



Geothermal Resources Ltd

ABN 45 115 281 144

ANNUAL REPORT

**GEOTHERMAL EXPLORATION LICENCE
181**

FOR THE PERIOD

22 Nov. 2006 to 21 Nov. 2007

February 2008

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1. Introduction

GEL 181 was granted to Havilah Resources NL on 22 November 2004 and subsequently transferred to Geothermal Resources Limited on 12 August 2005.

This is Geothermal Resources third year of tenure and the minimum work commitment was to complete one shallow drill hole (Table 1).

Adjacent to GEL 181 Geothermal Resources also holds existing GEL's 208, 209 and 210.

2. Work Completed

In accordance with the proposed work program, Geothermal Resources has compiled a comprehensive data base of all geophysical and borehole data for GEL 181. This work has confirmed Geothermal Resources original reason for taking out the GEL, namely that the area is underlain by a large gravity low that is probably caused by a buried granite body rather than a thick sequence of Arrowie Basin sediments.

Based on interpretation of all available data, eight drill hole locations were selected for shallow drilling to 500 metres depth during Years 2 and 3 (Figure 1). In anticipation of the Year 3 drilling program and in compliance with the requirements of the Petroleum Act, an Activity Notification document was prepared and lodged with PIRSA in July 2006. Permission for drilling of the eight holes was given at the end of 2006.

Four drillholes were completed in the GEL block in Year 3 with the assistance of a PACE grant (DPY 3-77) of \$100,000. Two holes were completed on GEL 181, namely Frome 2 and Frome 3, while two holes were completed on adjacent GEL 210, namely Frome 1 and Frome 9 (these holes are reported in the annual report for GEL's 208-210). All holes were drilled by a combination of a percussion drilling rig with 200 metre depth capacity owned by Talager Drilling Pty Ltd and a diamond drilling rig with more than 600 metre NQ coring capability owned by Silver City Drilling.

Drilling of the precollars with the Talager Drilling percussion drill rig commenced on 8 March 2007. For logistical reasons, owing to heavy rain in the region and difficulty of access, the first hole collared was Frome 8 on GEL 222 to the east, which was successfully drilled to 201 metres in dense green Neoproterozoic dolomitic siltstones.

Frome 2 (384527E 6513154N, AGD 66 co-ordinate system) was successfully completed with diamond coring to 500 metres depth on 28 June 2007. The hole was reamed and 100 mm PVC casing run to the commencement of hard rock at 138 metres depth. HQ diamond coring continued until 180 metres and NQ coring continued thereafter until the end of the hole at 500 metres. Cambrian limestones were encountered until approximately 340 metres, when reddish brown Neoproterozoic flaggy siltstones and shales were intersected. Water return was lost in some fracture zones towards the base of the Cambrian sequence, but generally drilling conditions were reasonable.

Frome 3 (387734E 6502647N, AGD 66 co-ordinate system), just over 10 kilometres south of Frome 2, was successfully completed with diamond coring to 500 metres depth on 14 July 2007. The attempted pre-collar drilled with the RC rig was unsuccessful owing to collapsing sands in the upper part of the hole. Consequently, the diamond drill rig started from surface in a new hole (**Frome 3A**) next to the Frome 3 collar. Frome 3A was mud drilled and cased to 125 metres and then successfully HQ cored until 188 metres and then NQ cored until end of hole at 500.4 metres. Fine grained, thinly bedded, red, brown and green dolomitic siltstones and shales of probable Neoproterozoic age were intersected the length of the hole.

TEMPERATURE LOGGING

Downhole temperature logging was carried out a few weeks after completion of drilling in order to allow water in the drillholes to reach thermal equilibrium with the country rocks. The Department for Water, Land and Biodiversity Conservation were contracted to do the logging using extremely accurate and sensitive state of the art logging equipment, which recorded a continuous temperature log for the entire hole.

Frome 2 and 3 (and Frome 9) all recorded abnormally high temperature gradients, with Frome 3, lying roughly midway between Frome 2 and Frome 9, having the highest bottom of hole temperature. The temperature gradient in Frome 3 is only a little lower than in the Cooper Basin. These three holes define an area of at least 400 square kilometres where temperatures over 40° C exist at 500m indicating a potentially large geothermal heat reservoir at depth. The three holes are **located near the centre of an interpreted large buried granite body** (based on gravity and seismic data) here informally referred to as the “**Vulcan granite**” after the Roman god of energy and fire (Figure 2).

Conductivity measurements will be made on selected core samples in order to calculate hypothetical heat flows in due course.

3. Reporting Against Requirements of the Petroleum Act 2000

(a) Summary of regulated activities conducted under the licence during the Year

Completion of drillholes Frome 2, 3 and 3A and temperature logging of these holes.

(b) Report for the Year on compliance with the Act, these regulations, the licence and any relevant statement of environmental objectives

Geothermal Resources carried out its field activities in accordance with the Cooper Basin Drilling SEO, dated November 2003 (see Appendix 1). All prevention and remediation measures, as listed in Appendix 1, were diligently followed. Geothermal Resources is not aware of any SEO non-compliance issues. Site visits and inspection by PIRSA personnel during drilling operations raised no non-compliance issues. Drill site rehabilitation was commented on favourably by PIRSA personnel.

All obligations were complied with, other than the late submissions for the annual report, and one wire-line LAS file. The annual report was not submitted within 2 months after the end of the licence year as required by Regulation 33. It was submitted within 3 months of the end of the licence year. This was largely due to insufficient staffing to cover both exploration and reporting roles. The LAS file for the wire-line log of Frome 2 was submitted late through incomplete knowledge of the reporting requirements for geophysical surveys.

(c) Actions to rectify non-compliance with obligations imposed by the Act, these regulations or the licence, and to minimise the likelihood of the recurrence of any such non-compliance

Ongoing efforts to find and employ suitably qualified technical staff to assist with tasks including timely submission of all reports.

(d) 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 action that has, or will be, taken

Management closely monitored all activities and did not detect any reportable deficiencies or incidents.

(e) List all reports and data relevant to the operation of the Act during the relevant licence Year

Report	Due date	Date submitted	Statement of compliance
2007 Annual Report	21 Jan. 2007	Feb. 2007	Late; ie. non-compliant
Notification of Activity	not applicable	Jul. 2006	Compliant (early)
Frome 2: Daily Drilling Reports	16/03/2007 to 17/03/2007 and 20/06/2007 to 29/06/2007	16/03/2007 to 17/03/2007 and 20/06/2007 to 29/06/2007	Compliant
Frome 3/3A: Daily Drilling Reports	18/03/2007 to 19/03/2007 and 4/07/2007 to 15/07/2007		Compliant
Frome 2 Wire-line log Las files (Temp. & Gamma)	19 Nov. 2007	[Feb. 2008]	[Late; ie. non-compliant]

Note: use of [] indicates not in this reporting period

(f) Report of incidents reportable to the Minister under the Act and regulations

No incidents occurred and therefore none were reported.

(g) Report on any reasonably foreseeable threats 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.

No threats identified

(h) Operations proposed for the ensuing Year

During Year 4 it is proposed to complete some further shallow drillholes to 200-600 metres depth in accordance with the Activity Notification lodged with PIRSA in July 2006 and subsequent addendums. This includes Frome 10 and 11 on GEL 210, and Frome 5 on GEL 181, and possibly Frome 8 and 9 on GEL's 208 and 209 respectively, depending on rig availability (Figure 3). Temperature logging of these holes will also be carried out. It is then planned to drill at least one deep hole to greater than 1000 metres in fulfilment of commitments to the end of Year 4 (see Table 1).

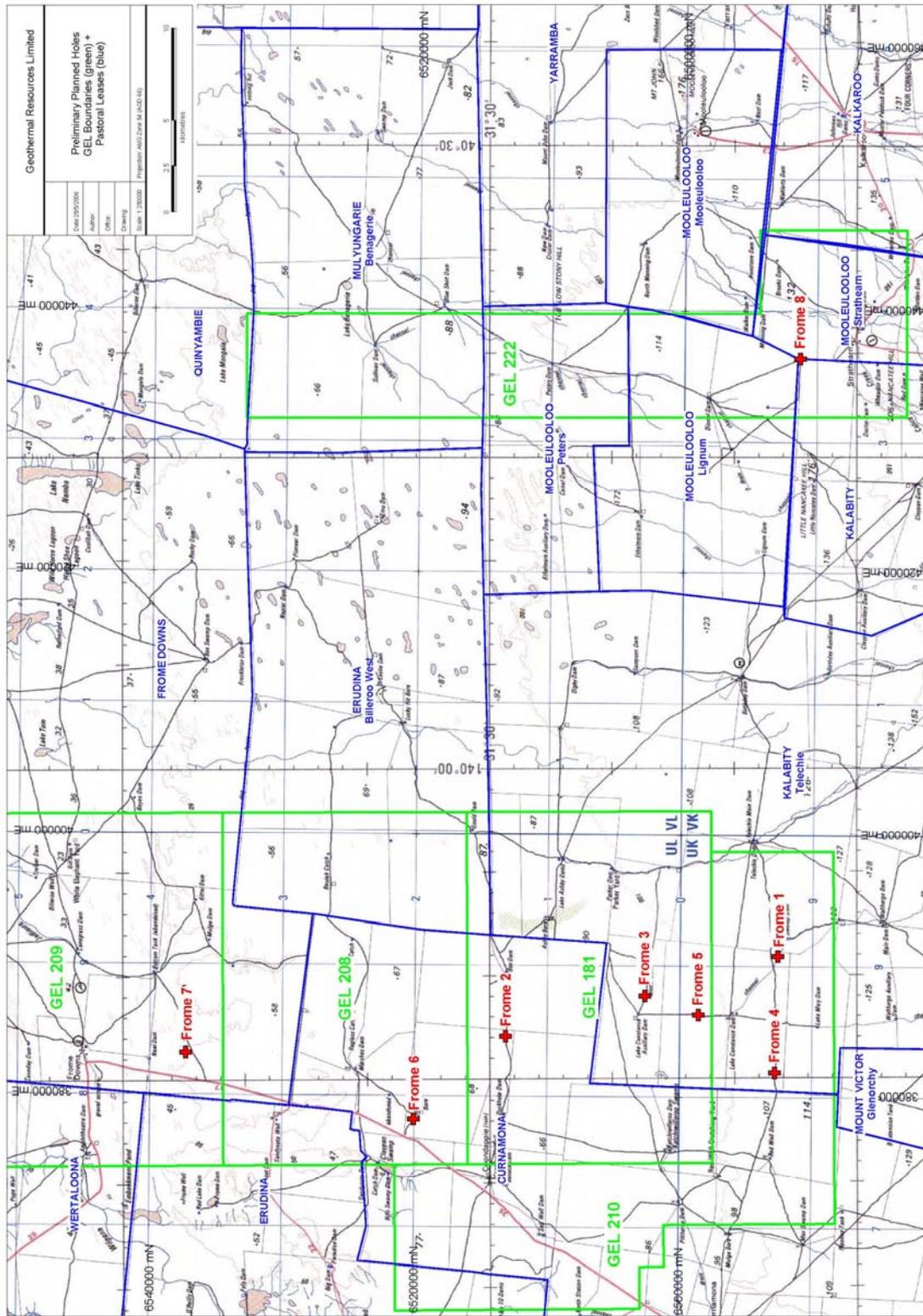
4. Expenditure for Year 3

Commercial in Confidence

TABLE 1: Work Program for GEL 181

Year	Work Commitment	Work completed
One	Gravity survey	Database compilation, acquisition existing gravity and seismic data.
Two	Data review	Selection of drill sites, aboriginal heritage survey, submission of Activity Notification, and submission for PACE grant – (received DPY 3-77).
Three	Drill one shallow hole	Completion of drillholes, Frome 2, 3 and 3A. Temperature logging of these holes.
Four	Drill one deep pilot hole	
Five	Drill one production well and one injection well	

Figure 1. GEL boundaries, pastoral leases and planned holes at start of Year 3.



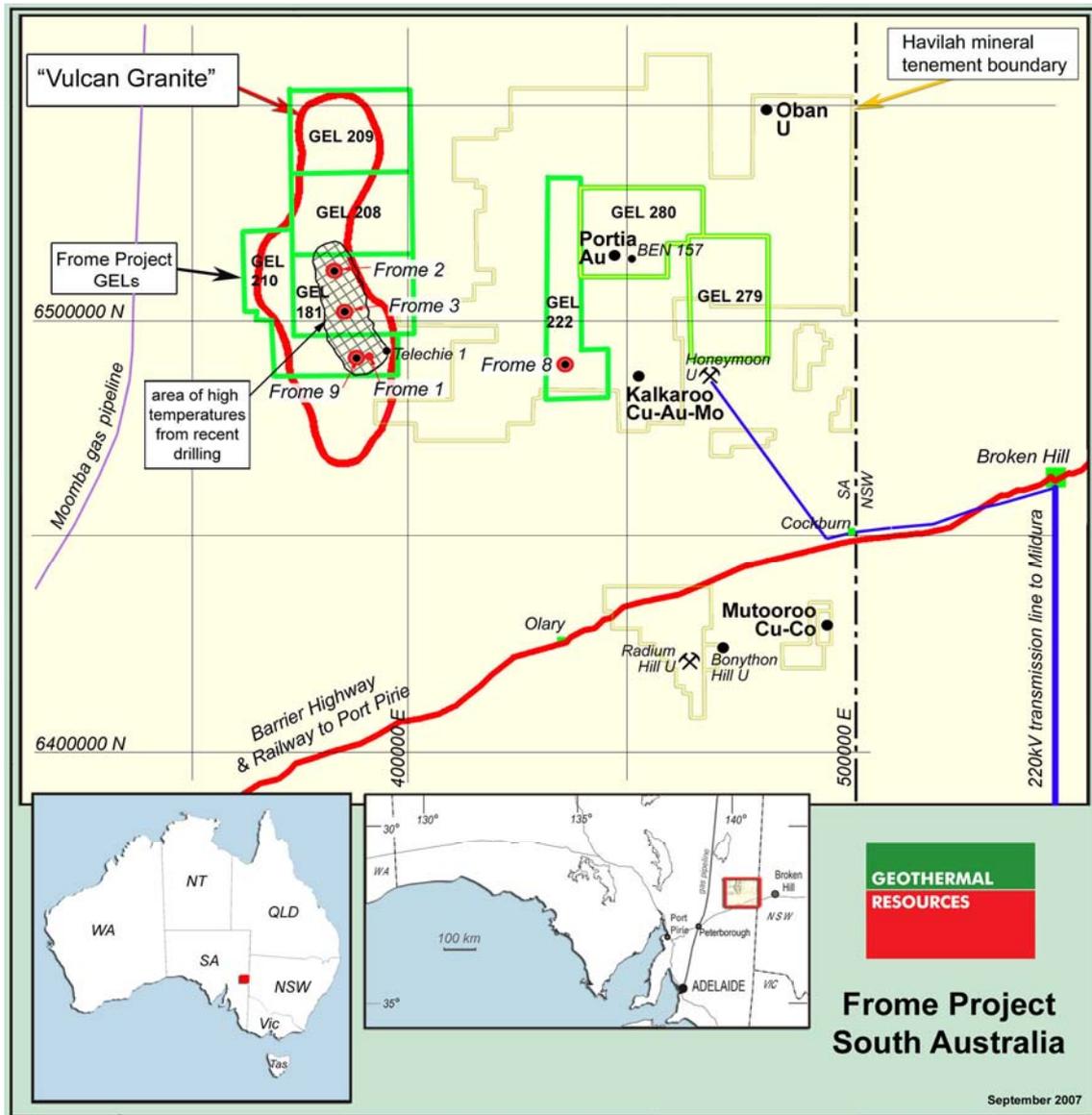


Figure 2. Holes completed during Year 3 on GEL's 181 and 210

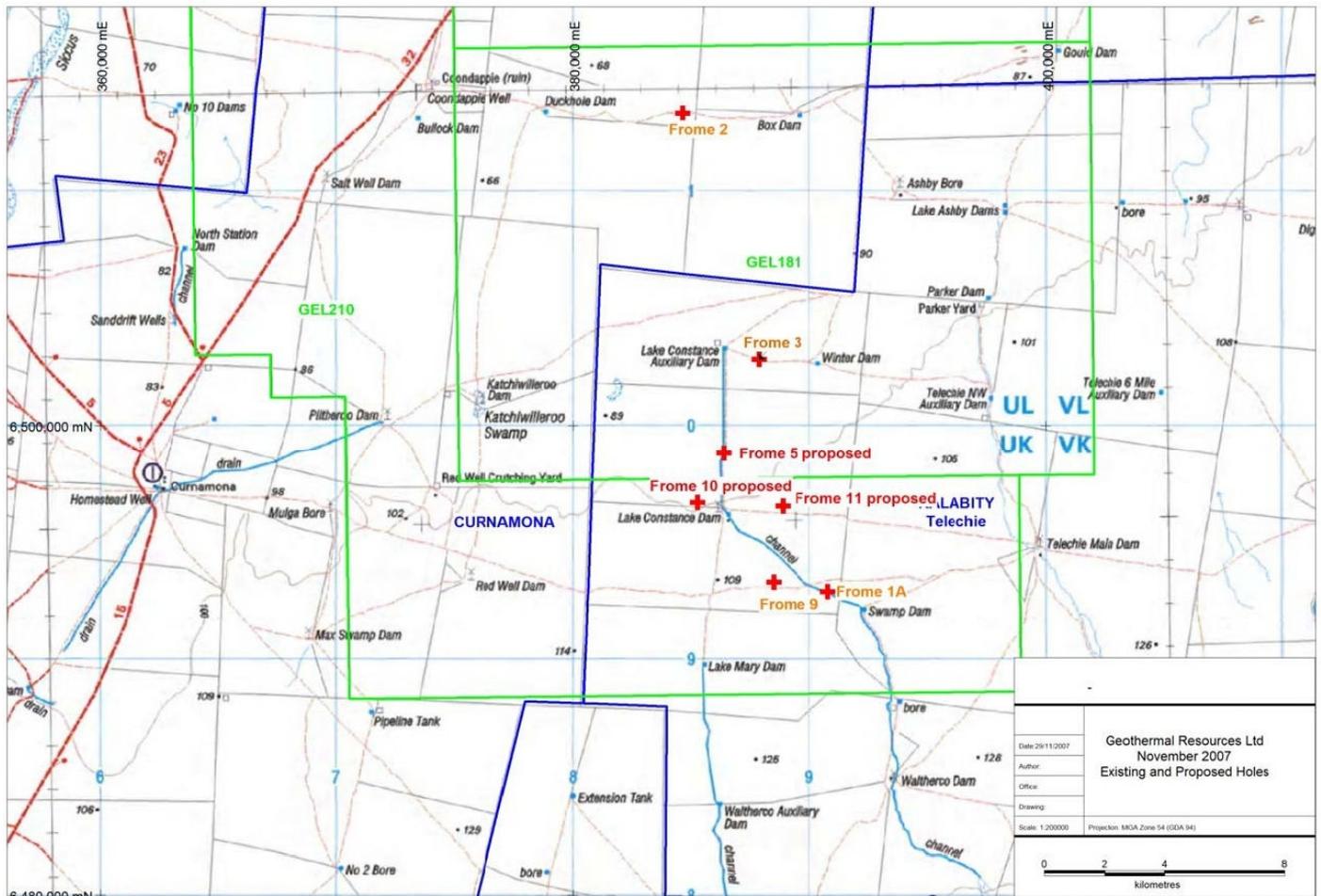


Figure 3. Drillhole (Frome 5) proposed during Year 4 on GEL 181

APPENDIX 1

ASSESSMENT of GEOTHERMAL RESOURCES

PERFORMANCE IN ACHIEVING

ENVIRONMENTAL OBJECTIVES

(as defined in the COOPER BASIN DRILLING SEO, 2003)

for all Drilling and Well Operations

in GEL 181 (AR 2007)

ASSESSMENT of GEOTHERMAL RESOURCES PERFORMANCE IN ACHIEVING ENVIRONMENTAL OBJECTIVES (as defined in the COOPER BASIN DRILLING SEO, 2003)

2007 AR: GEL 181 (all Drilling and Well Operations)

Environmental Objectives	Assessment Criteria	Compliant/ Non-Compliant	Comment
<p>Objective 1:</p> <p>Minimise the risk to public and other third parties.</p>	<ul style="list-style-type: none"> Reasonable measures implemented to ensure no injuries to the public or third parties. 	Compliant	
<p>Objective 2:</p> <p>Minimise disturbance and avoid contamination to soil.</p>	<p><u>Well Site and Access Track Construction</u></p> <ul style="list-style-type: none"> 0, + 1 or + 2 GAS criteria are attained for 'Minimise visual impacts of abandoned well sites and access tracks' objective as listed in Appendix 4 for well lease and access track construction. No unauthorised off-road driving or creation of shortcuts. No construction activities are carried out on salt lakes, steep tableland land systems or wetlands land systems (as defined in EIR). <p><u>Fuel and Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> No spills/leaks outside of areas designed to contain them. Level of hydrocarbon continually decreasing for in situ remediation of spills. Soils remediated to a level as determined by the SHI process. <p><u>Waste Disposal (domestic, sewage and sludges)</u></p> <ul style="list-style-type: none"> All domestic wastes are disposed of in accordance with WPA licensing requirements. 0, + or + 2 GAS criteria for 'Waste material' objective is attained. 	<p><u>Well Site and Access Track Construction:</u></p> <p>Compliant</p> <p>GAS +1</p> <p><u>Fuel and Chemical Storage and Handling:</u></p> <p>Compliant</p> <p><u>Waste Disposal:</u></p> <p>Compliant</p> <p>GAS +2</p>	<p>GAS of +1, rather than +2, because the earthwork disturbance is only beginning to blend with the surroundings.</p>

Environmental Objectives	Assessment Criteria	Compliant/ Non-Compliant	Comment
<p>Objective 3:</p> <p>Avoid the introduction or spread of pest plants and animals and implement control measures as necessary.</p>	<ul style="list-style-type: none"> ▪ No weeds or feral animals are introduced to operational areas. 	Compliant	
<p>Objective 4:</p> <p>Minimise disturbance to drainage patterns and avoid contamination of surface water and shallow ground water resources.</p>	<p><u>Well Lease and Access Track Construction.</u></p> <ul style="list-style-type: none"> ▪ Well leases and access tracks are located and constructed to maintain pre-existing water flows (ie. channel contours are maintained on floodplains and at creek crossings). <p><u>Drilling Mud Sumps and Flare Pits</u></p> <ul style="list-style-type: none"> ▪ No overflow of drill cuttings, mud and other drilling fluids from mud sumps. ▪ No waste material disposal to sumps and flare pits. <p><u>Fuel/Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> ▪ No leaks spills outside of areas designed to contain them. 	Compliant	
<p>Objective 5:</p> <p>Avoid disturbance to sites of cultural and heritage significance.</p>	<ul style="list-style-type: none"> ▪ Proposed well sites and access tracks have been surveyed and any sites of Aboriginal and non-Aboriginal heritage identified. ▪ Any identified cultural and heritage sites have been avoided. 	Compliant	
<p>Objective 6:</p> <p>Minimise loss of aquifer pressure and avoid aquifer contamination.</p>	<p><u>Drilling & Completion Activities</u></p> <ul style="list-style-type: none"> ▪ There is no uncontrolled flow to surface (Blow out). ▪ Sufficient barriers exist in casing annulus to prevent cross flow between separate aquifers of hydrocarbon reservoirs. ▪ Relevant government approval obtained for abandonment of any radioactive tool left down-hole. 	Compliant	

Environmental Objectives	Assessment Criteria	Compliant/ Non-Compliant	Comment
<p>Objective 6 cont. :</p> <p>Minimise loss of aquifer pressure and avoid aquifer contamination.</p>	<p><u>Producing, Injection, Inactive and Abandoned Wells</u></p> <ul style="list-style-type: none"> ▪ No cross-flow behind casing between aquifers, and between aquifers and hydrocarbon reservoirs unless approved by DWLBC. 		
<p>Objective 7:</p> <p>Minimise disturbance to native vegetation and native fauna.</p>	<p><u>Well Lease and Access Track Construction and Restoration</u></p> <ul style="list-style-type: none"> ▪ Any sites with rare, vulnerable and endangered flora and fauna have been identified and avoided. ▪ 0, + 1 or + 2 GAS criteria are attained for 'Minimise impacts on vegetation' objectives as listed in Appendix 2, during well lease and access track site selection and construction and for 'Re-establish natural vegetation on abandoned well sites and access track' objective in Appendix 4. <p><u>Waste Management</u></p> <ul style="list-style-type: none"> ▪ Refer to assessment criteria for Objective 11. <p><u>Fuel and Chemical Storage and Management</u></p> <ul style="list-style-type: none"> ▪ Refer to assessment criteria for Objectives 2 and 4. 	<p>Compliant</p> <p>Appendix 2 GAS: +2</p> <p>Appendix 4 GAS: +1</p>	<p>GAS of +1, rather than +2, because there are no perennials.</p>
<p>Objective 8:</p> <p>Minimise air pollution and greenhouse gas emissions.</p>	<ul style="list-style-type: none"> ▪ Compliance with EPA requirements. 	<p>Compliant</p>	
<p>Objective 9:</p> <p>Maintain and enhance partnerships with the Cooper Basin community.</p>	<ul style="list-style-type: none"> • No unresolved reasonable complaints from the community. 	<p>Compliant</p>	
<p>Objective 10:</p> <p>Avoid or minimise disturbance to stakeholders and/or associated infrastructure.</p>	<ul style="list-style-type: none"> • No reasonable stakeholder complaints left unresolved. 	<p>Compliant</p>	

Environment Objectives	Assessment Criteria	Compliant/ Non- Compliant	Comment
<p>Objective 11:</p> <p>Optimise waste reduction and recovery.</p>	<ul style="list-style-type: none"> ▪ With the exception of drilling fluids, drill cuttings and other fluids disposed during well clean-up, and sewage wastes, all wastes to be disposed of at an EPA licensed facility in accordance with IPA Licence conditions. ▪ Attainment of GAS criteria for 'Site left in clean, tidy and safe conditions after final clean-up' objective during well site restoration (refer Appendix 4). ▪ Attainment of Gas criteria for 'site left in clean, tidy and safe condition' objective during borrow pit restoration (refer Appendix 5). 	<p>Compliant</p> <p>Site cleanliness GAS: 0</p>	<p>A GAS score of 0 is the maximum attainable in this category.</p>
<p>Objective 12:</p> <p>Remediate and rehabilitate operational areas to agreed standards.</p>	<ul style="list-style-type: none"> ▪ No unresolved reasonable stakeholder complaints. <p><u>Contaminated Site Remediation</u></p> <ul style="list-style-type: none"> ▪ Contaminated sites are remediated in accordance with criteria developed with the principals of the National Environment Protection Measure of Contaminated sites and in consultation with the EPA. <p><u>Well Site and Access Track Restoration</u></p> <ul style="list-style-type: none"> ▪ The attainment of 0, + 1 or + 2 GAS criteria for (refer Appendix 4): <ul style="list-style-type: none"> – 'minimise visual impact of abandoned well sites' – 'minimise visual impact of abandoned access tracks' – 're-establish natural vegetation on abandoned well sites and access tracks' <ul style="list-style-type: none"> • <i>Note:</i> Well abandoned issues addressed under objective 6. 	<p>Compliant</p> <p>na</p> <p>GAS: +1</p>	<p>GAS of +1, rather than +2, because the earthwork disturbance is only beginning to blend with the surroundings.</p>

