

**GEL 156 – Paralana – Licence year 3**  
**GEL 254 – Paralana North – Licence year 5**  
**GEL 336 – Paralana Extension – Licence year 5**

**Combined Annual Report**  
**23 November 2012 – 22 November 2013**

**GEL 156 – Paralana**  
**GEL 254 – Paralana North**  
**GEL 336 – Paralana Extension**

**Combined Annual Report**

**23 November 2011 – 22 November 2012**

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# 1. Introduction

Neighbouring tenements GEL 156 (Paralana), GEL 178 (Paralana East) and GEL 180 (Paralana South) were granted to MNGI Pty Ltd, a wholly owned subsidiary of Petratherm Ltd, on 23 November 2004 for a period of 5 years each.

In December 2005 Petratherm applied for, and was granted, Variations to the Work Programs of each of the three Paralana tenements with the view of amalgamating their work programs into a single regional project and streamlining compliance reporting.

Subsequently, on 23 November 2006, GEL 254 (Paralana North) was added to the Paralana Project licences followed by GEL 336 (Paralana Extension) on 20 September 2007. As such GELS 156, 178, 180 and 254 share a common anniversary and work program. In March 2008 Petratherm was granted a suspension on Paralana 336 in order to bring the anniversary date in-line with the other 4 Paralana tenements. Petratherm also applied for and was granted in March 2008 a work program variation which merged the Year 4 and 5 work program requirements of the Paralana tenements together.

In October 2009 Petratherm submitted a request to PIRSA to consolidate GELs 156, 178 & 180 into a single licence and to extend that licence for a further 5 year term; also to suspend GEL 254 for the period 23 Nov 2009 through to 22 Nov 2010 in order to align the anniversary date of GEL 336 for future consolidation. Those changes were approved.

In June 2012, Petratherm applied to vary the work programs and form a common work program for the Paralana GEL's 156, 336 and 254. Petratherm also applied to place GEL's 156, 254 and 336 into suspension for a period of 12 months. The variation and those changes were approved on the 7<sup>th</sup> of August 2012.

In September 2013, Petratherm applied for a consolidation of GELs 254 and 336 and the relinquishment of 33% of their combined area. The new GEL 254 was renewed for a period of 5 years.

This report provides a summary of work activities performed on the three tenements over the period 23 November 2012 to 22 November 2013 which represents Year 3 of the GEL 156 work program and Years 5 of the 254 and 336 work programs.

## 2. Permit Summary

For the duration of the licence year, MNGI (Petratherm) held a 79% and Beach Energy a 21% interest for Geothermal Exploration Licences (GELs) 156, 254 and 336.

The work programs of Paralana GEL's 156, 336 and 254 have been varied in order to form a common work program. GEL's 156,254 and 336 have been placed into suspension for a period of 12 months from and including 30 July 2012 to 29 July 2013. The variation and the changes were approved on the 7th of August 2012. The motivation for these changes is that the year 3 program has been delayed, whilst Federal Government grant funding arrangements for the drilling of Paralana 3 are resolved.

The current work commitments associated with the above licences can be seen in Table 1. The suspension has been taken into account in the license dates.

**Table 1 Current work commitments by licence year**

Licence Year	Licence Dates	Work Program for Paralana: GEL 156
Yr 3	23 Nov 2011 - 22 Nov 2013	<ul style="list-style-type: none"> <li>Geological and geothermal studies <i>(Year 3 work program may be conducted anywhere within the boundaries of GELs 156, 254 and 336)</i></li> </ul>
		Work Program for Paralana: GEL 254
Yr 5	23 Nov 2011 - 22 Nov 2013	<ul style="list-style-type: none"> <li>Geological and geothermal studies <i>(Year 5 work program may be conducted anywhere within the boundaries of GELs 156, 254 and 336)</i></li> </ul>
		Work Program for Paralana: GEL 336
Yr 5	23 Nov 2011 - 22 Nov 2013	<ul style="list-style-type: none"> <li>Geological and geothermal studies <i>(Year 5 work program may be conducted anywhere within the boundaries of GELs 156, 254 and 336)</i></li> </ul>

Considering the suspension, the current licence Year has concluded on 22 November 2013. The following table, Table 2, displays the minimum work program and the actual work completed up until the end of the reporting period.

**Table 2 Final work program and work completed in the current reporting period**

Work Commitment	Actual Work
<ul style="list-style-type: none"> <li>Geological and geothermal studies</li> </ul>	<ul style="list-style-type: none"> <li>Data review, processing and interpretation</li> <li>MEQ array maintenance, monitoring and data download</li> </ul>

### 3. Regulated Activities - 2011 Reporting Period

Pursuant to Regulation 33(2)(a) under the Act, the following is a summary of the regulated activities conducted under the licence during the 2011 reporting year.

**Table 3** Summary of Activities

Activity	Refer to Section
<b>Seismic Data Acquisition</b> <ul style="list-style-type: none"> <li>• Microseismic data captured but not downloaded. MEQ sites inspected</li> </ul>	3.1
<b>Seismic Data Processing and Reprocessing</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	
<b>Geochemical Surveys</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	
<b>Drilling and Related Activities</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	
<b>Preliminary Survey Activities</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	
<b>Production and Processing</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	
<b>Pipeline/Flowline Construction and Operation</b> <ul style="list-style-type: none"> <li>• <i>No regulated activities undertaken in the licence reporting period</i></li> </ul>	

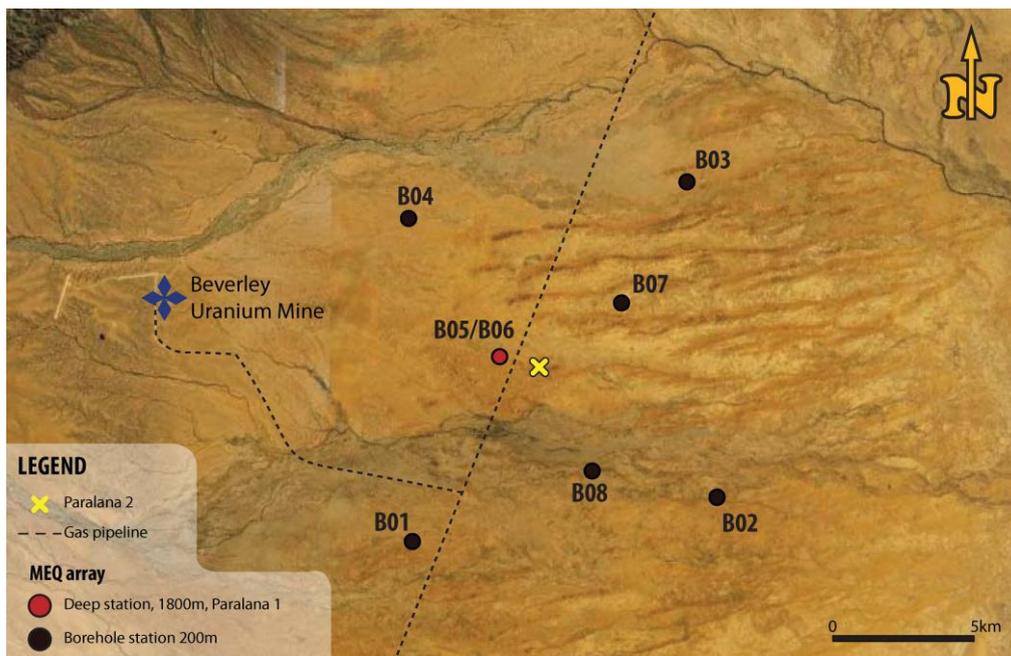
### 3.1 Microseismic Data Acquisition

**Table 4 Paralana 2 – Microseismic Data Acquisition Summary**

<b>Wells</b>	Paralana 1B (Paralana B-05) Paralana B-01 Paralana B-02 Paralana B-03 Paralana B-04 Paralana B-06 Paralana B-07 Paralana B-08
<b>Type of Well</b>	Geothermal exploration/reinjection MEQ boreholes
<b>Operator</b>	Beach Energy on behalf of MNGI
<b>Contractor</b>	IESE (Institute of Earth Science and Engineering) Hasting Micro-Seismic Consulting
<b>Download dates</b>	A site inspection occurred but no down load was made during the period. The array was operating and capturing data.
<b>Results</b>	None

#### 3.1.1 Passive Seismic Array

The passive seismic array following the 2011/2012 stimulation and flow test activities includes 1 deep borehole geophone at 1800 m below surface in Paralana1B (B05), 6 borehole sondes at approximately 200 m and 1 borehole sonde (B06) at 40m (refer to Figure 1).



**Figure 1: Paralana passive seismic array in the current license year**

### 3.1.2 Microseismic Data Processing and Reprocessing

Petratherm staff are responsible for the maintenance of MEQ array and the downloading of the data. The site was visited once in the reporting period to check the operating status of the MEQ stations however no data download occurred.

## 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.”*

*MNGI (Petratherm) and its JV partner Beach Energy have complied with the relevant conditions under the Petroleum Act 2000 and the Petroleum Regulations 2000. Detailed information on the individual instances of non-compliance is provided below in designated sections.*

#### Licence Non-Compliance

**Table 5 List of licence non-compliances for current reporting year**

No.	Stated Commitment	Reason for Non-Compliance	Rectification of Non-Compliance
No licence non-compliances occurred			

#### Regulatory Non-Compliance

**Table 6 List of regulatory non-compliances for current reporting year**

No.	Date	Activity	Details of Non-Compliance	Rectification of Non-Compliance
No regulatory non compliances occurred				

#### Compliance with Statement of Environmental Objectives (SEOs)

The SEOs used to assess compliance are:

Statement of Environmental Objectives for Drilling and Well Operations in the Cooper/Eromanga Basins – South Australia 2009 and; Statement of Environmental Objectives for Ground-Based Geophysical Operations (non-seismic) in South Australia 2007

An updated assessment of performance in achieving the SEO objectives is made when visits are conducted on site for MEQ array maintenance. Operations are continuing on the drilling site so the site remains to be completely rehabilitated. MNGI (Petratherm) and Beach Energy are satisfied that the objectives required by the SEO have been met up to the current stage of operations.

Appendix 1 summarises the assessment of MEQ array maintenance operations against the SEO objectives.

## 4.2 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 carried out during the licence year.

## 4.3 Report and Data Submissions

**Table 7 List of report and data submissions during current licence reporting year**

<b>Description of Report/Data</b>	<b>Date Due</b>	<b>Date Submitted</b>	<b>Compliant / Non-Compliant</b>
Annual Report for GELs 156 (Year 3) 254 (Year 5) and 336 (Year 5)	24/01/2013	22/01/2013	Compliant
<b>QUARTERLY CASED HOLE AND REPORTABLE ACTIVITY REPORTS</b>			
Quarter 4 – December 2012	31/01/2013	31/01/2013	Compliant
Quarter 1 – March 2013	30/04/2013	30/04/2013	Compliant
Quarter 2 – June 2013	31/07/2013	31/07/2013	Compliant
<b>Beach Energy, Paralana Quarterly Cased Hole Well Activity Report 4Q 2012</b>	31/01/2013	31/01/2013	Compliant
<b>Beach Energy, Paralana Quarterly Cased Hole Well Activity Report 1Q 2013</b>	30/04/2013	30/04/2013	Compliant
<b>Beach Energy, Paralana Quarterly Cased Hole Well Activity Report 2Q 2013</b>	31/07/2013	30/07/2013	Compliant
<b>Beach Energy, Paralana Quarterly Cased Hole Well Activity Report 3Q 2013</b>	31/10/2013	31/10/2013	Compliant
<b>OTHER REPORTS</b>			
<b>Petratherm, Paralana tenement consolidation and GEL renewal</b>	N/A	17/09/2013	N/A
<b>Petratherm, Paralana DFIT, Microseismic Operations Report</b>	N/A	01/09/2013	N/A
<b>Petratherm, Paralana DFIT, Microseismic Processing Report</b>	N/A	01/09/2013	N/A
<b>Petratherm, Paralana DFIT, Microseismic Interpretation Report</b>	N/A	01/09/2013	N/A
<b>Petratherm, Paralana Hydraulic Fracture Stimulation, Microseismic Operations Report</b>	N/A	01/09/2013	N/A
<b>Petratherm, Paralana Hydraulic Fracture</b>	N/A	01/09/2013	N/A

<i>Stimulation, Microseismic Processing Report</i>			
<b>Petratherm, Paralana Hydraulic Fracture Stimulation, Microseismic Interpretation Report</b>	N/A	01/09/2013	N/A

#### 4.4 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 – an overall assessment and analysis of the incidents, including the identification and analysis of any trends that have emerged; and 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”.**

**Table 8 List of incidents during current licence reporting year**

<i>Date</i>	<i>Activity</i>	<i>Incident Description</i>	<i>Type of Loss</i>	<i>Action to Rectify &amp; Effectiveness of Action</i>	<i>Date Reported / Reported to Whom</i>
<b><i>No reportable incidents occurred</i></b>					

#### 4.5 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 presents, 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 the subject GELs other than the disruptive influence of occasional rain storms and dust storms. Exploration activity schedules are adjusted accordingly.

## 5 Future Work Programme

The work program for the next Licence Year of the Paralana Project Tenements will be aimed at drill preparation works and the drilling of the production well Paralana 3.

**Table 9 Paralana Project current work program summary**

Licence Year	Licence Dates	Work Program for Paralana: GEL 156
Yr 4	23 Nov 2013 - 22 Nov 2014	<ul style="list-style-type: none"> <li>• Drill one well</li> <li>• Geological and geothermal studies <i>(Year 3 work program may be conducted anywhere within the boundaries of GEL 156 and consolidated GEL 254)</i></li> </ul>
		<b>Work Program for Consolidated Paralana: GEL 254</b>
Yr 1	23 Nov 2013 - 22 Nov 2014	<ul style="list-style-type: none"> <li>• Geological and geothermal studies <i>(Year 3 work program may be conducted anywhere within the boundaries of GEL 156 and GEL 254)</i></li> </ul>

# Appendix 1

## Assessment of SEO Compliance

### 1. SEO for MEQ array maintenance operation

Environmental Objective	Assessment Criteria	Compliant / Non-compliant	Comments
<b>Objective 1:</b> Minimize impact on native flora and fauna and endangered ecological communities.	<ul style="list-style-type: none"> <li>Any sites with rare, vulnerable and endangered flora and fauna have been identified and avoided.</li> <li>0, +1, +2 GAS<sup>1</sup> criteria are attained for 'Minimise impact on native vegetation'.</li> <li>No deaths or injury to fauna as a result of project activities.</li> </ul>	<i>Compliant</i>	Occasional visits to 8 existing MEQ monitoring stations, using single 4WD vehicle and using existing tracks.
<b>Objective 2:</b> Avoid the introduction or spread of pest plants and animals.	<ul style="list-style-type: none"> <li>Nor weeds or feral animals are introduced to, or spread in operational areas as a consequence of activities.</li> </ul>	<i>Compliant</i>	All vehicles and equipment were cleaned before arrival and departure from site.  No pets or other animals were brought to site.
<b>Objective 3:</b> Avoid or minimise disturbance to stakeholders and/or associated infrastructure.	<ul style="list-style-type: none"> <li>No reasonable stakeholder complaints left unresolved.</li> </ul>	<i>Compliant</i>	No complaints were received
<b>Objective 4:</b> Avoid disturbance to sites of cultural and heritage significance.	<ul style="list-style-type: none"> <li>Sites of operation have been surveyed and any sites of cultural and heritage significance identified.</li> <li>Any identified cultural and heritage sites avoided.</li> </ul>	<i>Compliant</i>	Cultural and Heritage site registers consulted. Local station manager consulted.
<b>Objective 5:</b> Minimize the risk of initiation and/or propagation of wildfire.	<ul style="list-style-type: none"> <li>Appropriate plans in place and equipment available to identify hazards, initiate hazard mitigation and response training, fire-fighting equipment available</li> </ul>	<i>Compliant</i>	An Emergency Response Plan exists for the area and is known to the personnel. Fire-extinguishers are present in vehicles. Local station manager and workmen aware of the personnel's movements.
<b>Objective 6:</b> Minimize the visual impacts of geophysical operations.	<ul style="list-style-type: none"> <li>Surveying, creation of wheel tracks and campsite preparation.</li> <li>Proposed survey traverses have been appropriately located to minimize visual impacts.</li> <li>Vegetation and terrain variations have been used to minimise survey traverse visibility.</li> <li>Planning procedures to minimize visibility aspects are evident and available for audit upon request.</li> </ul>	Compliant	Work crews accommodated at existing local station facilities or mine site. No campsite setup. Occasional visits only to a small number of monitoring stations with a single 4WD vehicle.

<sup>1</sup> Goal Attainment Scaling

<p><b>Objective 7:</b> Prevent the occurrence of seismic activity that could cause concern to local populations or damage to local infrastructure.</p>	<ul style="list-style-type: none"> <li>Local seismic indicators (ground velocity, acceleration or moment magnitudes) not to exceed level were damage to infrastructure is possible as determined by the site specific risk assessment (Petratherm, 2010).</li> </ul>	<p>Compliant</p>	<p>Seismic monitoring of the site during, post stimulation and during the flow test was undertaken. Seismic data was analysed in real-time to determine event magnitudes and guide activities as per the response plan outlined in assessment. No complaints were received from stakeholders or locals.</p>
<p><b>Objective 8:</b> Optimise waste avoidance, reduction, reuse, recycling treatment and disposal.</p>	<ul style="list-style-type: none"> <li>All wastes to be disposed at an EPA facility.</li> <li>Wastewater disposal in accordance with the Public and Environmental Health (Waste Control) Regulations 1995 or to the Department of Health's satisfaction.</li> <li>Attainment of GAS criteria for "Site to be left clean, tidy and safe".</li> </ul>	<p>Compliant</p>	<p>Crew camped at established quarters at local homestead or on mine site. All waste disposed of at the homestead or at the mine site.</p>