

# **ANNUAL REPORT**

## **Mineral Resources Tasmania**

### **Department of Infrastructure, Energy and Resources**

#### **TITLE PAGE**

Licence No:	65/2007
Nature of Report:	Annual Report
Period of Report:	18 September 2010 to 18 September 2011
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Date of Report:	18 August 2011

## **1 Abstract**

An exploration drilling programme comprising 16 cored holes and 9 rotary holes was completed.

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.

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## **2 Introduction**

### **2.1.1 Exploration rationale (objective) and geological setting**

The principal objective of exploring in the Woodbury region is to develop a geological and geophysical foundation definition of coal resources in the near surface Permo-Triassic coal measures. Typically the coal measures are associated with a characteristic lithic sandstone sequence which has been preserved from erosion by the overlying Jurassic dolerite capped Black Tier Range immediately to the south. 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° and extends for a minimum of 9 kilometres (km) long and 1 km wide. The Kuranda Graben forms a cross cutting structure trending 63° 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 the Central Midlands region of Tasmania in February, 1981. Historically a number of companies have explored the region for coal and petroleum. In total 68 drillholes 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:	Woodbury
Tenement location:	Tunbridge
Reporting period:	18/9/10 – 18/9/11
Tenement holder:	Energy Investments Pty Ltd

### **2.1.3 Location**

The area surrounding the Woodbury project consists predominantly of undulating pastoral lands which are principally used for grazing sheep. The resource area is located adjacent to the main north-south railway line and highway connecting the main population centres and ports of Hobart and Launceston (Bell Bay) which are approximately 85 kilometres to the north and south respectively. The towns 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.

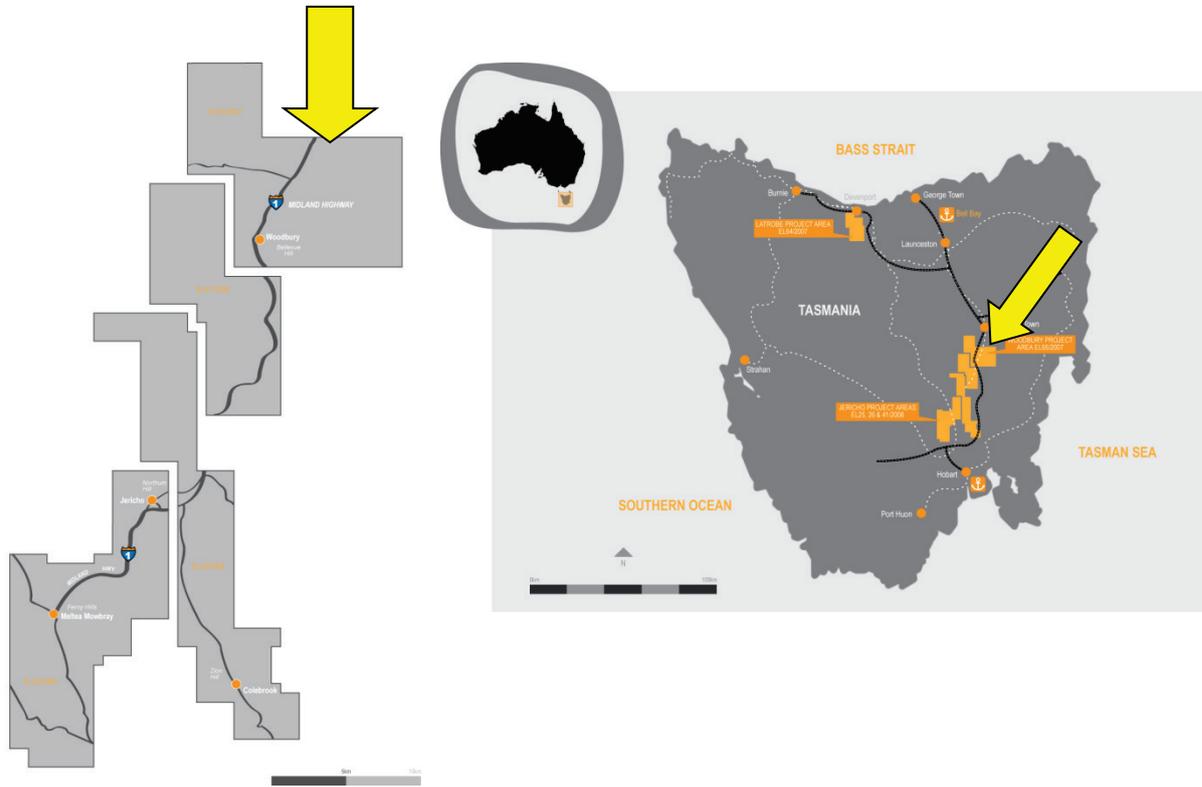


Figure 1. Location of Woodbury Project, EL65/2007

## 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 the Department. The Woodbury area has an extensive, if in part somewhat unreliable, coverage of borehole data. Current exploration activities are directed towards validating earlier data in several tightly controlled areas before progressing to further regional drilling.

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.

## **4 Exploration completed during the reporting period**

### **4.1.1 Drilling Programme**

A drilling programme of 25 holes was completed with two objectives; a) quantify variation in the geological factors related to sedimentology and structure and, b) variation in the coal quality characteristics as they affect the prediction of washing yield and product characteristics. The drilling programme was managed by Marston International Pty Ltd.

The holes were drilled on two offset near parallel lines. Ten holes were drilled on Line 1 on 538,380mE and 12 holes (including one re-drill) 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 - 103.0m. The locations of the holes are shown in Figure 2, Woodbury Drill Hole Locations. Four seams were encountered, Seams A, B, C and D with up to three splits recognised in each seam. Due to the shallow nature of the drilling, most holes intersected Seams A and B only.

The drilling indicated the structure of the deposit was relatively simple although seam splitting and pinching was quite complex. A broad anticline runs east-west through the southern part of the deposit.

Details of the drilling programme are included in the report "Woodbury Coal Project Exploration and Resource Report", by Marston International Pty Ltd, February 2011, which is submitted with this report.

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

An electronic copy of the geophysical log files is submitted with this report.

An electronic copy of geological logs of the 25 drill holes is submitted with this report.

### **4.1.2 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.

An electronic copy of the raw coal samples test results is submitted with this report.

Figure 2

A total of 50 composite and single seam samples from Seams A, B, C and D were submitted to SGS Laboratories in Newcastle 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.

An electronic copy of the float-sink test results is submitted with this report.

Details of the evaluation of the float-sink test results are included in the report "Float Sink Test Results, Woodbury, Tasmania", by Golder Associates Pty Ltd, July 2011, which is submitted with this report.

No testing of coal quality of clean coal composites has been conducted to date.

#### **4.1.3 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. All seams and seam splits were correlated using wireline log signatures. There are no marker beds recognised in the deposit. Lithology and coal quality data was entered into geological database and a geological model of the Woodbury deposit was constructed using Mincom Stratmodel® software. The model used the 25 new drill holes and 33 historic drill holes. Relative density data was corrected using the Preston Sanders method to estimate in-situ density. The model was then used to estimate in-situ resources. 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 are 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, which is submitted with this report.

## **5 Discussion of results**

The results of the exploration programme and resource modelling indicate that a significant resource is present in the area tested to date. The structure of the coal seams and the coal quality have been shown to vary across the deposit and between seams, and a distinct trend has been 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 some level of 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 is 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 is 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 is recommended. Testing of clean coal composites from the float-sink testing is also recommended.

## **6 Conclusions**

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

- The structure and depositional history of the deposit has been verified,
- A significant shallow resource is present in the area (78.5 Mt)
- Geology is comparatively simple
- Seam geology and coal quality is variable across the deposit.
- Areas of better quality are present with 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 better quality areas is required.
- Drill testing outside the area of the main graben structure is required to confirm the lateral extent of the resource,

## **7 Environment**

The area explored to date is cleared land used mainly for grazing sheep with some limited cropping. The drilling program was conducted in a manner to minimise impact on the areas. All drill holes were sealed and surface disturbance was rehabilitated to the standards set out in the Mineral Resources Tasmania, Mineral Exploration Code of Practice.

## 8 Expenditure

Expenditure to date has amounted to \$884,730 (\$120,450 during 2008/09 period, \$547,150 during 2009/10 period and \$217,130 during 2010/11 period, excluding the September quarter which has not yet expired).

Further expenditure is budgeted to drill Woodbury further to enable the quantification of a JORC resource as follows:-

<b>Woodbury Exploration Programme</b>			
<b>Contractor</b>	<b>Activity</b>	<b>Time</b>	<b>Cost</b>
KMR	Drilling	12 weeks	286,454
Groundsearch Australia	Geophysical Logging	8 days	21,710
Peter Binney	Survey	2 days	2,400
KMR/Sub-contractor	Excavation Services	5 weeks	37,500
Marston	Geological Supervision	12 weeks	170,760
<b>Total</b>			<b>\$518,824</b>