjacent borrow pit.	Contractors encouraged to ensure proper work practices regarding procedures prior to operation and maintenance of equipment.

#### 4.6 Threat Prevention

Pursuant to Regulation 33(2) (g) under the Act, an annual report must include:

*"a report on any reasonably foreseeable threats (other than threats previously reported on) that reasonably present, or may present, a hazard to facilities or activities under the licence, and a report on any corrective action that has, or will be taken".*

There are no foreseeable threats to the proposed exploration activities for PEL 218, other than the disruptive influence of occasional flooding of the Cooper Creek or abnormally high rainfalls in the basin itself.

Flooding events in the headwaters of the Cooper Creek are closely monitored by satellite surveillance to predict well in advance the time of their arrival in the PEL 218 area. Drilling schedules will continue to be amended accordingly.

#### 4.7 Future Work Program

Pursuant to Regulation 33(2) (h) under the Act, an annual report must include:

*"unless the relevant licence year is the last year in which the licence is to remain in force – a statement outlining operations proposed for the ensuing year".*

Drilling of vertical and horizontal wells, fracture stimulation and production testing is planned within PEL 218 over the next 12 months to continue evaluation of the basin centred and shale gas plays within the Nappamerrie Trough.

### **5 Statement of Expenditure**

Pursuant to Regulation 33(3) under the Act, an annual report must contain:

*"An annual report must be accompanied by a statement of expenditure on regulated activities conducted under the licence for the relevant licence year, showing expenditure under each of the following headings:*

- a) drilling activities;*
- b) seismic activities;*
- c) technical evaluation and analysis;*
- d) other surveys;*
- e) facility construction and modification;*
- f) operating and administration expenses (not already covered under another heading)".*

The Expenditure Statement for the current reporting period is presented as Appendix 2.

## APPENDIX 1

### Compliance with the SEO for Drilling and Well Operations PEL 218 Licence Year 4 of Term 1

Beach's strategies for achieving each of the SEO objectives during the drilling of Moonta-1; fracture stimulation of Holdfast-1; completion of Encounter-1 are outlined in Table below.

*Note: The Santos SEO for Drilling and Well Operations has been adopted by Beach Energy Limited for its Drilling and Well Operations in the South Australian sector of the Cooper Basin. References to 'Appendix 1 Table A2' and 'Appendix 1 Table A3' refer to tables included in Santos' "South Australia Cooper Basin Statement of Environmental Objectives: Drilling and Well Operations November 2009"*

**Table A1-1 SEO for Cooper Basin Drilling Operations**

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 1:</u>  Minimise risks to the safety of the public and other third parties.	Reasonable measures implemented to ensure no injuries or health risks to the public or to third parties.	Non-Compliant	<p>The well cellar at Encounter-1 was not covered. This incident followed workover operations at Encounter-1 in May 2011 and was not associated with main drilling (Oct-Dec 2010) or fracture stimulation activities at Encounter-1 (June 2011).</p> <p>Communication of all potential hazards to safety associated with drilling and other well site operations including the rig move to all affected parties, prior to the commencement of such activities. Beach maintained regular contact with the landholder and associated stakeholders during drilling operations.</p> <p>The design and operation of the PEL 218 activities was undertaken in accordance with Beach safety policies, standards and guidelines. All employees visiting or working on the Ensign 16 rig undertook a</p>

		<p>safety induction prior to commencing work in the field and will undertake a refresher course if/when required. Beach's Permit to Work System was in operation during drilling operations to control potentially dangerous situations. Appropriate Personal Protective Equipment (PPE) was issued to all personnel involved in the drilling operations. Accident / incident reporting systems were in place as defined in the Beach Drilling Operation Manual. Records are reviewed regularly to assess trends.</p> <p>Beach Safety Management Plans are updated and reviewed on a regular basis. The Beach Emergency Response System which includes; Emergency Management Manual, Site Emergency Response Plans and Emergency Management Initial response guidelines were reviewed during 2009 with documentation being updated to meet the changing roles and responsibilities in the organisation.</p> <p>Signage was erected along the access road to advise that only authorised personnel are permitted on to the well site.</p> <p>A specific risk assessment of fracture stimulation activities was undertaken prior to commencement of activities at Holdfast-1. A HSE Management Plan was also prepared for fracture stimulation activities (including procedures and requirements for audits, safety inductions, incident reporting).</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 2 :</u> Minimise disturbance and avoid contamination to soil.	<p><u>Well Site &amp; Access Track Construction</u>            0, +1 or +2 GAS criteria are attained for "Minimise impacts on soil" objective as listed in Appendix 1 Table A1* and "To minimise the visual impact" as listed in Appendix 1 Table A2*.</p> <p>No unauthorised off-road driving or creation of shortcuts.</p> <p>No construction activities are carried out on salt lakes or steep tableland slopes or wetlands land systems.</p> <p><u>Borrow pit construction and restoration</u>            0, +1 or +2 GAS criteria are attained for "Minimise visual impacts" and "Minimise impact on soil" objectives as listed in Appendix 1 Table A3*</p>	Compliant  Compliant	<p>The Moonta-1 and Streaky-1 well sites and the existing access track and leases at Holdfast-1 were constructed in accordance with the procedures outlined in Beach's <i>"Guidelines for Lease Construction and Restoration"</i>.</p> <p>Potential impacts on the environment were carefully considered prior to constructing tracks and the well site. Existing routes were utilised where feasible.</p> <p>Vehicle movements were strictly limited to the defined access track and well pad areas – areas which had been given cultural heritage clearance for the drilling operations.</p> <p>Site specific environmental assessments were conducted to assess environmental, topographical features. No leases or access tracks were constructed on salt lakes, tablelands or wetlands.</p> <p>Where possible, existing borrow pits will be used. Borrow pits will be rehabilitated and restored in accordance with the guidelines set down in DMITRE's Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating.</p> <p>Topsoil was stockpiled for subsequent respreading when restoration activities are conducted.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
	<p><u>Production Testing / Well Blowdowns</u> No soil contamination as a result of production testing or well blowdown operations.</p> <p><u>Fuel and Chemical Storage and Handling</u> No spills/leaks outside of areas designed to contain them.</p> <p>Level of hydrocarbon continually decreasing for in-situ remediation of spills.</p> <p>Soils remediated to a level as determined by the Soil Health Index process</p> <p><u>Waste Disposal (domestic, sewage and sludges)</u> All domestic wastes are disposed of in accordance with EPA licensing requirements.</p> <p>0, +1 or +2 GAS criteria are attained for "Site to be left in a clean and tidy condition" objective listed in Appendix 1 Table A2*.</p> <p>No spills or leaks from sewage treatment processing.</p> <p>Refer to Assessment Criteria for Obj 11.</p>	Compliant  Non-Compliant  Non-Compliant	<p>Clay lined flare pits and flare tanks were used when flaring at Holdfast-1. There were no spills as a result of production testing or well blowdown operations or drilling operations outside of areas that were designed to contain them.</p> <p>There were two instances of non-compliance with regards to spills. Both cases involved hydraulic oil leaks. In one instance the leak was caused by breakage of hydraulic hose on the savannah workover rig 66 at the Encounter-1 lease. In the second instance hydraulic fuel leaked from a crane at the Moonta-1 lease. In both instances the spills were cleaned and remediated insitu. Both spills were reported in the Quarterly Compliance reports as per Beach Incident Reporting system. Beach's Oil Spill Contingency Plan is included in the Emergency Response Plan.</p> <p>Domestic Wastes were managed as described in the Cooper Basin Drilling &amp; Well Operations EIR. Wastes were collected, stored and transported in covered bins / containers. All rubbish was disposed of at a licensed waste facility.</p> <p>There was one instance of non-compliance during the reporting period with regards to the Waste Water Treatment plant at Encounter-1 in Jan 2012. The WWTP did not conform to SA health requirement. The issue was a "design" problem as the Environflow unit was not correctly installed. Tanks and pits were pumped out by a licensed waster handler.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 3</u> Avoid the introduction or spread of pest plants and animals and implement control measures as necessary.	No weeds or feral animals are introduced to, or spread in, operational areas as a consequence of activities.	Compliant	Rigs and associated equipment is washed down prior to entering and leaving different state borders as per Beach Policy.
<u>Objective 4</u> Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow ground resources	<u>Well Lease and Access Track Construction</u> Well sites and access tracks are located and constructed to maintain pre-existing water flows (i.e. channel contours are maintained on floodplains and at creek crossings).	Compliant	<p>Cased hole testing will be conducted with every effort to ensure there will be no spills or seepages.</p> <p>Fracture stimulation fluids are contained within lined ponds. Once the fluids in the lines ponds have evaporated, the liner is removed and disposed of to an appropriately licensed facility. The pond is then rehabilitated.</p> <p>The drill pad and access track were constructed and located to avoid diversion of flood waters from their natural direction of drainage in the event of inundation.</p> <p>Holding ponds for fracture stimulation fluids were sited in areas that are not prone to inundation (eg Cooper Creek floodplain).</p> <p>All drill cuttings, muds, and non toxic drill fluids were contained within designated mud sumsps with adequate freeboard at the</p>

	<p><u>Well Heads (Oil and Gas Systems)</u> No leaks/spills outside of areas designed to contain them.</p> <p><u>Well Blowdown/Production Testing</u> No water (surface or groundwater) contamination as a result of production testing or well blowdown operations.</p> <p><u>Fuel/Chemical Storage and Handling</u> No water (surface or groundwater) contamination as a result of fuel or chemical storage and handling.</p> <p><u>Waste Management</u> Refer to Assessment Criteria for Objective 11.</p>	Compliant	<p>completion of operations to allow for a 1m cover of clean fill at remediation.</p> <p>Cased hole testing will be conducted with every effort to ensure there will be no spills or seepages. Specific oil spill containment / cleanup materials were and will be on site at all operational times. Beach's Oil Spill Contingency Plan is included in Beach's Emergency Response Plan.</p> <p>Clayed lined flare pits and lined ponds were used at Holdfast-1 for flow testing.</p> <p>Although there were two non-compliances with regard to fuel and chemical spills, these spills were contained to the clay lined lease area and did not therefore affect surface waters and shallow ground water resources</p> <p>Waste was removed from the well site. Bins are covered to prevent access by wildlife and prevent spread of rubbish by wind.</p> <p>Non-putrescible waste material (including hazardous material) was stored safely on site for later removal to an EPA approved disposal facility.</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 5</u>  Avoid disturbance to sites of cultural and heritage significance	<p>Proposed well sites and access tracks have been surveyed and any sites of Aboriginal and non-Aboriginal heritage identified.</p> <p>Any identified cultural and heritage sites have been avoided.</p> <p><i>Note:</i>  <i>Where a negotiated agreement or determination for heritage clearance is in place, compliance with the negotiated agreement or determination takes precedence over the above criteria.</i></p>	Compliant	<p>Beach has an agreement with the Yandruwandha / Yawarrawarrka 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.</p> <p>Joint site visits were carried out with the Yandruwandha / Yawarrawarrka, the Native Title Claimant group. The proposed drilling location and access route were agreed and given heritage clearance for activities within PEL 218</p> <p>Areas of significance were recorded and marked as exclusion zones.</p>
<u>Objective 6</u>  Minimise loss of aquifer pressure and avoid aquifer contamination	<p><u>Drilling &amp; Completion Activities</u></p> <p>There is no uncontrolled flow to surface (blow out).</p> <p>Sufficient barriers exist in casing annulus to prevent crossflow between separate aquifers or hydrocarbon reservoirs.</p> <p>Relevant Government approval obtained for abandonment of any radioactive tool left downhole.</p>	Compliant	<p>The Drilling Programs for Moonta-1 well was designed to ensure minimal loss of reservoir and aquifer pressures and minimal contamination of freshwater aquifers.</p> <p>Holdfast-1, Encounter-1 and Moonta-1 have been cased from total depth to surface. The cement bond log demonstrates competent cementing and the isolation of all aquifer units.</p> <p>During the drilling and testing of Moonta-1, LDW tools became stuck in the hole at a depth of approximately 2900 metres. The drillers repeatedly tried to remove the tools from the hole using the recognised techniques and procedures in line with best industry practice, however, they were unable to retrieve the logging tools. Beach's only option was to abandon the tools in the hole and place a 130 metre cement plug above the tools. Drilling continued via sidetrack at depth of approx. 2600 m.</p>

	<p><u>Producing, Injection, Inactive and Abandoned Wells</u></p> <p>No cross-flow behind casing between aquifers, and between aquifers and hydrocarbon reservoirs unless approved by DWLBC.</p>	Compliant	<p>Side tracking Drilling continued by Beach advised the Department for Manufacturing Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) and the Environmental Protection Authority (EPA) and landholder about these activities.</p> <p>When abandonment operations are undertaken cement plugs will be installed to isolate any zones that have been perforated to ensure no likelihood of cross-flow.</p> <p>Pressure cementing of the casing annulus will provide sufficient barriers to the potential for cross flow between aquifers to enable the requirements for the abandonment of petroleum wells to be met.</p> <p>A competent cement bond between and across each of the aquifers intersected by the well bore was established.</p> <p>Monitoring programs will be implemented in the future to assess cross-flow behind casing.</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<p><b>Objective 7</b> Minimise disturbance to native vegetation and native fauna.</p>	<p><b><u>Well Lease and Access Track Construction and Restoration</u></b> Any sites with rare, vulnerable and endangered flora and fauna have been identified and avoided.</p> <p>0, +1 or +2 GAS criteria are attained for "Minimise impact on vegetation" objective as listed in Appendix 1 Table 1A and "The revegetation of indigenous species" objective as listed in Appendix 1 Table A2, during well lease and access track site selection, construction and restoration.</p> <p><b><u>Borrow Pit Construction and Restoration</u></b> 0, +1 or +2 GAS criteria are attained for "Minimise impacts on vegetation" objective as listed in Appendix 1 Table A3 during borrow pit site selection construction and restoration.</p>	Compliant  Compliant	<p>Although the Moonta-1 and Streaky-are located in the Innamincka Regional Reserve they lie outside the area defined as the Coongie Lakes Wetlands of International Significance, they were not located in or near an area of high biological or wilderness values and hence the drilling operations presented no long term impacts to any such areas.</p> <p>National Parks and Wildlife flora/fauna databases contain no records of vulnerable or endangered species within several kilometres of the drill site.</p> <p>Construction of the access tracks to the well sites required minimal clearance of vegetation and the routes were aligned to avoid clearing trees. The access tracks to the well sites were each less than one kilometre long.</p> <p>Both well sites contained only sparse vegetation, and clearance was minimised. Any trees that were present either on the site or adjacent to the site were not cleared. RPS Environment and Planning evaluated the site prior to Beach undertaking activities.</p> <p>Facilities were designed and constructed to minimise fauna entrapment. Fauna were not encouraged to access operational areas. Holding ponds are fenced to prevent access by large native fauna. Any borrow pits established for building the tracks or the drill pad will be rehabilitated and restored in accordance with the guidelines set down in DMITRE's Field Guide for the Environmental Assessment of Abandoned Petroleum Well Sites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating.</p>

	<p><u>Waste Management</u> Refer to assessment criteria for Objective 11.</p> <p><u>Fuel and Chemical Storage and Management</u> Refer to assessment criteria for Objectives 2 and 4.</p>	Compliant Compliant	<p>Beach's Drilling Operations Manual sets out the company's policy in relation to storage, use and disposal of hazardous material.</p> <p>Wastes were managed as described in the Drilling &amp; Well Operations EIR. Wastes were collected, stored and transported in covered bins / containers.</p> <p>All rubbish was disposed of at a licensed waste facility.</p> <p>Although there were two non-compliances with regard to fuel and chemical spills, these spills were contained to the clay lined lease area and cleaned up and are therefore unlikely to affect native vegetation and fauna.</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 8</u>  Minimise air pollution and greenhouse gas emissions.	Compliance with EPA requirements.	Compliant	<p>Cased hole testing will be undertaken in accordance with appropriate industry accepted standards and with a minimal amount of gas flaring to achieve test objectives.</p> <p>No open hole testing was undertaken.</p>
<u>Objective 9</u>  Maintain and enhance partnerships with the Cooper Basin community.	No unresolved reasonable complaints from the community.	Compliant	<p>Beach maintained regular contact with the landholder and associated stakeholders prior to, and while undertaking drilling operations.</p> <p>Beach enhances partnerships with the local community through various events and sponsorships.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 10</u> Avoid or minimise disturbance to stakeholders and/or associated infrastructure	No reasonable stakeholder complaints left unresolved.	Compliant	<p>Beach maintained regular contact with the landholder and associated stakeholders prior to and while undertaking drilling at all well sites. Discussions will be undertaken with the landowner to determine whether he wishes to have any rehabilitation work undertaken on the access track.</p> <p>Wells are located nearby to public roads regularly used by tourists. Signs advising of no unauthorised entry to the well sites were erected at the beginning of each access track.</p> <p>At the completion of the operations, temporary cattle proof fencing was erected to isolate any pits or plant remaining on site. The fencing will be kept in place until rehabilitation operations on the well site resume.</p>
<u>Objective 11</u> Optimise (in order of most to least preferable) wast avoidance, reduction, reuse, recycling, treatment and disposal	All wastes to be disposed of at an EPA licenced facility in accordance with criteria developed with the exception of the National Environment Protection Measure for contaminated sites, and wastewater (see below).	Compliant	<p>Waste was removed from the well sites in accordance with Beach's policy set out prior to final restoration.</p> <p>Bins are covered to prevent access track and rig site. Non-putrescible waste material (including hazardous material) was stored safely on site for later removal to an EPA approved disposal facility.</p> <p>Beach conducts post drilling audits to ensure drill sites and associated tracks are free of waste materials and left in a tidy and safe condition.</p> <p>Refer to the comments recorded above in relation to the non-compliance with the Objective 2 Assessment Criteria, resulting from the non-compliance with SA Health standards for Waste Water Treatment system at Encounter camp.</p>

	<p>Wastewater (sewage and grey water) disposed of in accordance with the Public and Environmental Health (Waste Control) Regulations 1995 or to the Department of Health's satisfaction.</p> <p>Attainment of GAS criteria for "Site to be left in a clean, tidy and safe condition" objective during well site restoration (refer Appendix 1 Table A2):</p> <ul style="list-style-type: none"> <li>- "To minimise the visual impact"</li> <li>- "The revegetation of indigenous species"</li> </ul>	Non compliant (refer non-compliance of Object 2)	
<p><b>Objective 12</b></p> <p>Remediate and rehabilitate operational areas to agreed standards.</p>	<p>No unresolved reasonable stakeholder complaints.</p> <p><u>Contaminated Site Remediation</u></p> <p>Contaminated sites are remediated to a level as determined by the approved SHI process.</p> <p>Prior to the finalisation and approval of the SHI process, contaminated sites are remediated in accordance with criteria developed with the principles of the National Environment Protection Measure for contaminated sites, and in consultation with the EPA.</p>	<p>Compliant</p> <p>Compliant</p>	<p>Following testing of Holdfast-1, Encounter-1 and Moonta-1 these leases will be rehabilitated leaving a level work area for future workover requirements as part of the on-going work scope to use these wells for microseismic observation and/or water producers.</p> <p>Contaminated sites are remediated in accordance with Beach Guidelines and Industry Standards.</p> <p>Discussions will be undertaken with the landowner to determine whether he wishes to have any rehabilitation work undertaken on the access track and rig site.</p>

	<p><u>Well Site and Access Track Restoration</u>  The attainment of 0, +1 or +2 GAS criteria for the objectives (refer Appendix 1 Table A2):</p> <ul style="list-style-type: none"> <li>– "To minimise the visual impact"</li> <li>– "The revegetation of indigenous species"</li> </ul> <p><u>Borrow Pit Restoration</u>  The attainment of 0, +1 or +2 GAS criteria for (refer Appendix 1 Table A3):</p> <ul style="list-style-type: none"> <li>– "Rejuvenation of indigenous species"</li> <li>– "Minimise impact on soil"</li> <li>– "Minimise visual impacts"</li> <li>– "Site to be left in a clean and tidy condition"</li> </ul> <p><i>Note: Well abandonment issues are addressed under Objective 6.</i></p>	Compliant Compliant	<p>Beach will complete post operations audit of each wellsite after rehabilitation work has been completed.</p> <p>Borrow pits will be rehabilitated and restored using effective contouring in accordance with the guidelines set down in DMITRE's Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating.</p>
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## **Compliance with the SEO for Cooper Basin Geophysical Operations PEL 218 Licence Year 4 of Term 1**

Government approval for Beach to undertake the Regius seismic survey was conditional on Beach committing to the objectives defined in the "Statement of Environmental Objectives: Geophysical Operations - for the Cooper / Eromanga Basin – South Australia (June 2006)".

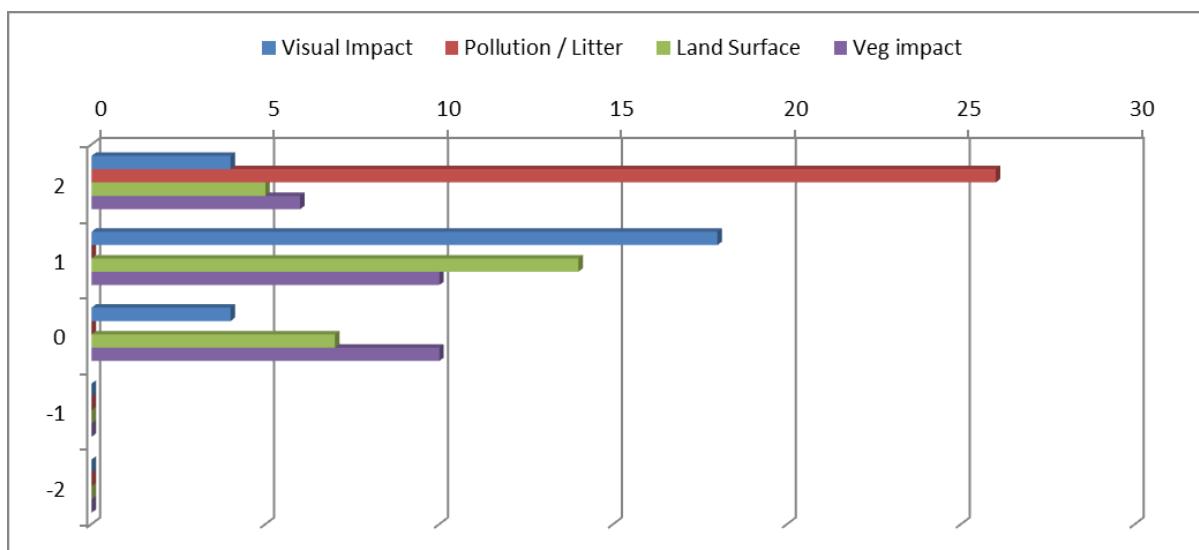
Beach's strategies for achieving each of the SEO objectives during the recording the Regius 2D survey is outlined in the attached table, Table A1-2.

A Work Area Clearance was undertaken by representatives of the Yandruwandha / Yawarrawarrka people in August 2011, in advance of the forthcoming seismic operations.

At the completion of the survey, assessments of the impacts from the survey were undertaken against a set of GAS criteria. GAS audit scores were recorded at 26 locations around the Regius survey. The results of the audits against the GAS criteria are presented in the bar chart below.

As part of the GAS audits, three sites were selected as Environmental Monitoring Points (EMPs) for future photo monitoring of the rate of natural rehabilitation.

Scores from GAS Audits of Year 4 Seismic Surveys



## **Compliance with the SEO for Cooper Basin Seismic Operations**

### **PEL 218 Licence Year 4 of Term 1**

Beach's strategies for achieving each of the SEO objectives during the Regius 2D seismic survey are outlined in Table below.

<b>Table A1-2 SEO for Cooper Basin Drilling Operations</b>			
<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 1:</u> Minimise the visual impact of operations.	<u>Campsite and survey line preparation</u> Proposed survey lines and campsites have been appropriately located and prepared to minimise the visual impact. The attainment of 0, +1 or +2 GAS criteria for 'visual impact' objective listed in Appendix 3.	Compliant	Goal Attainment Scaling audits for the Regius 2D survey were taken at approximately 26 locations, spread throughout the 300 kilometres of the survey area.

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<p><u>Objective 2:</u> Minimise disturbance to and contamination of soil resources.</p>	<p><u>Campsite and survey line preparation</u> Attainment of 0, +1 or +2 GAS criteria for 'Minimise impacts to land surface' objective, as listed in Appendix 3. Proposed survey lines and campsites have been appropriately located and prepared to minimise the disturbance to soil resources.</p> <p><u>Fuel Storage and Handling</u> No refuelling occurs outside designated refuelling/servicing areas. Spills or leaks are immediately reported and clean up actions initiated. Records of spill events and corrective actions are maintained in accordance with company procedures.</p> <p>Appropriate spill response equipment is available on site.</p>	Compliant  Compliant	<p>Of the 26 locations audited for GAS scores in the Regius survey, none were given a negative score.</p> <p>There were no incidents of soil contamination arising from the survey activities.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 3:</u> Minimise disturbance to native vegetation and fauna.	<p><u>Campsite and survey line preparation</u>  The attainment of 0, +1 or +2 GAS criteria for 'Impact on native vegetation' objective listed in App 3.</p> <p><u>No mature trees are removed.</u>  Vehicle access to survey lines is to be via existing access tracks or pre-existing survey lines, except where they have rehabilitated. Other temporary access tracks may be utilised where such use is likely to result in less environmental impact than other options.</p> <p><u>Fuel and Chemical Storage and Management</u>  Refer to assessment criteria for objective.</p> <p><u>Fire Danger Season restrictions and education</u>  All personnel are fully informed on the fire danger season and associated restrictions.</p>	Compliant  Compliant  Compliant	<p>At each of the dunefield locations audited for GAS scores in the survey area, the scores for "impact on vegetation" were either "0", "+1" or "+2" indicating there were no instances where the disturbance was greater than is usual for these type of operations.</p> <p>All chemicals are stored in bunded areas. There were no incidents associated with improper chemical storage and management.</p> <p>The risk of fire was identified in the risk assessment for this activity. To manage the risk, a fire monitor equipped followed the dozer/grader to observe for any fire. There were two reportable incidents of fires associated with line preparation. In both cases the fire was immediately extinguished and monitored.</p>

<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 4:</u> Avoid disturbance to sites of cultural and heritage significance.	<p>The following is one possible procedure to achieve the objective.</p> <p>Appropriately trained and experienced cultural/heritage advisors have scouted proposed survey line locations and access tracks.</p> <p>The operator has a mechanism in place to appropriately report and respond to any sites discovered during survey operations. Any sites identified have been flagged and subsequently avoided.</p> <p>Note: Where a negotiated agreement or determination for heritage is in place, compliance with the negotiated agreement or determination takes precedence over the above criteria.</p> <p>The EIR details this possible procedure.</p>	Compliant	<p>Beach has an agreement with the Yandruwandha / Yawarrawarrka people which specifies the requirements for scouting proposed seismic lines to identify and avoid areas of heritage value and archaeological significance.</p> <p>A site visit was carried out with representatives from the Yandruwandha / Yawarrawarrka, and proposed line locations and access routes were agreed and given heritage clearance.</p> <p>Areas of significance were recorded and marked as exclusion zones.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 5:</u> Minimise disturbance to livestock, pastoral infrastructure and landholders.	<p>The attainment of 0, +1 or +2 GAS criteria for 'Impact on infrastructure' objective listed in Appendix 3.</p> <p>No reasonable concerns raised by stakeholders are left unresolved.</p> <p>The extent to which the relevant sections of the Petroleum Act and Regulations have been followed and implemented and in particular in relation to landowner liaison and notification.</p>	Compliant	<p>Beach maintained regular contact with the pastoral lessees prior to, and while undertaking, survey operations.</p> <p>None of the seismic lines interfered with cattle watering points and cattle were not present in significant numbers.</p> <p>No issues of concern have been raised by the landowner in relation to these activities.</p>
<u>Objective 6:</u> Avoid the introduction or spread of exotic species and implement control measures as necessary.	Weeds or feral animals are not introduced into, or spread, in operational areas	Compliant	Machinery and vehicles used for line preparation and survey recording were already working in the Cooper Basin prior to commencing the Regius survey.

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 7:</u> Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow groundwater resources.	<p>Campsite and survey line preparation            Campsites and survey lines/traverses are located and constructed to avoid diversion of water flows.</p> <p>The attainment of 0, +1 or +2 GAS criteria for 'disturbance to land surface' objective listed in Appendix 3.</p> <p>No uncontrolled flows to surface from aquifers intersected in upholes/shallow boreholes.</p> <p>There is no unnecessary interference with natural drainage features.</p> <p>Fuel Storage and Handling            No spills occur outside of areas designed to contain them.</p> <p>Refuelling occurs at least 1km from watercourses or sensitive ecological environments (wetlands).</p> <p>Appropriate spill response equipment is available on site.</p> <p>Spills or leaks are immediately reported and clean up actions initiated promptly.</p>	Compliant	Some of the survey lines in Regius survey traversed the Cooper Creek. The line clearing and recording operations used a 1km exclusion zone from the creek.

<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 8:</u> Optimise waste reduction and recovery.	Wastes are segregated, burnt or transported to an Environment Protection Authority (EPA) approved waste disposal facility for recycling or burial in accordance with approved procedures. 0, +1 or +2 GAS criteria are attained for 'Negligible survey markers and rubbish in situ' objective listed in Appendix 3.	Compliant	Every GAS score in relation to "Pollution and litter" (control) at each of the 26 sites was "+2" indicating no litter was observed on any part of the survey.

## **Compliance with the SEO for Cooper Basin Production and Processing Operations PEL 218 Licence Year 4 of Term 1**

Beach's strategies for achieving each of the SEO objectives during the production testing at Holdfast-1 are outlined in Table below.

<b>Table A1-3 SEO for Cooper Basin Production and Processing Operations</b>			
<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 1</u>  To avoid unnecessary disturbance to 3 <sup>rd</sup> party infrastructure, landholders or land use	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  No unresolved reasonable landholder / 3 <sup>rd</sup> party complaints  Landholder activities not restricted or disturbed as a result of activities unless by prior arrangement.	Compliant	Rehabilitation of Holdfast will be undertaken in consultation with the landholder when activities cease.  Regular liaison with landholders provides advance warning of any significant developments or activities.

<p><u>Objective 2</u></p> <p>To maintain soil stability / integrity</p>	<p>The extent of soil erosion is consistent or less than surrounding land.</p> <p>Vegetation cover is consistent with surrounding land</p> <p>No evidence of significant subsoil on surface (colour).</p> <p>No production activities undertaken on salt lakes, steep tableland land systems or wetlands land systems (as defined in the EIR)</p> <p>Abandoned areas (e.g. borrow pits) are remediated and rehabilitated to be reasonably consistent with the surrounding area</p> <p>0, +1 or +2 GAS criteria for borrow pit construction and rehabilitation are attained (Appendix B)</p>	<p>Compliant</p>	<p>Disturbance was minimised and restricted to the existing Holdfast-1 lease.</p> <p>No significant erosion has been reported either at the facilities or along the access roads. Topsoil was stockpiled when the sites were originally cleared for the drilling operations.</p> <p>None of the fields are located on or within salt lakes, steep tableland areas or wetlands.</p> <p>All vehicle movements are restricted to the designated access roads and lease areas.</p> <p>Clay surfaces on the access roads minimise disturbance to the soil beneath.</p> <p>Rehabilitation of the production sites and access tracks will be undertaken in consultation with the landowner when production ceases.</p> <p>Borrow pits will be remediated and rehabilitated to be reasonably consistent with the surrounding topography.</p>
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<p><u>Objective 3</u></p> <p>To minimise disturbance to native vegetation</p>	<p>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). 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). 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) Works in aquatic habitats (e.g. flowing watercourses) have been approved by DMITRE</p>	<p>Compliant</p>	<p>The sites will be restored according to industry standards (e.g. SEO, PIRSA (2009) Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia). The existing well lease will be used as far as practicable. No significant or priority 1 vegetation will be removed. Where possible, areas with low vegetation density were utilised. Minor vegetation clearing was undertaken during the reporting period for the establishment of both temporary and permanent access tracks, facilities and accommodation camps. No salt lakes, steep tableland land systems or wetlands land systems are impacted. Proposed activities fall under the exploration regulation (Regulation 5(1)(zc)) and no SEB is required. Existing borrow pits will be used in preference to new borrow pits where feasible and rehabilitation will be in accordance with GAS criteria. Holdfast-1 is several kilometres from the nearest significant watercourse (Cooper Creek) and is not located in the immediate flood plain of Cooper Creek</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 4</u>  To prevent the introduction or spread of weeds, pathogens and pest fauna	<p>The presence of weeds and pathogens is consistent with or better than adjacent land</p> <p>No new outbreak or spread of weeds reported</p>	Compliant	No new outbreak or spread of weeds reported.
<u>Objective 5</u>  To minimise the impact of the production operations on water resources	<p>For excavations, surface drainage profiles area restored to be as reasonably consistent with surrounding area as possible.</p> <p>For existing easements, drainage is maintained similar to pre-existing conditions.</p> <p>Volume of water produced is recorded.</p> <p>No uncontrolled flow to the surface (i.e. no free flowing bores)</p> <p>Note: the “Cooper Basin Drilling and well Operations” SEO provides detail on aquifer issues.</p>	Compliant	Production testing at Holdfast had no impact on surface drainage

<p><u>Objective 6</u></p> <p>To avoid land or water contamination</p>	<p>No evidence of any spills or leaks to areas not designated to contain spills</p> <p>In the event of a spill, the spill was:</p> <ul style="list-style-type: none"> <li>Contained</li> <li>Reported</li> <li>Cleaned-up</li> <li>Cause investigated and corrective and/or preventative action implemented</li> </ul> <p>Compliance with the Environment Protection Act, Australian Standard 1940 and the Australian Dangerous Goods Code.</p> <p>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</p> <p>No evidence of rubbish or litter on easements or at facilities.</p>	<p>Compliant</p>	<p>Fracture stimulation fluids were contained in lined ponds. Production storage tank area will drain to the drilling sump.</p> <p>No spills or contamination occurred</p>
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Objective	Assessment Criteria	Compliant / Non-compliant	Comments
Objective 6 (Continued):	<p>No evidence that waste material is not contained and disposed of in accordance with Beach approved procedures.</p> <p>Evidence of waste tracking certificates for prescribed wastes.</p> <p>Evidence of compliance with any waste disposal licence conditions (e.g. EPA permits)</p>	Compliant	All waste material has been and continues to be disposed of in accordance with Beach approved procedures.
	No evidence of impacts to soil, water and vegetation as a result of water disposal (i.e. soil erosion, dead vegetation, water discolouration)	Compliant	All water continues to be disposed of in accordance with Beach approved procedures.

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
Objective 6 (Continued):	<p>No evidence of non-compliance with local or state government regulations</p> <p>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</p> <p>No evidence of overflow of product from interceptor pit.</p> <p>No evidence of hydrocarbon contamination immediately adjacent to bunded ponds</p> <p>Periodic reports as required detail quantity, level of contamination and proposed ongoing operation of the Land</p> <p>Treatment Unit.</p>		

<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 7</u> To minimise the risk to public health and safety	No injuries or incidents involving the public Demonstrated compliance with relevant standards Emergency procedures implemented and personnel trained No uncontrolled operations related fires Emergency procedures implemented and personnel trained No unauthorised activity	Compliant Compliant	No incidents of risk to public health and safety during the reporting period.  No fires occurred at Holdfast  Well lease is cleared and fuel load in the region is relatively low. Bushfire risk is consequently low. Fire-fighting equipment will be available on-site.

<b>Objective</b>	<b>Assessment Criteria</b>	<b>Compliant / Non-compliant</b>	<b>Comments</b>
<u>Objective 8</u>  To minimise impact of emergency situations	<p>Emergency response procedures are effectively implemented in the event of an emergency</p> <p>Emergency response exercises are aligned with credible threats and consequences identified in the risk assessment</p> <p>Refer to previous criteria (Objective 1, 2, 3 &amp; 6)</p>	Compliant	<p>No emergency situations arose Holdfast.</p> <p>Beach's HSE system includes periodic simulation of Emergency situations at production facilities.</p>
<u>Objective 9</u>  To minimise noise due to operations	<p>Operational activities have taken reasonable practical measures to comply with noise regulations, under the Environment Protection Act 1993</p> <p>No unresolved reasonable complaints.</p>	Compliant	<p>Holdfast is approximately 5 km from Innamincka and is not likely to cause issues at this distance.</p>

Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<u>Objective 10</u> To minimise atmospheric emissions	Reasonable practical measures implemented in design and operation to minimise emissions  Annual Report includes atmospheric emissions data  No reasonable complaints received  No dust related injuries recorded	Compliant	Cased hole testing was undertaken in accordance with appropriate industry accepted standards and gas flaring.  Only short-term production testing and flaring (approx. 6 weeks) was conducted at Holdfast and therefore minimal impact on emissions.  Atmospheric emissions are being reported on a financial year basis as part of Beach's obligations under the <i>National Greenhouse and Energy Reporting Act</i> (NGER).  No complaints/injuries received.
<u>Objective 11</u> To adequately protect cultural heritage sites and values during operations and maintenance	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	Compliant	Beach has an agreement with the Yandruwandha / Yawarrawarrka 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 Yandruwandha / Yawarrawarrka, the Native Title Claimant group. The proposed drilling location and access route were agreed and given heritage clearance for activities within PEL 218 Areas of significance were recorded and marked as exclusion zones.