

**EL 65/2007 Tunbridge**

**ANNUAL REPORT**

**Energy Investments Pty Ltd**

September 2011 to September 2012

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## **1 Abstract**

An exploration drilling programme comprising 16 cored holes and 9 rotary holes was completed in 2010-2011 and reported on in September 2011.

Wireline geophysical logs were run in all holes.

Coal quality testing was conducted on 108 samples from the cored holes.

Float-sink testing was conducted on 50 seam and composite samples.

An evaluation of clean coal apparent yield was conducted.

A geological and coal quality data base was prepared with current exploration data and suitable historic data.

A geological model of the deposit was created

In-situ resources were estimated.

A drilling program is currently under way to allow a JORC compliant resource to be calculated and to investigate the increasing coal quality to the north.

Additional drill testing to confirm the extent of the better quality areas is currently proceeding and will be continued to allow a JORC compliant resource to be calculated.

A regional drilling program outside the area of the main graben structure to the north and northwest is planned.

## Table of Contents

2	Introduction.....	4
2.1.1	Exploration philosophy and geological setting.....	4
2.1.2	Licence details.....	4
2.1.3	Location and Geology.....	4
2.1.4	Tenure.....	7
3	Review of previous work.....	7
3.1.1	Prior to current tenement.....	7
3.1.2	During current tenement.....	7
3.1.3	Drilling Programme.....	7
3.1.4	Coal Quality Testing.....	8
3.1.5	Geological Modelling and Resource Estimate.....	9
3.1.6	Discussion of results.....	9
4	Exploration completed during the reporting period.....	10
5	Conclusions and future work.....	11
6	Environment.....	11
7	Expenditure.....	12

## List of figures

1.	Location of EL65/2007 Tunbridge	5
2.	Regional geology	6
3.	Modelled drill holes plus seam subcrops	8
4.	Planned drilling program for 2012 at Woodbury	10

## **2 Introduction**

### **2.1.1 Exploration philosophy and geological setting**

The aim of the current exploration programme on EL 65/2007 (Tunbridge) (see Figure 1 for locality) is to provide drill data to allow the quantification of a JORC resource in the near surface Triassic coal measures. The coal measures are associated with a lithic sandstone sequence which has been preserved from erosion by the overlying Jurassic dolerite capped Black Tier Range immediately to the south of the Woodbury deposit (see Figure 2 for regional geology).

Continuity of the coal seams has been established by past explorers through a combination of lithological, geophysical and analytical correlation. The Woodbury trough trends  $112^{\circ}$  and extends for a minimum of 9 kilometres (km) long and is 1 km wide. The Kuranda Graben forms a cross cutting structure trending  $63^{\circ}$  and is approximately 4 km long and 700 meters (m) wide. Coal seam distribution and lateral extent is not restricted to the graben structures.

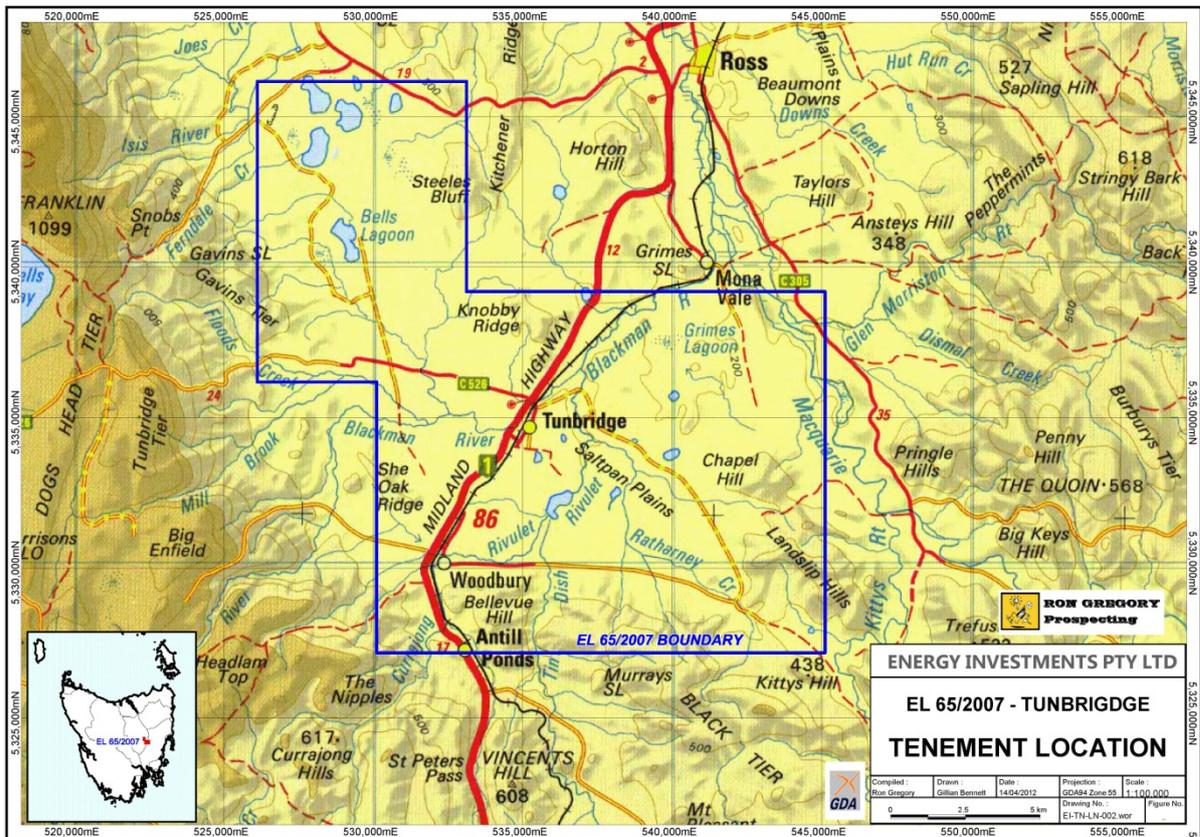
Black coal was first discovered by Victor Petroleum and Resources Ltd, at Woodbury in 1981. Historically a number of companies have explored the region for coal and petroleum. In total 68 drill holes were completed, most of which were relatively shallow and designed to test the open cut potential of the area whilst leaving the underground potential virtually untested.

### **2.1.2 Licence details**

Tenement number:	EL 65/2007
Tenement name:	Tunbridge
Tenement area:	237 sq km
Reporting period:	18/9/11 – 18/9/12
Tenement holder:	Energy Investments Pty Ltd
Project Supervisor:	Ron Gregory Prospecting

### **2.1.3 Location and Geology**

The Woodbury project area consists predominantly of undulating pastoral lands which are currently being converted from sheep grazing to centre pivot irrigation. The resource area is located adjacent to the main north south railway line and Midlands Highway which connect the main population centres and ports of Hobart and Launceston (Bell Bay). The deposit is approximately half way between these two centres (85km). The townships of Oatlands, Ross and Campbell Town are located within 20 kilometres of the Woodbury Deposit. The location of the licence is shown in Figure 1 below.

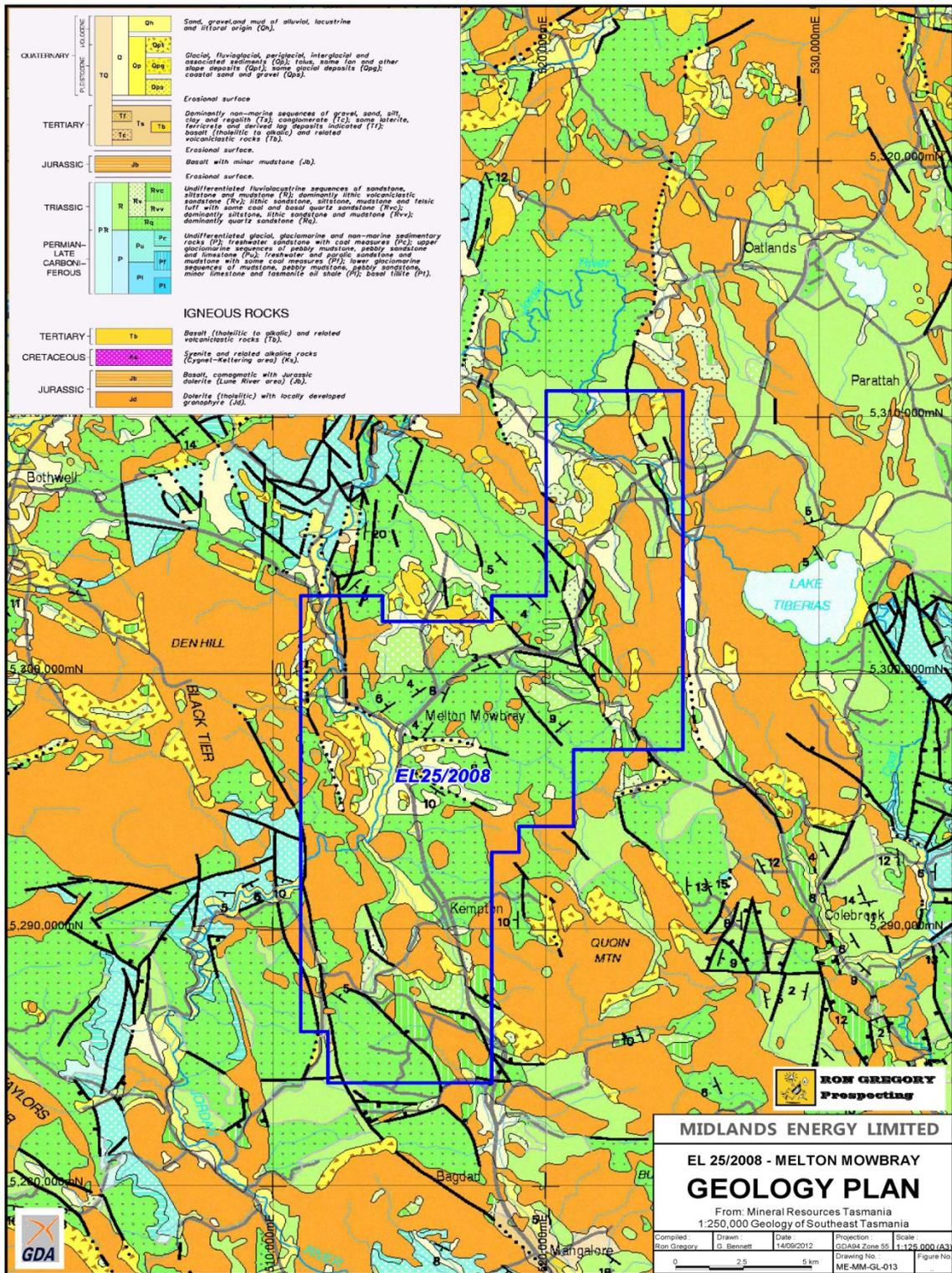


**Figure 1.** Location of EL65/2007 Tunbridge

The Triassic coal measures at Woodbury are found in a gently west plunging anticline with the seams dipping at  $4^{\circ}$  to the north and  $8^{\circ}$  to the south (see Figure 2 and Figure 3). The deposit is confined by the Tin Dish Fault in the west, the Sugarloaf Fault to the east and the Wood 2 Fault in the south.

The high country around the Woodbury area is formed by large dolerite intrusions and within the resource there are two small dolerite intrusions forming low hills.

Four major seams have been delineated from the shallowest D (1.55m), C (1.15m), B (0.8m) to the deepest being A (0.95m).



## **2.1.4 Tenure**

Five years from 18 September 2008 to 18 September 2013

## **3 Review of previous work**

### **3.1.1 Prior to current tenement**

A number of past explorers have conducted significant exploration over the Woodbury tenement. A joint venture between Costain Australia Limited, Victor Petroleum & Resources Limited and North West Bay Company Pty. Limited completed a study into the economics of supplying a nearby coal fired power plant in 1983 proposed by the Hydro Electric Commission of Tasmania.

### **3.1.2 During current tenement**

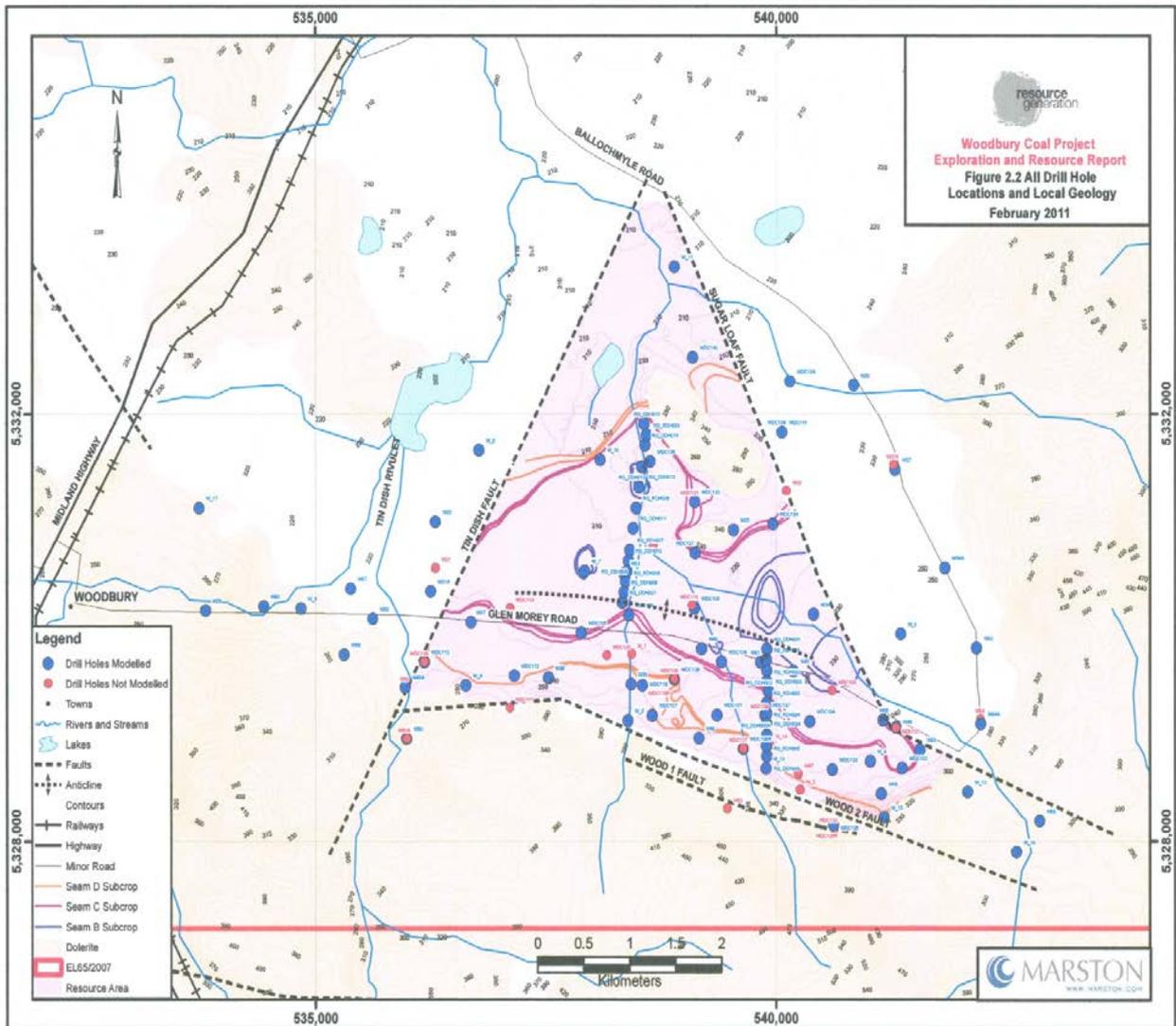
A thorough review was undertaken of all historical reports including an extensive review of maps and data retained by Mineral Resources Tasmania. A new computer data base was constructed comprising data from 96 historic drill hole records. Geophysical logs were available for only 33 of the historic holes and in many instances data was scaled from graphic seam profiles rather than borehole logs.

### **3.1.3 Drilling Programme**

A drilling programme of 25 holes was completed in 2010 and fully reported on 2011. The drilling programme was managed by Marston International Pty Ltd. These notes summarise the results of the drilling programme which are reported in full in the report "Woodbury Coal Project Exploration and Resource Report", by Marston International Pty Ltd, February 2011.

The holes were drilled on two near parallel lines. Ten holes were drilled on Line 1 on 538,380mE and 12 holes were drilled on Line 2 on 539,900mE. The holes were spaced 100 - 200m apart and comprised 16 HQ diamond holes and 9 rotary holes for a total of 1,750m. Depth varied from 42.2 to 103.0m. The four seams described above were encountered with up to three splits recognised in each seam. The drilling indicated the structure of the deposit was relatively simple although seam splitting and pinching was quite complex (see Figure 3 below).

All holes were logged with wireline geophysical tools that included long-spaced density, short-spaced density, natural gamma, resistivity and caliper.



**Figure 3.** Modelled drill holes plus seam subcrops.

### 3.1.4 Coal Quality Testing

Coal quality testing was conducted on 108 samples collected from the 16 HQ core holes. All coal sections > 0.3m thick were sampled including stone bands > 0.1m thick. Samples were collected from coal plies and coal seam roof and floor. Samples were analysed at SGS Laboratories in Newcastle for total moisture, inherent moisture, ash, volatile matter, fixed carbon, total sulphur, calorific value and relative density.

A total of 50 composite and single seam samples from Seams A, B, C and D were submitted for float-sink testing. The samples were crushed to a top size of 12 mm and were tested at densities of 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0 and 2.2 in accordance with AS 4156.1. All float fractions were tested for ash content. The majority of the tested samples were from Seams A and B.

The test results indicate a product with average ash content of 20% (adb) could theoretically be achieved through washing with an average apparent yield of 61%. The results indicate apparent yield is highly variable between the seams and across the deposit. The majority of samples with higher apparent yield are from Seams A and B and there appears to be a trend towards higher apparent yield to the north of the deposit.

### **3.1.5 Geological Modelling and Resource Estimate**

The depth and thickness of all coal seam records in the geological logs was corrected to the geophysical log data as there are no marker beds recognised in the deposit. A geological model was constructed using Mincom Stratmodel® software. The model used the 25 new drill holes and 33 historic drill holes.

The model was used to estimate a non JORC compliant in-situ resource. A total of 78.5 million tonnes (Mt) was estimated with an average ash content of 47.4% (range 33.6 - 59.2%), volatile matter content average 11.8% (range 10.0 - 14.3%) and calorific value average 15.3 kcal/kg (range 10.2 - 20.7 kcal/kg). Average total sulphur content is 0.29% (range 0.22 - 0.40%). All values were reported on an air-dried basis.

Details of the correlations, modelling methodology and the resource estimate are included in the report "Woodbury Coal Project Exploration and Resource Report", by Marston International Pty Ltd, February 2011.

### **3.1.6 Discussion of results**

The results of the exploration programme and modelling indicated that a significant resource is present in the Woodbury area. The structure of the coal seams and the coal quality were shown to vary across the deposit and between seams, and a distinct trend was identified with coal quality improving towards the north of the deposit. The average coal quality data reported to date has been strongly influenced by the presence of some higher ash sections in the deposit. Despite the high average ash content there are sections of improved quality coal within Seams A and B that have lower ash, higher volatile matter content and higher calorific value. The low volatile matter content indicates that much of the deposit tested to date has been subject to heating probably in conjunction with the Jurassic dolerite intrusives.

There has been only limited testing of the two lower Seams A and B, and no confirmation testing of the lateral extent of the coal seams that are known to be present outside the main graben structure.

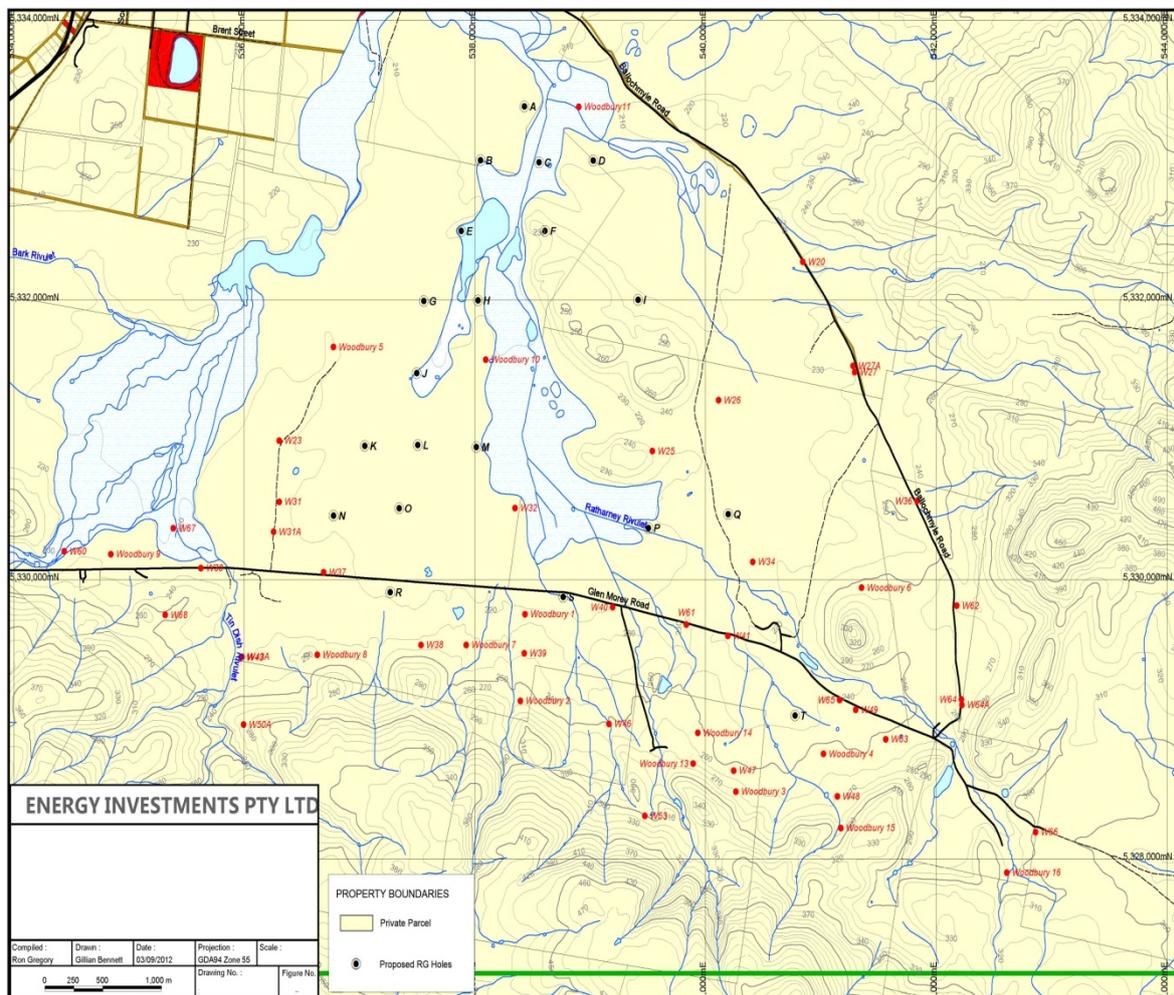
Additional exploration and coal quality testing of the deposit was required to confirm resources, state resources to JORC standard and confirm the extent of areas of improved coal quality. Additional infill drilling of the deposit was recommended particularly in the north of the deposit where coal quality appears to be improving. Exploration to determine the lateral extent of coal seams outside of the main graben structure was recommended. Testing of clean coal composites from the float-sink testing was also recommended.

## 4 Exploration completed during the reporting period

A drilling program for 2011 – 2012 was designed to meet the following recommendations of the Marston report:

- The drilling was required to confirm resources, state resources to JORC standard and confirm the extent of areas of improved coal quality.
- Additional infill drilling in the north of the deposit where coal quality was seen to be improving.
- Regional drilling to explore the extent of the coal in the northern and western parts of the area.

The drilling program illustrated in Figure 4 below was designed to meet the JORC requirements for resource definition and to test the coal quality in the northern part of the licence.



**Figure 4.** Planned drilling program for 2012 at Woodbury

A Work Program Application was submitted to Mineral Resources Tasmania and approval received to proceed with the program subject to landowner access agreements being negotiated. Land owner liaison and access agreements have been negotiated and KMR Drilling were contracted to undertake the work. A minimum of 20 holes (18 open and 2 cored) has been planned with further work depending on the results from this drilling and rig availability.

The drill program was delayed by the availability of the drill rig and the recent wet weather.

At the time of submission of this report KMR are currently drilling and have completed holes R, S, and T.

A wireline geophysical program will be run down all the drill holes and will include long-spaced density, short-spaced density, natural gamma, resistivity and caliper.

## **5 Conclusions and future work**

The exploration programme and coal quality testing has indicated the following:

- A currently non JORC compliant shallow resource is present in the area (78.5 Mt.)
- The geology is comparatively simple.
- Seam geology and coal quality is variable across the deposit.
- Areas of better quality are present within seams A and B that can theoretically produce a 20% ash product with a 61% apparent yield.
- Heat affects from dolerite intrusions is apparent.
- Additional drill testing to confirm the extent of the better quality areas is currently proceeding and will be continued to allow a JORC compliant resource to be calculated.
- A regional drilling program outside the area of the main graben structure to the north and northwest is planned.

## **6 Environment**

The area explored to date is cleared agricultural land. The drilling programs are being conducted in a manner to minimise impact on the areas. All drill holes are sealed with PVC casing and caps until down hole geophysics is completed and then grouted to near surface and backfilled with soil. All surface disturbance is rehabilitated to the standards set out in the 5<sup>th</sup> Edition of the Mineral Exploration Code of Practice.

## 7 Expenditure

Expenditure in 2011/2012 was calculated to have been \$38,193.10.

Details are:

Geology	\$19,403.45
Drilling	\$15,317.55
Administration	\$3472.10