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MIDLAND ENERGY LTD

# Woodbury Coal Project 2013 JORC Resources Statement

**Submitted to:**  
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REPORT

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## Executive Summary

Midland currently holds an Exploration Licence (EL65/2007) over the Woodbury Coal Project, located in the Tasmanian Central Midlands, 5 km east of the Midlands Highway near the town of Woodbury.

Golder was requested by Midland to independently prepare a Coal Resources statement for the Woodbury Coal Project. The report is to comply with the guiding principles and minimum standards set out in The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition (JORC Code, 2012).

Coal Resources have been estimated and reported according to the JORC Code 2012.

All Coal Resources are deemed mineable by open cut mining methods. Open cut Coal Resources have been estimated for the D, C, B and A seams. The seam names were supplied to Golder by Midland. Golder has continued to use the current seam names as they are utilised in all historic data and reports. Estimated Coal Resources are deemed to be fresh (un-oxidised/un-weathered) coal with a minimum coal thickness of 0.10 m and a maximum 45% raw ash (adb) cut-off applied within the Woodbury Resource Area (WRA).

This study incorporates all supplied data up to the end of September 2013. Total Coal Resources estimated and reported are 23 million tonnes (Mt) at an average combined raw ash of 37.8% (adb), calorific value of 19.2MJ/kg (adb), total sulphur of 0.4% (adb) and volatile matter of 12.7% (adb). Table 1 below presents a summary of the estimated Coal Resources for the WRA as at November 2013.

**Table 1: 2013 JORC Resources estimate**

SEAM	JORC Resources Category	Tonnes Mt	Raw Ash % (adb)	Calorific Value MJ/kg (adb)	Fixed Carbon % (adb)	Inherent Moisture % (adb)	Relative Density g/cc (adb)	Total Moisture% (arb)	Total Sulphur % (adb)	Volatile Matter % (adb)
BU	Indicated	0.5	33.1	20.8	51.8	3.4	1.6	4.3	0.3	11.7
BM		0.8	37.9	19.5	48.5	3.2	1.7	4.3	0.2	11.9
BL		0.5	37.6	19.2	50.0	3.8	1.6	4.8	0.4	9.7
Sub-Total	<b>Indicated</b>	<b>2</b>	<b>36.5</b>	<b>19.8</b>	<b>49.8</b>	<b>3.4</b>	<b>1.6</b>	<b>4.4</b>	<b>0.3</b>	<b>11.2</b>
A	Inferred	3.2	34.1	21.4	49.6	2.9	1.6	3.8	0.3	13.4
AU		1.2	39.0	18.4	46.8	4.9	1.7	6.4	0.4	9.3
AM		1.1	41.0	17.5	50.3	4.6	1.8	5.9	0.6	10.0
BU		0.3	34.2	20.4	51.0	3.5	1.6	4.3	0.3	11.4
BM		7.3	41.4	17.8	41.6	4.5	1.7	5.7	0.3	12.7
BL		2.2	39.6	18.3	42.4	4.5	1.6	5.6	0.4	14.0
C		2.2	35.9	19.2	*	4.7	1.6	5.9	*	*
CM		0.2	43.6	16.2	*	6.7	1.7	8.2	*	*
CL		2.1	31.3	21.6	47.4	4.3	1.5	5.2	0.5	15.3
DU		0.3	30.3	22.0	*	4.8	1.5	6.0	*	*
DL		0.7	36.6	19.4	*	4.8	1.6	5.8	*	*
Sub-Total	<b>Inferred</b>	<b>21</b>	<b>38.0</b>	<b>19.1</b>	<b>45.0</b>	<b>4.3</b>	<b>1.6</b>	<b>5.4</b>	<b>0.4</b>	<b>12.8</b>
<b>Total</b>	<b>Indicated + Inferred</b>	<b>23</b>	<b>37.8</b>	<b>19.2</b>	<b>45.4</b>	<b>4.2</b>	<b>1.6</b>	<b>5.4</b>	<b>0.3</b>	<b>12.7</b>

\*Insufficient data to be used in JORC Resources estimate.

\*\*Resources reported at a minimum coal thickness cut-off of 0.10m and a maximum raw ash cut-off of 45% (adb).



In addition to the JORC Resources estimated, Golder also generated a JORC Exploration Target (Table 2) for the WRA. The exploration target estimated is exclusive of the JORC Resources estimated (Indicated plus Inferred Resources) and its extents are limited by the boundary of the WRA. A JORC Exploration Target was estimated due to boreholes possessing incomplete datasets, therefore being unsuitable to be utilised as POO in the estimation of JORC Resources. The potential quantity and coal quality is conceptual in nature and there has been insufficient exploration to estimate a Coal Resource and it is uncertain if further exploration will result in the estimation of a Coal Resource.

Golder conducted a geostatistical analysis of ST, AS, CV, FC, IM, RD, TM, TS and VM data to aid the estimation of both upper and lower limit tonnages and coal qualities at a 95% confidence interval in order to provide an estimate of potential. As a result, Golder has estimated a JORC Exploration target of between 11-19 Mt of coal with a range in coal quality of between 29.8-42.1% raw ash (adb), 17.5-21.6MJ/kg calorific value (adb), 3.4-4.0% total moisture (adb), 0.2-0.4% total sulphur (adb) and 10.0-10.8% volatile matter (adb).

**Table 2: 2013 JORC Exploration Target**

<b>Tonnes Mt</b>	<b>Raw Ash % (adb)</b>	<b>Calorific Value MJ/kg (adb)</b>	<b>Total Moisture% (adb)</b>	<b>Total Sulphur % (adb)</b>	<b>Volatile Matter % (adb)</b>
<b>11-19</b>	<b>29.8-42.1</b>	<b>17.5-21.6</b>	<b>3.4-4.0</b>	<b>0.2-0.4</b>	<b>10.0-10.8</b>



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### 1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was engaged by Midland Energy Ltd (Midland) to complete a Coal Resources estimate and subsequent JORC 2012 Resources statement in accordance with The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition (JORC Code, 2012).

### 1.1 Project Team

This report has been prepared by Mr Stephen Kidcaff, who holds the position of Senior Geologist with Golder Associates. Mr Kidcaff is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) with over 10 years' experience in the coal mining industry. The report has been prepared under the technical guidance of Mr Aaron Radonich (Senior Geologist, Golder). Aaron is a qualified geologist and member of both the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG); he is certified by the AusIMM as a Chartered Professional in the field of Geology. Aaron has approximately 12 years' experience in the mining industry and is a Competent Person for reporting Resources under the JORC Code for coal (both thermal and metallurgical). Other members of the Golder team directly involved in the preparation of this report include:

- Mr Sam Reich (Principal Mining Consultant)
- Mr David Arnott (Group Manager – Mining)
- Ms Faye Jones (Senior Geostatistician)
- Mr Bryce McKay (Project Geologist)
- Ms Amanda Pearse (Geologist)

### 1.2 Scope of Work

Golder was requested by Midland to prepare an independent Coal Resource statement for the Woodbury Coal Project, located in Tasmania. The report is to comply with the guiding principles and minimum standards set out in the JORC Code, 2012.

### 1.3 Deliverables

The following outlines the project deliverables:

- Review and validation of data within the geological database
- Update of geological database and geological model as necessary
- JORC Coal Resources estimate
- JORC Coal Resources statement, prepared according to the JORC Code, 2012.



## 2.0 PROJECT LOCATION AND OWNERSHIP

### 2.1 Location

#### 2.1.1 Access

The Woodbury Coal Project, composed of a single Exploration Licence (EL), EL65/2007 is located in Australia’s Tasmanian Central Midlands; 5 km east of the Midlands Highway near the town of Woodbury (refer Figure 2.1).

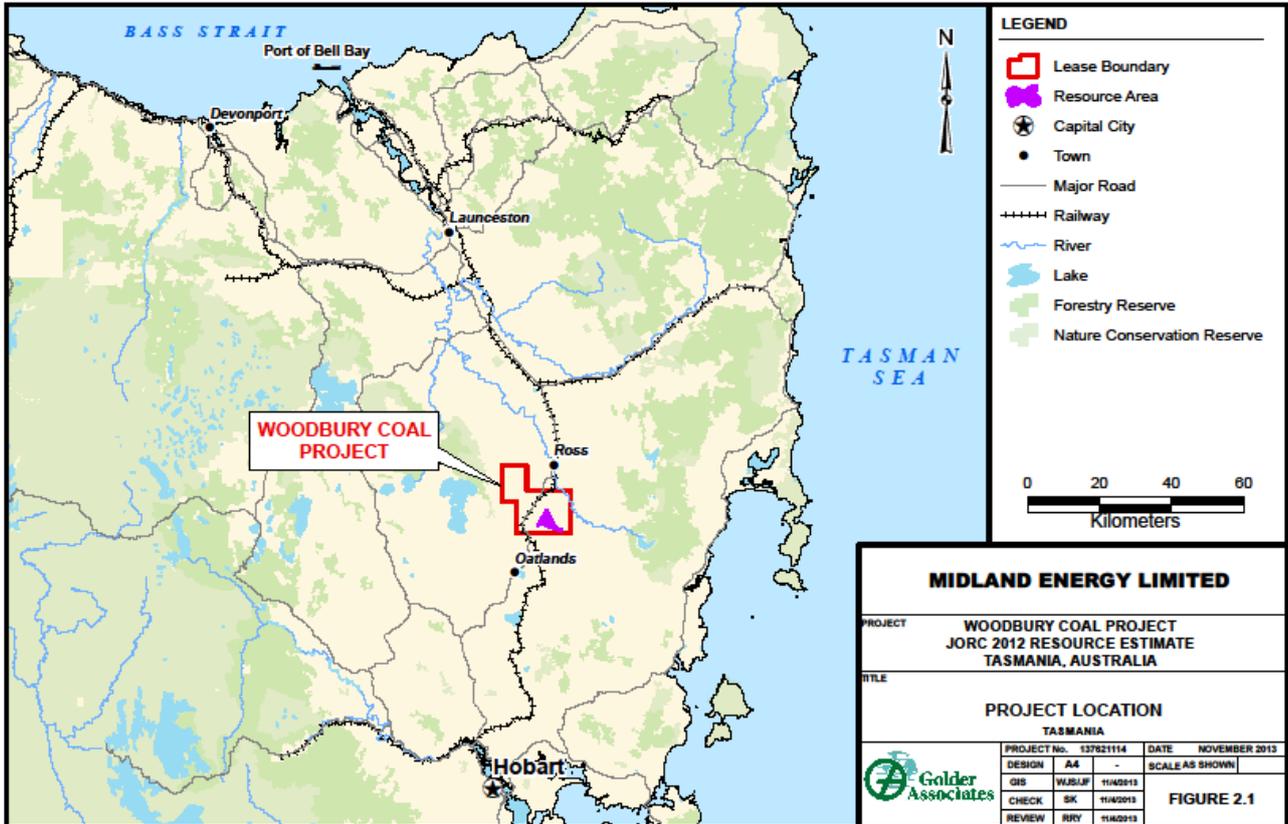


Figure 2.1 Woodbury Coal Project location

A major north-south railway line is located in close proximity to the Woodbury Coal Project and connects to the city of Launceston 85 km to the north and also to the capital city of Hobart 80 km to the south.

The Bell Bay region, located 40 km north of Launceston, hosts a number of deep water load out facilities on the Tamar River. The Tamar River currently services 40,000 to 60,000 tonne Panamax size vessels on a regular basis (Marston, 2011). These port facilities may well be suitable for the Woodbury Project to utilise to export coal.

#### 2.1.2 Grid System

The Woodbury Coal Project area is contained within the Geocentric Datum of Australia 1994 (GDA94) Map Grid of Australia 1994 (MGA94) Zone 55.

## 2.2 Physiography

The major topographical land forms within and around the Woodbury area are the NS-SE trending Black Tier range, the NS trending ridge from Landslip Hills to Chapel Hill and the flood plain area known as Saltpen Plains continuing north of Tunbridge to Mona Vale (Section 5.4.2 and Figure 3.1).



Relief within the WRA ranges between approximately 196 and 322 m (Figure 2.2).

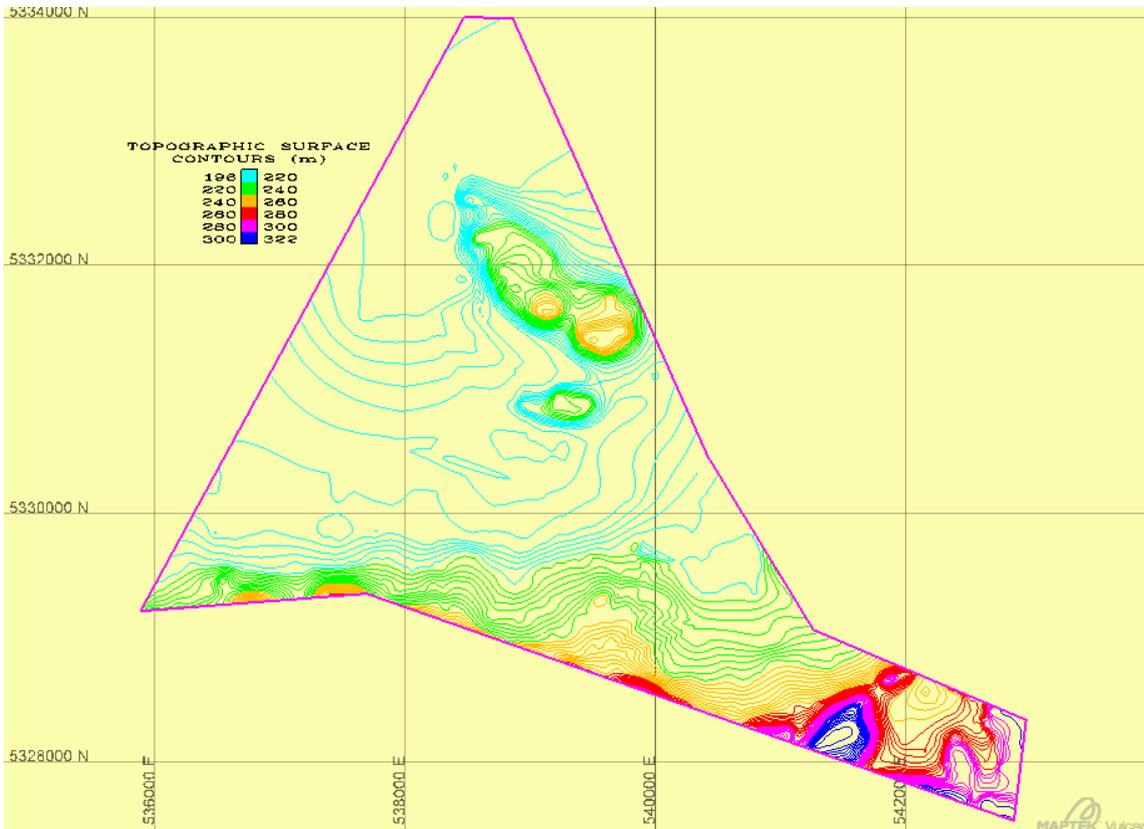


Figure 2.2: Topographic contours over the WRA

The higher (300 m plus) elevation areas are invariably capped with resistant dolerite with only minor sandstone ridges formed within the lower flood plains (Figure 2.3). The higher and variable relief areas generally coincide with the contrast between dolerite outcrop and the Saltpen Plains area, underlain by Triassic sediments (Eshuys, 1981). These high relief areas in the northeast and southeast of the WRA have not had resources estimated (dolerite masks have been utilised) due to the lack of boreholes drilled into the dolerite to test for coal continuity.

Figure 2.3 and Figure 2.4 demonstrate the most prominent topographic feature within the Woodbury area and the general relief across the project area respectively.



Figure 2.3: Photograph looking northwest, showing the prominent hill (refer Figure 3.1) situated outside the southeast corner of the WRA



Figure 2.4: Photograph looking southeast towards the WRA, showing the general relief of the area



### 2.3 Climate

The Midlands region of Tasmania is within a rain shadow and is one of the driest areas in the state, with rainfall averaging 300 mm per annum. The area is subject to an even distribution of rainfall over the course of a year, with deluge events less common than on the neighboring east coast (Baker, 1985).

Isolation from the coast creates a localised climate that sees both the warmest summers and some of the coldest winters in Tasmania. In summer, maximum temperatures average 23°C, whilst in winter most days have frosts, ranging from mild to severe in magnitude (Baker, 1985).

Figure 2.5 presents key climate statistics for Launceston, the nearest major city to the Woodbury Coal Project.

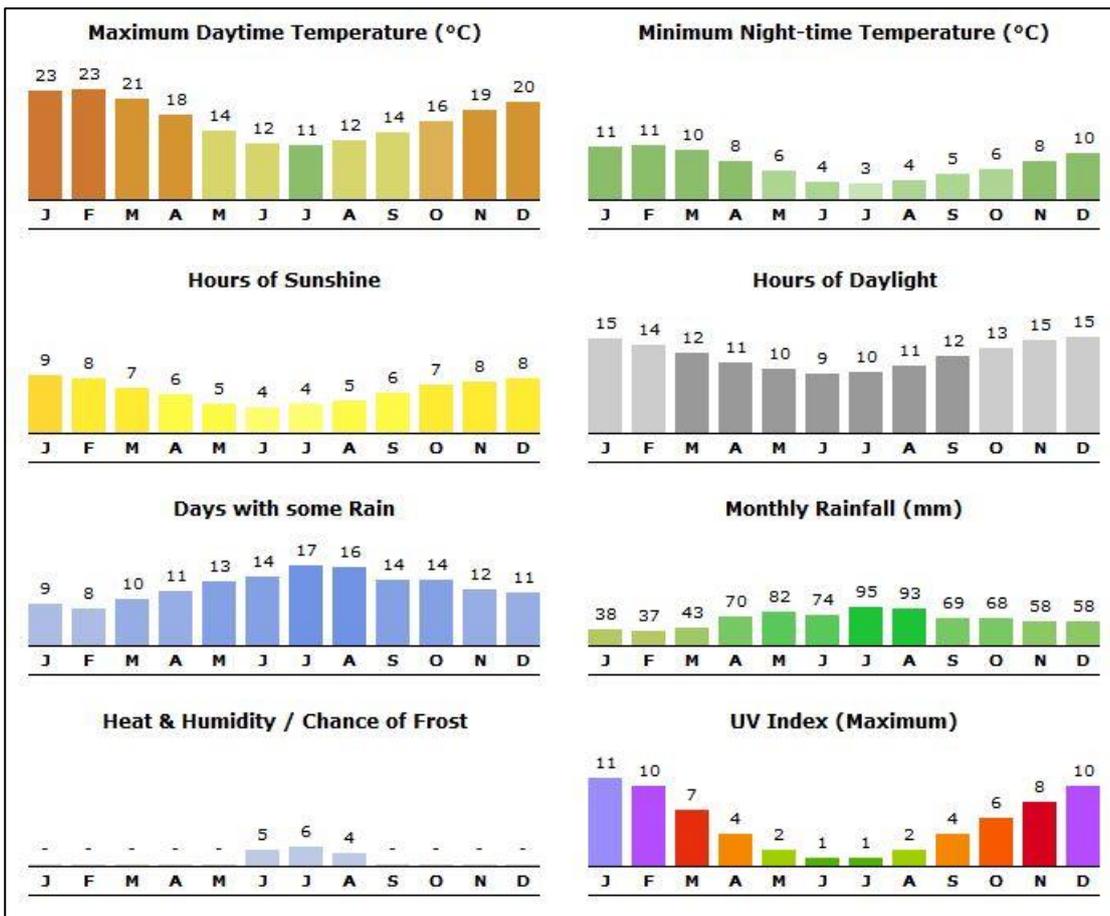


Figure 2.5: Climate statistics for Launceston, Tasmania (source: <http://www.worldclimateguide.co.uk>)

### 2.4 Land Use

Owing to the presence of recently eroded dolerite rocks, the Midlands are some of the most fertile in all of Tasmania. This fertility has created rich soils ideally suited for grazing, with the region supporting an intensive sheep rearing industry. Cultivation of certain grain varieties also occurs in the region; however this is supplementary to agriculture owing to cool summer conditions (Forsyth, 1989).

The area is well suited for superfine wool production from sheep, with goats and cattle also being raised in the region (Forsyth, 1989).



Although some water bores have been drilled in Tertiary clay, these resources are not pervasive due to their low success rate, whilst semi-permanent streams transport the remaining water required to maintain the viability of the area during the dry seasons (Forsyth, 1989).

### 2.5 Tenement and Ownership

EL 65/2007 was granted to Energy Investments Limited (EIL) in September 2008. In October 2008, EIL was sold to Resource Generation Limited (ResGen) who conducted extensive exploration works within the EL. Midland purchased EIL in September 2011 and continued exploration works within the EL. In May 2013, Midland signed an option agreement with South East Asia Energy Resources Singapore (SEARS), a wholly owned subsidiary of South East Asia Resources Limited (SXI) giving SXI the right to purchase EIL from Midland after completion of a JORC Resources estimation project.

Figure 2.6 shows the location and boundary of EL65/2007. EL65/2007 is currently under renewal by Midland (Table 3).

**Table 3: Current EL65/2007 tenement status (source: <http://mrt.tas.gov.au>)**

Tenement	Locality	Status	Principal Holder	Operator	Area (km <sup>2</sup> )
EL65/2007	Tunbridge	PENDING RENEWAL	Energy Investments Pty Ltd	Energy Investments Pty Ltd	237

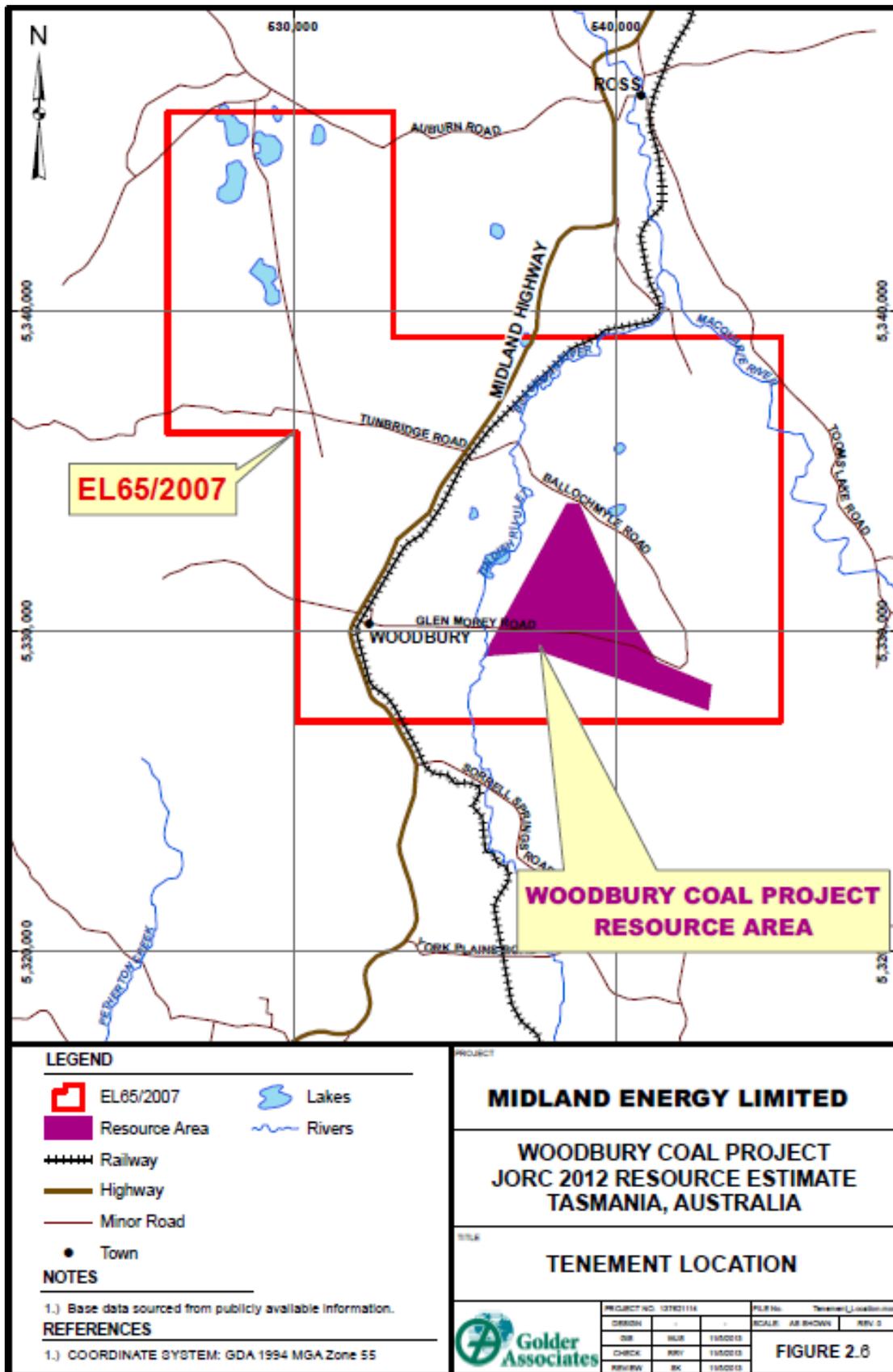


Figure 2.6: Location and boundary of EL65/2007



### 3.0 EXPLORATION HISTORY

In 2011, ResGen, commissioned Marston and Marston International Pty Ltd (Marston), to prepare a preliminary geological report and provide an updated geological model based on the 2010 exploration program conducted on the Woodbury Resource Area (WRA). The following is a summary of the Woodbury Coal Project Exploration and Resource Report (Marston, 2011).

Victor Petroleum and Resources Limited, The Broken Hill Pty. Co. Ltd (now BHP Billiton), Northwest Bay Company and Costain Australia Limited all led initial exploration efforts in the early 1980's centred around the development of a 20 year resource, capable of supporting a potential coal fired power station situated near Campbell Town.

In 1981, 74 (both cored and rotary) boreholes were drilled by Victor Petroleum Pty Ltd within EL31/80 (EL65/2007 is wholly contained within EL31/80). Three years later, joint venture partners Costain Australia Limited, Victor Petroleum and Resources Limited and Northwest Bay Company Pty Ltd drilled another 39 boreholes within the same exploration lease with the aim of further delineating the geological structure and coal seam stratigraphy. This drilling program consisted of 12 partly and fully core HQ diamond boreholes, three 200 mm cored seam intersections and 24 open boreholes.

Following a decision by the Tasmanian Government favouring construction of an oil powered utility, which was subsequently converted to gas, the project was abandoned.

ResGen conducted the next round of exploration in 2010 in a bid to establish seam continuity and thickness, whilst also further defining coal quality characteristics to reduce the variability of washing yield and other product characteristics. Uncertainty surrounding seam continuity stemmed from irregular borehole placement, along with the lack of a complete data set arising from truncated boreholes. This phase of exploration consisted of two parallel lines comprised of 12 and 13 holes respectively, drilled between 100m and 200m apart in an alternating cored/open-hole sequence in a roughly north-south orientation. Figure 3.1 shows the borehole locations.

All boreholes drilled throughout the ResGen program were geophysically logged and surveyed.



# WOODBURY 2013 JORC RESOURCES STATEMENT

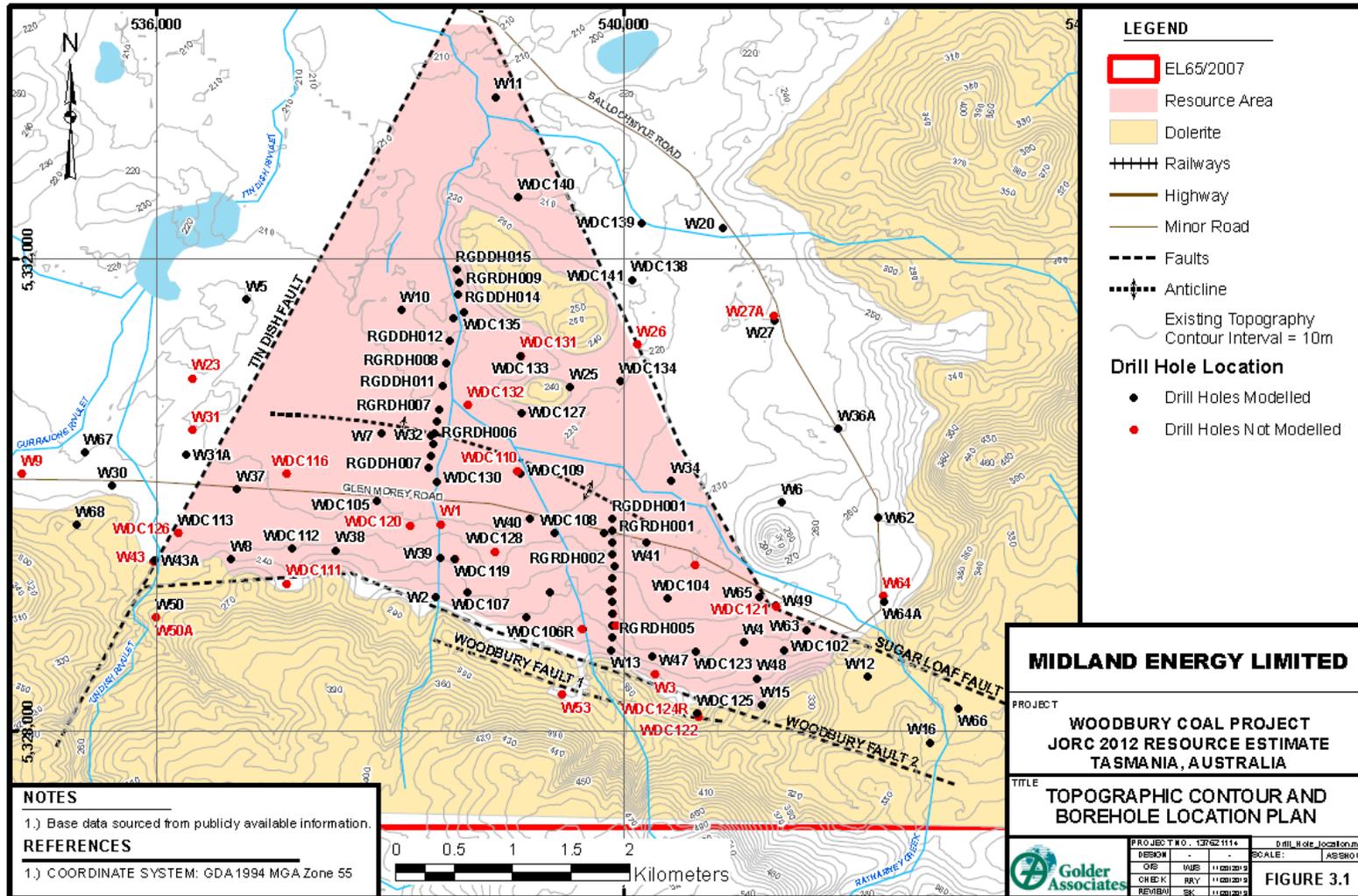


Figure 3.1: Borehole locations and topography





## 4.0 GEOLOGY

### 4.1 Regional Geology

Within EL65/2007, the sedimentary rocks of the Parmeener Supergroup rest on a folded and eroded basement of Precambrian and early Palaeozoic rocks. The upper sequences of the marine and non-marine beds of the Parmeener Supergroup are intruded by both concordant and discordant Jurassic dolerite sills (Eshuys, 1981).

Tectonic activity associated with the Tabberabberan Orogeny during the Devonian initiated a prolonged phase of erosion that persisted through the Triassic (Eshuys, 1981).

From the cessation of Triassic sedimentation until the recent times, Tasmania was subjected to normal north-northwest trending faulting. During this tensional phase, only limited sedimentation occurred within restricted basins (Eshuys, 1981).

During the Tertiary, major horst and graben structures developed, with the largest forming the Central Highlands Plateau and West Coast Range. Most Tertiary age faults tend to be normal with dips varying between 45 and 90°. Drag folding against faults has resulted in locally steep dips and gentle tilting of fault blocks (Eshuys, 1981).

As a result of both the Jurassic dolerite intrusions and Tertiary epeirogeny was the development of the central plateau mass, consisting of a huge slab of block-faulted and warped Permo-Triassic sediments and dolerite (Eshuys, 1981).

A generalised regional geological setting is presented below in Figure 4.1.

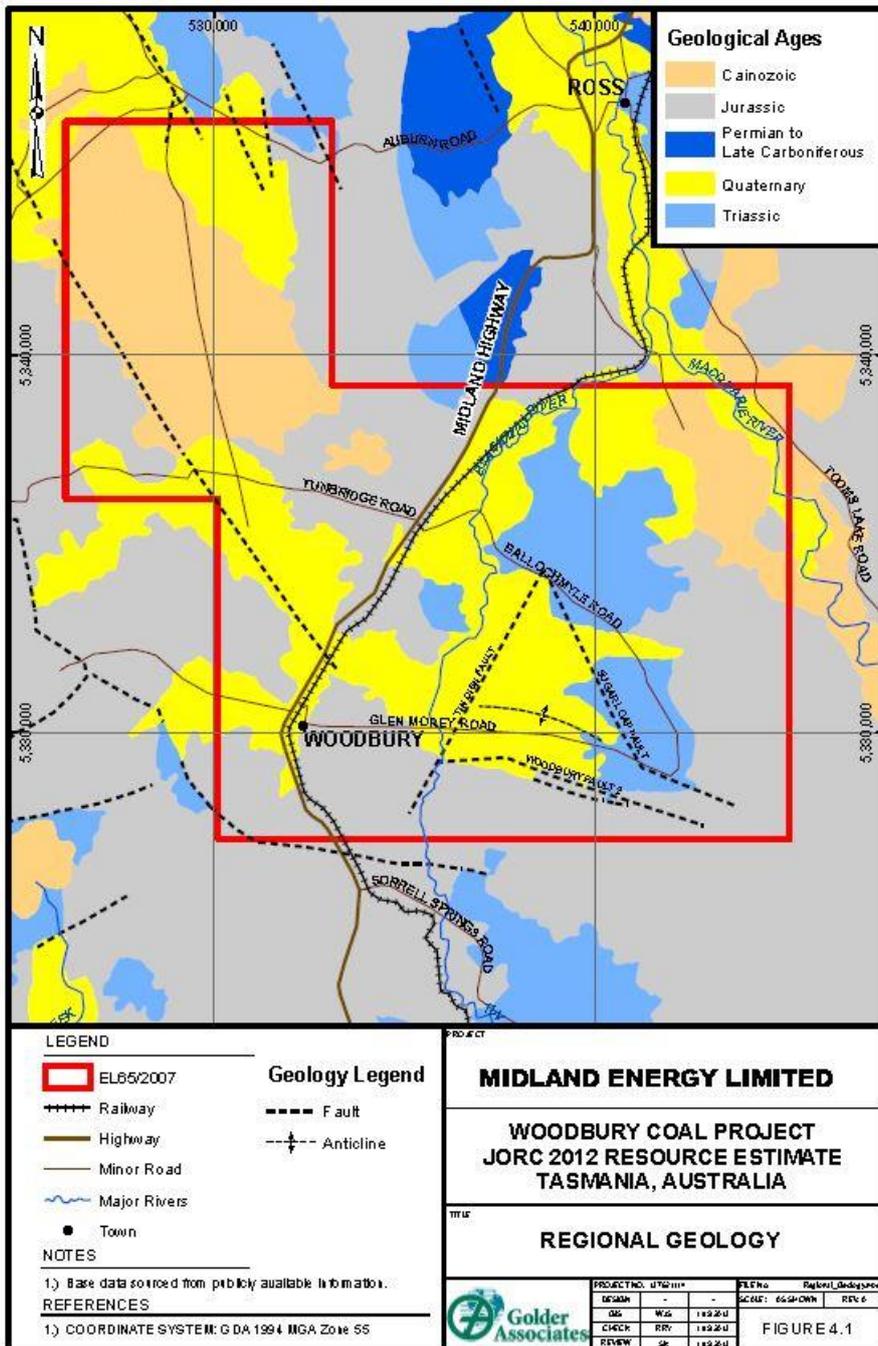


Figure 4.1: Regional geological setting

### 4.1.1 Tectonic Setting

During the Devonian, tectonic activity associated with the Tabberabberan orogeny initiated a prolonged phase of erosion which persisted through to the commencement of the main Triassic coal forming episode (Marston, 2011).

From the cessation of Triassic sedimentation until recent, Tasmania was subjected to normal north-northwest trending regional faulting. During this tensional phase there was only limited sedimentation in restricted basins (Marston, 2011).



During the Tertiary, horst and graben structures of major dimensions developed with the largest horst forming the Central Highlands Plateau and West Coast Range. Drag folding against faults resulted in locally steep dips and gentle tilting of the fault blocks (Marston, 2011).

The overall result of the Jurassic dolerite intrusions and Tertiary epeirogeny was the development of the central plateau mass, consisting of a huge slab of block faulted and warped Permo-Triassic sediments with coal bearing units and dolerite (Marston, 2011).

On a local scale, the combination of gravity surveying work and photo linear analysis has resulted in the delineation of several graben and horst structures in the Woodbury area. The most significant of these structures are the northeast (062°) trending Kuranda Graben, the east-southeast (112°) trending Woodbury Trough and the east-southeast trending Black Tier – Bellevue Hill and Glen Morey Horsts. The Kuranda Graben is thought to be approximately 4 km in length and 0.7 km in width, whilst the Woodbury trough is thought to be at least 9 km in length and 1 km in width (Costain, 1983).

## 4.2 Local Geology

### 4.2.1 Stratigraphy

Bedrock for the Woodbury deposit appears barren of coal and primarily consists of a tuff and siltstone facies, lithic and sub-lithic sandstone, and mudstone (Costain, 1983).

The coal measures sequence is composed of lithic sandstone, mudstone, carbonaceous mudstone, minor tuff and siltstone, along with coal (Costain, 1983). The middle to late Triassic stratigraphy of the coal measures is less than 150 m in thickness, with individual seams ranging from 0.7 m to 3.90 m thick (Marston, 2011). The stratigraphic sequence of the coal bearing strata is shown in Figure 4.2 and cross sections for the WRA are shown in Figure 4.3.

### 4.2.2 Coal Seams

The Triassic aged coal seams occur within lithic sandstone belonging to the Upper Permian Supergroup (Forsyth, 1989).

A gently westward plunging, east-west trending anticline is the primary geological feature of the coal measures. The anticline has a variable dip of 8° for the southern limb and 4° for the northern limb (Marston, 2011).

Workers have assigned four major seams, D, C, B and A, with seam A being the basal seam and seam D being the uppermost seam. The average seam thickness is 1.55 m, 1.15 m, 0.8 m and 0.85 m for seams D, C, B and A respectively. Section 5.4.4 and Table 10 to Table 13 contain detailed descriptions and statistics for all seams. The majority of coal tonnage appears to be in seams D and C, however further deeper drilling may increase the confidence in continuity for seam A which has the potential to be the most laterally continuous of all seams (Marston, 2011).

The coals of the Woodbury Coalfield are described as being of moderate rank (medium to low volatile bituminous) and consisting predominantly of durainous lithotypes. The elevated coal rank and high content of inertinite macerals (the latter being typical of Tasmanian coals) have been assessed as contributors to a higher specific energy (33-34 MJ/kg daf basis) and slightly lower volatile matter content (up to 31% daf basis) when compared to the stratigraphical equivalent coals of the Fingal Valley, Tasmania (Costain, 1984).

The areal extent of the deposit is largely limited by three major faults, namely the Tin Dish fault to the west, the Sugarloaf Fault to the east, and the Woodbury 2 fault to the south. Other factors, such as topographic control in relation to weathering, have an effect on seam distribution for seams D and C, whilst igneous intrusions also influence the extent of the resource (Marston, 2011).

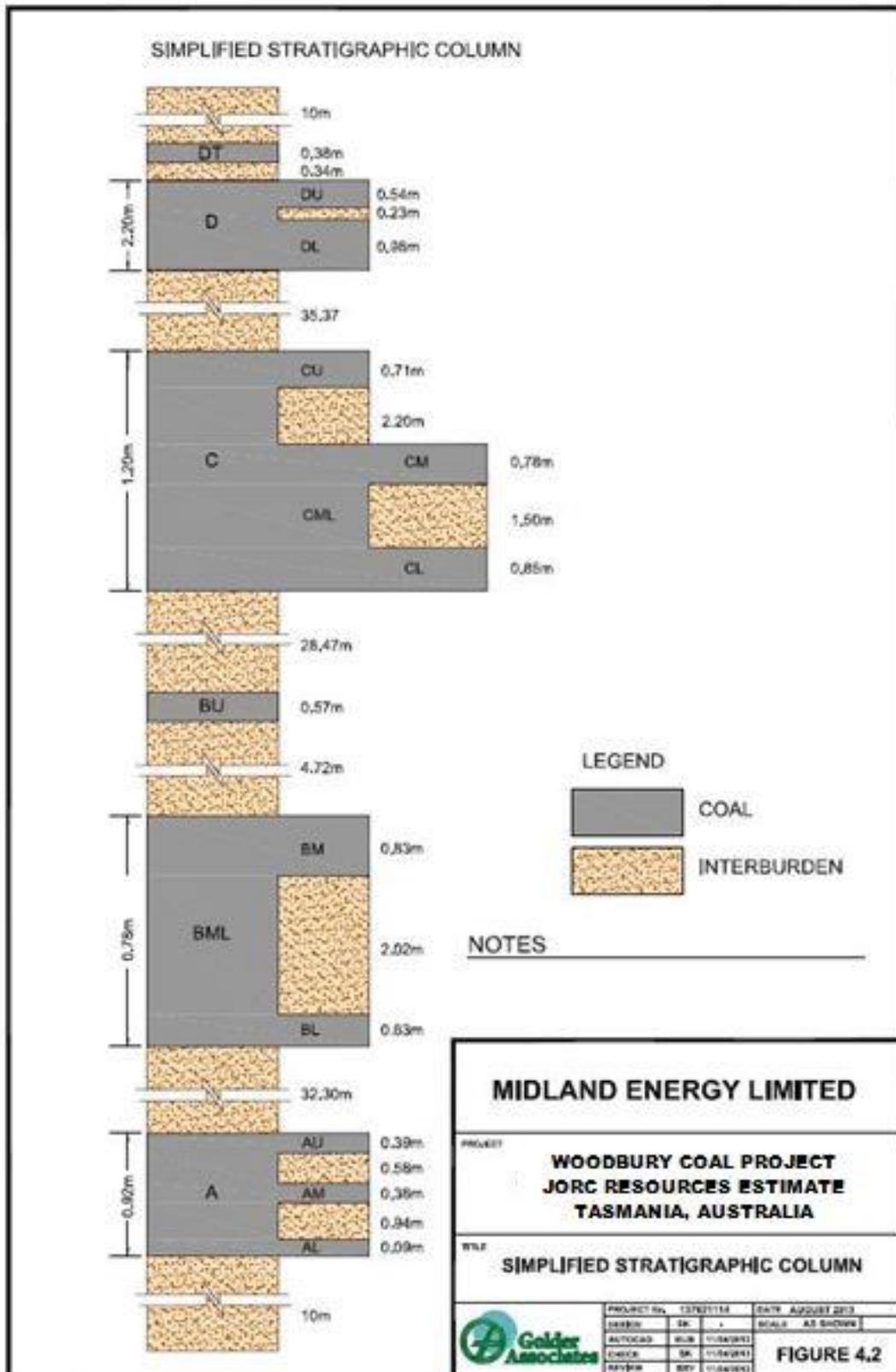


Figure 4.2: Simplified stratigraphic column





## **5.0 GEOLOGICAL MODELLING**

### **5.1 Software Utilised**

Golder updated the Woodbury geological model which had been created in 2011 by Marston. This earlier model was developed using MineScape™ (version 4.119), with Golder updating the structural and coal quality models in relation to this report using version 5.4.

### **5.2 Data**

#### **5.2.1 Information Supplied**

Data was supplied by Luke Marshall, Director of Midland to Golder in an electronic format. Data files were supplied as MS ACCESS, MS EXCEL, MS WORD, LAS, PDF and AUTOCAD formatted files, as well as various image formats.

Golder was already in possession of the previous geological model Marston had created in 2011 as part of their work commissioned by ResGen. Approval was sought and received from ResGen to use the existing model. Data was supplied for a total of 123 boreholes of which Golder deemed 99 to be suitable for use in the model.

A summary of the data provided is presented below:

- Borehole information – a total of 123 boreholes.
  - Collar location
  - Down hole survey data
  - Lithological observations
  - Coal quality analyses.
- Lease boundary
- Topographic contours
- Geophysical logs in electronic LAS format where available
- Geophysically depth-corrected borehole logs
- Core photographs
- Various supporting documentation.

#### **5.2.2 Borehole Databases**

Golder was provided with an existing borehole database, “woodbury\_dhdb.mdb”, comprising collar locations, ply codes and depths, lithological depths, raw coal quality data and composited quality data that matches ply intervals. The database was reviewed and updated where data anomalies were found. Coding was assigned to each borehole to identify the borehole type, whether it is used in the model and if there is geophysical or coal quality data available for the borehole. The codes used are shown in Table 4 below.



**Table 4: Borehole codes and descriptions**

Borehole Code	Description	Number of Holes
MC	Model, Cored	13
MCG	Model, Cored, Geophysics	3
MCGQ	Model, Cored, Geophysics, Quality	23
MCQ	Model, Cored, Quality	8
MD	Model, Dummy	4
ML	Model, Large Diameter	2
MO	Model, Open	20
MOG	Model, Open, Geophysics	26
XC	Excluded, Cored	6
XCG	Excluded, Cored, Geophysics	1
XL	Excluded, Large Diameter	1
XO	Excluded, Open	11
XOG	Excluded, Open, Geophysics	9
<b>Total</b>		<b>127</b>

### 5.2.3 Validation

Validation of the geological database was carried out using a number of methods, including cross referencing associated data, graphical comparisons and checking quality samples using cross plots for any significant trending between data. The raw proximate data was calculated to check that it added up to 100.0% (ash + inherent moisture + fixed carbon + volatile matter = 100.0). The following is a full list of validations carried out by Golder:

- Check borehole proximity distances to identify duplicate holes
- Review borehole distances to determine appropriate grid cell spacing by cumulative frequency
- Check borehole collar against topography
- Check for ply from/to depth overlaps
- Review ply statistics
- Check coal quality samples for overlaps in from/to depths
- Review coal quality relationships for outliers
- Review coal quality sample statistics
- Based on the data review and validation, 28 boreholes were excluded from the geological model. Reasons for excluding boreholes include proximity to other (better, more reliable or more complete) boreholes, difference between borehole collar and topographic elevation is greater than 2 m (indicating uncertain location), poor recovery and missing geophysical logs. Excluded boreholes as well as the reason for exclusion are shown in Table 5 below



- Borehole locations were compared to identify boreholes that are in close proximity (less than 10 m apart). A total of eight boreholes were excluded from the geological model as they were located within 10 m of another borehole that contained more complete or more reliable information.

**Table 5: Excluded boreholes**

Borehole	Reason for Exclusion
RGDDH005	Redrilled - use hole RGDDH005A.
W1	Depths do not correlate with English log. Unable to read geophysical depths.
W14	Depths do not correlate with English log. Unable to read geophysical depths.
W23	Plies not identified. English log contradicts geophysical log. Outside of Resource area.
W26	Plies not identified. Geophysical log not available. Outside of Resource area.
W27A	Plies not identified. Topography/Collar difference >2m. Use hole W27 instead.
W3	Depths not accurate. Poor quality geophysics.
W31	Plies not identified. Topography/Collar difference 1.8 m. Use hole W31A instead.
W43	Plies not identified. Within 10 m of hole W43A.
W50A	Plies not identified. Within 10 m of hole W50.
W53	Plies not identified. Topography/Collar difference >2m. No geophysics available.
W64	Plies not identified. Topography/Collar difference >2m. Use hole W64A instead.
W9	Coal exists but geophysics of poor quality. Too difficult to read. Outside of Resource area.
WDC103	Suspect depths. No geophysics available.
WDC110	Plies not identified, no geophysics available. Use hole WDC109 instead.
WDC111	Plies not identified, no geophysics available. Outside of Resource area.
WDC116	Plies not identified. Topography/Collar difference >2m.
WDC117	Duplicate of hole WDC106R
WDC118R	Plies not identified. Geophysical log not available. Outside of Resource area. Within 10 m of WDC119.
WDC120	Plies not identified, no geophysics available. Topography/Collar difference >2m.
WDC121	Plies not identified. Within 10 m of W49.
WDC122	Plies not identified. Topography/Collar difference >2m.
WDC124R	Plies not identified. Topography/Collar difference >2m. Within 10 m of WDC125.
WDC126	Poor recovery. Duplicate of hole WDC113
WDC129	Plies not identified. Within 10 m of hole WDC129.
WDC131	Plies not identified. Topography/Collar difference >2m. Within 10 m of WDC133.
WDC132	Plies not identified, no geophysics available.
WDC136	Duplicate of hole WDC137

A comparison between topography and collar elevation was conducted and eight boreholes (Table 6) were identified with a difference greater than 2 m. A difference of  $\pm 2$  m was selected due to the fact that the variation in relief across the project is relatively small (Figure 3.1, Sections 2.2 and 5.4.2). These boreholes were excluded from the geological model, as their locations were probably uncertain. All other boreholes in the geological model are relatively similar (less than 2 m) in elevation to the topography. Topographic data



used to create the topographic grid in the geological model was originally sourced from Tasmania's Department of Primary Industries and Water (DPIW), purchased on behalf of ResGen (Harvey, 2008).

**Table 6: Difference between collar and topography**

Borehole	Difference Between Collar and Topography (m)
W53	7.08
WDC122	5.63
WDC131	5.38
WDC116	4.37
WDC124R	4.25
W64	2.15
W27A	2.12
WDC120	2.07

In order to determine the most appropriate grid cell size for creating a geological model, Golder developed a function within the borehole database to determine a suitable grid cell size. The database process calculates the distance from each borehole to every other borehole in the database. It then classifies and orders them by discrete bins of distance values and identifies the smallest value above which 95% of the calculated population lies. The recommended minimum grid cell size is one third of the resulting distance, which in this case was 10 m, as shown in Figure 5.1. Due to a number of the boreholes being drilled in a linear chain pattern Golder determined the minimum grid cell size to be 20 m. As a result of this process the grid cell size used to build the geological model was 20 m.

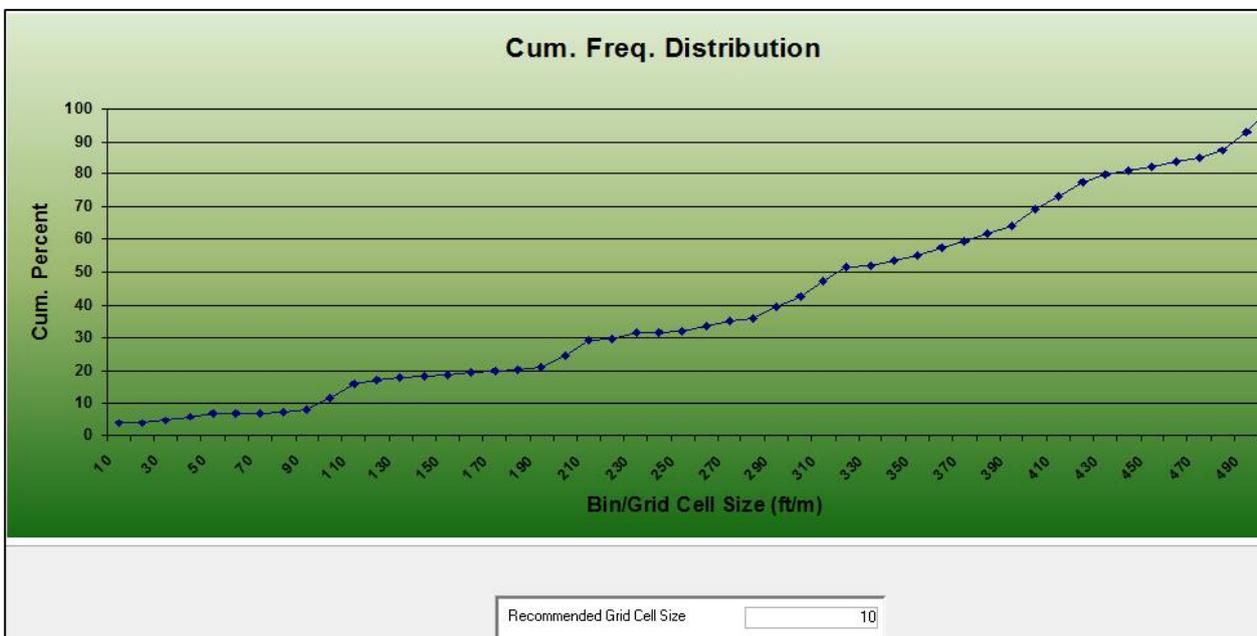


Figure 5.1: Grid cell size determination

Coal ply intervals and sample intervals were assessed for depth overlaps. No overlapping depths were identified. Statistical analyses were run on each ply used by the model with the results shown in Figure 5.1. Results show the number, average thickness, minimum thickness, maximum thickness, standard deviation, skewness and kurtosis for each interval. Based on the skewness values that are close to zero, indicating that



the distribution is reasonably symmetrical and does not show signs of extreme scores (outliers) either side of the mean.

**Table 7: Ply statistics**

Ply	Count	Ave. Thick (m)	Borehole Min. Thick (m)		Borehole Max. Thick (m)		S.D.	Skewness	Kurtosis
DT	6	0.443	WDC107	0.16	W39	0.64	0.186	-0.435	-1.229
DU	6	0.497	RGDDH006	0.22	WDC119	0.69	0.172	-0.627	-0.878
DL	7	0.86	RGRDH005	0.38	WDC106R	1.42	0.373	0.121	-1.171
D	13	2.285	W38	0.8	W15	3.9	0.937	0.432	-0.631
CU	16	0.615	DUM_02	0.068	WDC140	2.5	0.609	1.954	3.781
CM	15	0.768	RGRDH005	0.23	RGDDH005A	1.38	0.351	0.351	-0.791
CL	22	0.768	WDC138	0.3	RGRDH005	1.92	0.406	1.208	1.035
C	14	1.145	WDC113	0.6	WDC112	2.66	0.519	1.777	3.241
BU	23	0.578	WDC134	0.1	W38	1.06	0.244	-0.415	-0.469
BM	47	0.76	RGDDH009	0.13	DUM_02	1.9	0.329	0.451	1.739
BL	28	0.557	W64A	0.1	W32	1.2	0.32	0.294	-0.914
AU	10	0.521	RGDDH008	0.16	RGDDH015	1.24	0.375	1.108	-0.177
AM	10	0.439	RGRDH001	0.28	RGRDH009	0.7	0.128	0.817	-0.23
AL	5	0.1	W61	0.07	RGDDH002	0.13	0.022	0	-0.95
A	15	0.734	RGDDH013	0.19	W32	1	0.232	-0.814	0

Across all exploration programs, coal quality data was sampled to match geological intervals. Samples were composited by Golder to match ply intervals within the model. Golder reviewed all raw coal quality samples and checked for completeness. Proximate analyses were numerically combined to confirm they total 100.0%. Coal quality variables were compared against ash to identify outliers. An example of the ash and density plot is shown in Figure 5.2. Outliers were reviewed on a case by case basis before determining whether the samples were suitable to be included in the model.

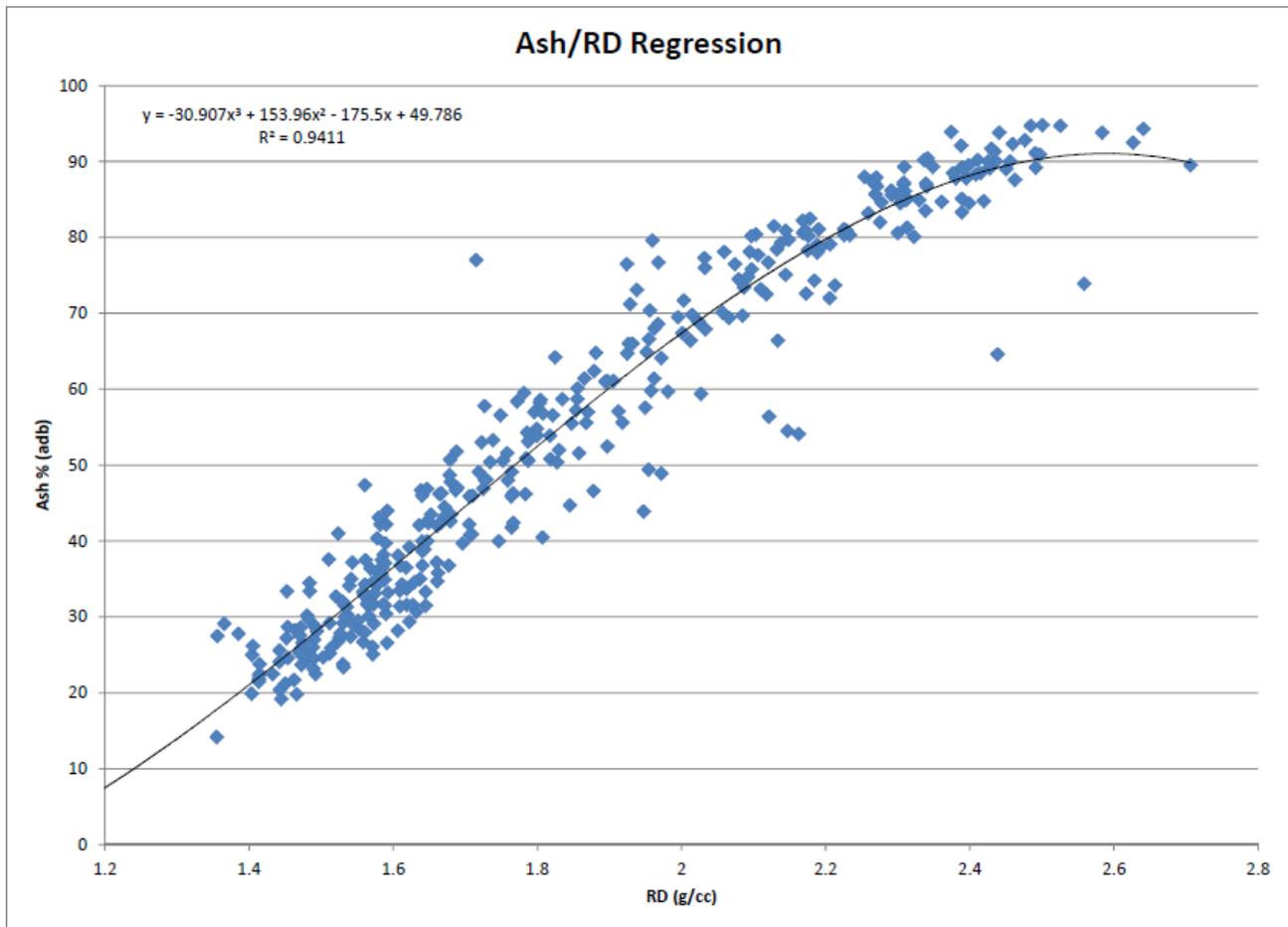


Figure 5.2: Ash v density plot

Coal quality samples were checked to establish which samples cover less than 90% or greater than 100% of the ply interval. Samples that fall in these categories were excluded from the coal quality model as they were determined not to be representative of the interval. Coal quality data was then composited against their respective ply intervals and reviewed for anomalous values. The review found that five samples should be excluded from the coal quality model due to insufficient ply interval coverage (3 samples), one sample included an excessive amount of overburden material and the results from another sample did not support the associated lithological or geophysical information. Table 8 shows a breakdown of the sample and ply interval correlations. Values highlighted in red have a sample excluded from the model for that ply.

**Table 8: Coal quality sample/ply interval correlation**

SEAM	COUNT	>100%	100%	>90%	>75%	>50%	<50%	Comment
A	6	0	6	0	0	0	0	
AL	2	0	2	0	0	0	0	
AM	7	1	6	0	0	0	0	Exclude borehole RGDDH002 from model. Suspect coal quality values.
AU	7	0	7	0	0	0	0	Exclude borehole RGDDH002 from model. Suspect coal quality values.
BL	12	0	11	0	0	1	0	Borehole W25 excluded from model. Sample covers <75% of interval.
BM	20	0	19	1	0	0	0	
BML	1	0	1	0	0	0	0	



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SEAM	COUNT	>100%	100%	>90%	>75%	>50%	<50%	Comment
BU	9	0	9	0	0	0	0	
C	4	0	4	0	0	0	0	
CL	6	0	6	0	0	0	0	
CM	4	0	3	0	0	0	1	Borehole RGDDH005A excluded from model. Sample covers <50% of interval.
CU	4	0	3	0	0	0	1	Borehole RGDDH004 excluded from model. Sample covers <50% of interval.
DL	3	0	2	1	0	0	0	
DT	3	0	3	0	0	0	0	
DU	3	0	3	0	0	0	0	

For coal quality data to be determined suitable for use in the coal quality model, a minimum of three data points were required. This is due to the fact that a minimum of three data points are required to facilitate triangulation and to develop a spatial trend for coal quality model extents. Table 9 identifies those samples with three or more values and the average coal quality values for each ply interval.



## WOODBURY 2013 JORC RESOURCES STATEMENT

**Table 9: Compositing coal quality summary**

Seam	Composite Count	TM_arb		IM_adb		Ash_adb		FC_adb		TS_adb		VM_adb		RD_adb		CV_adb		
		Ave	Count	Ave	Count	Ave	Count	Ave	Count	Ave	Count	Ave	Count	Ave	Count	Ave	Count	
A	6	4.22	6	3.31	6	29.93	6	52.42	6	0.34	6	14.34	6	1.60	6	22.54	6	
AU	6	8.11	6	5.95	6	43.64	6	37.58	3	0.29	3	8.84	3	2.01	6	22.68	6	
AM	6	6.11	6	4.61	6	39.35	6	27.78	3	0.26	3	6.13	3	1.75	6	18.17	6	
AL	2	4.63	2	3.60	2	58.47	2	0.00	0	0.00	0	0.00	0	1.99	2	10.45	2	
BU	9	4.91	9	3.97	9	40.70	9	43.69	9	0.25	8	11.64	9	1.69	9	17.85	9	
BM	20	5.84	20	4.61	20	43.00	20	28.16	14	0.21	14	9.35	14	1.68	20	17.56	20	
BML	1	5.98	1	4.40	1	40.90	1	46.60	1	0.20	1	8.10	1	1.71	1	21.02	1	
BL	11	5.73	11	4.68	11	42.11	11	33.31	9	0.30	9	10.72	9	1.67	11	17.29	11	
C	4	6.78	4	5.48	4	40.60	4	20.02	2	0.17	2	7.70	2	1.68	4	17.33	4	
CU	3	4.56	3	3.52	3	64.04	3	25.32	2	0.15	2	6.79	2	1.96	3	8.93	3	
CM	3	8.04	3	6.58	3	49.36	3	16.25	1	0.15	1	5.53	1	1.72	3	14.01	3	
CL	6	5.42	6	4.63	6	32.85	6	34.68	4	0.34	4	11.49	4	1.55	6	20.97	6	
DT	3	7.89	3	6.54	3	49.00	3	7.14	1	0.04	1	5.87	1	1.72	3	13.43	3	
DU	3	6.28	3	5.05	3	33.01	3	10.27	1	0.10	1	3.65	1	1.54	3	20.90	3	
DL	3	5.86	3	4.79	3	36.82	3	10.15	1	0.10	1	4.62	1	1.58	3	19.27	3	
D	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	
*Note	Blue square means able use in model (≥3 data points)																	



### 5.2.4 Coal Quality Sampling and Analysis

As part of the 1981 exploration program, Victor Petroleum Pty Ltd submitted 237 samples from sixteen cored boreholes to SGS Australia Pty Ltd (SGS) for analysis, at their Sydney laboratory. This laboratory is NATA certified today and was at the time these analyses were completed. Limited information is available for this analytical program. The samples included coal, roof and floor units. Analyses reported included inherent moisture (adb), ash (adb), volatile matter (adb), fixed carbon (adb), specific energy (adb), total sulphur (adb) and relative density (adb). Individual plies were sampled on a geological basis and in some cases composited.

All of the analyses were completed according to Australian Standards (details below) for coal and coke testing methods.

Three seam sections (W39 - D seam, W41 - BU ply, BU ply and BL ply and W46 - D seam) from boreholes W39, W41 and W46 were submitted to SGS for sizing and washability analysis. In each case a composite was prepared from plies with designated coal sections, utilizing the maximum amount of available sample. These composites, comprising coal of nominal topsize 12.7 mm were first sized at 0.5 mm. The plus 0.5 mm fraction was then float/sink separated at gravities of 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.80, 1.90 and 2.00. Ash was determined on each fraction. The minus 0.5 mm fraction was further sized at 250, 125 and 75 microns. Ash was determined on each size fraction.

As part of the 2010 exploration program commissioned by ResGen, coal sampling was conducted on 15 cored boreholes by Marston geologists. The 15 cored boreholes had correlated depths picked from geophysical logs. A total of 108 samples were submitted to SGS Australia Pty Ltd (Newcastle laboratory) for coal quality analysis, which is also and was at the time these analyses were conducted NATA certified.

The samples included coal, roof and floor units. Analyses reported included total moisture (ar), inherent moisture (adb), ash (adb), volatile matter (adb), fixed carbon (adb), total sulphur (adb), gross calorific value (adb) and relative density (adb). Individual plies were composited and proximate analysis was available for all seams sampled.

Total moisture analyses were completed according to AS 1038.1 (Coal - Total Moisture), inherent moisture, ash, volatile matter and fixed carbon analyses were completed according to AS 1038.4 (Coal and Coke – Proximate Testing), total sulphur analyses were completed according to AS 1038.6.3.3 (Coal and Coke – Total Sulphur I IR Method), gross calorific value analyses were carried out according to AS 1038.5 (Coal and Coke – Calorific Value) and relative density analyses were carried out according to AS 1038.21.1.1 (Coal and Coke – Relative Density – Bottle Method).

As part of the 2010 ResGen exploration program a total of 50 composite and single seam samples were submitted for testing to SGS Australia Pty Ltd (Newcastle laboratory) from the A, B, C and D seams. 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 (Coal – Float and Sink Testing). All float fractions were tested for ash content.

### 5.2.5 Geophysical Logging

Groundsearch Australia Pty Ltd supplied Golder with the calibration block for the density tool used to geophysically log the ResGen boreholes. Using the calibration block ensures the downhole wireline probe is calibrated to provide accurate depth measurements of subsurface rock types. The downhole wireline logs are then used to adjust the depths of lithological logs, ply intervals and coal quality samples.

## 5.3 Geological Interpretation and Seam Correlations

Local geology interpretations have been undertaken by a variety of geological consultants, the most recent being Marston in 2011. Their interpretations were built on historical interpretations and have honoured the logic that was applied throughout the project's life. That is, the WRA consists of four main seams (A, B, C and D) each of which are split into upper, middle and lower plies. Information used to undertake the interpretation is derived from borehole data that has been logged by geologists and where applicable, analysed at a NATA certified laboratory.



Golder reviewed the correlations and identified some boreholes requiring further review. These boreholes have received closer review and changes to the ply correlation were made where necessary after examining the coal quality samples in conjunction with the lithological and geophysical data.

Based on the information supplied to Golder, the work undertaken to this point has been conducted in line with industry best practice and is considered appropriate for both geological modelling and resource estimation. It should be noted that in areas of limited data, more drilling and subsequent review of the relevant seam/ply correlations will be required to further increase the confidence of the geological model.

## 5.4 Modelling Process

### 5.4.1 Overview

Golder reviewed and updated a geological model for the deposit previously created by Marston in 2011. The updated model, named "woodbury\_1310", was used to evaluate the structure, and coal quality for the resource estimate. The model was constructed using Ventyx's MineScape software, version 5.4, utilising the Stratmodel module. Lithology data and borehole coordinates were provided by Midland Energy. Additional data was obtained from historical reports available from the Mineral Resources Tasmania.

The model was created using MineScape's Finite Element Method (FEM) interpolator to interpolate known data points (borehole data) onto a grid. For each data point, a bilinear equation can be set up to express the known value at the data point to the unknown values of the four surrounding nodes.

Three fault structures are incorporated into the model. These faults were based on digitized fault traces originated from available geological data and maps created in 2008. From this information the faults were given a dip of 90° and throws ranging from 10 m to 100 m. Dolerite intrusions have been identified primarily in the southern extent of the EL from regional geology maps and borehole data. Holes that have been drilled within the dolerite extents identify the dolerite as an intrusion rather than a surface flow. Golder applied polygons around the intrusion zone to mask out those areas.

The resource area that was delineated by MEGMS in the initial geological model was based on the three major fault structures surrounding the deposit and Marston subsequently applied the same limits in its model. Golder has again used this same resource area in this model to estimate coal tonnage due to the lack of data outside the area.

### 5.4.2 Topography

Topographic data was initially provided to Marston by ResGen in DXF format. The relative accuracy of the topographic contours supplied could not be confirmed, however, upon completion of a validation routine comparing collar elevation to topographic surface level, Golder confirmed the accuracy of the topographic surface. The modelled topographic grid was created using a 5 m grid cell spacing. The data was provided in the GDA 1994 MGA Zone 55 coordinate system. Topographic data used to create the topographic grid in the geological model was originally sourced from Tasmania's Department of Primary Industries and Water (DPIW), purchased on behalf of ResGen (Harvey, 2008).

A comparison of collar elevations with the topographic surface identified eight holes where the difference in elevation was greater than 2 m as discussed in Section 5.2.3. These holes were subsequently excluded from the model. The topography of the area is shown in Figure 3.1.

### 5.4.3 Base of Weathering

A total of 41 intercepts for the base of weathering (logged as BOX) were recorded. The BOX was based on visual observations determined by the field geologist. These values were used to create a base of weathering grid model utilising the modelling routine described in Section 5.4.1.

The logged base of weathering depth to floor observations range from 2.5 m to 15.8 m with an average of 9.1 m.



### 5.4.4 Geological Structure Models

Two data files were imported into MineScape to generate the structure model. One file contains borehole collar data and the other file contains borehole ply interval and base of weathering surface depths. The geological model splits the parent seams (A, BML, C and D) into daughter plies as shown in Figure 5.3, to provide consistent surfaces across the EL, which is useful for mine design purposes.

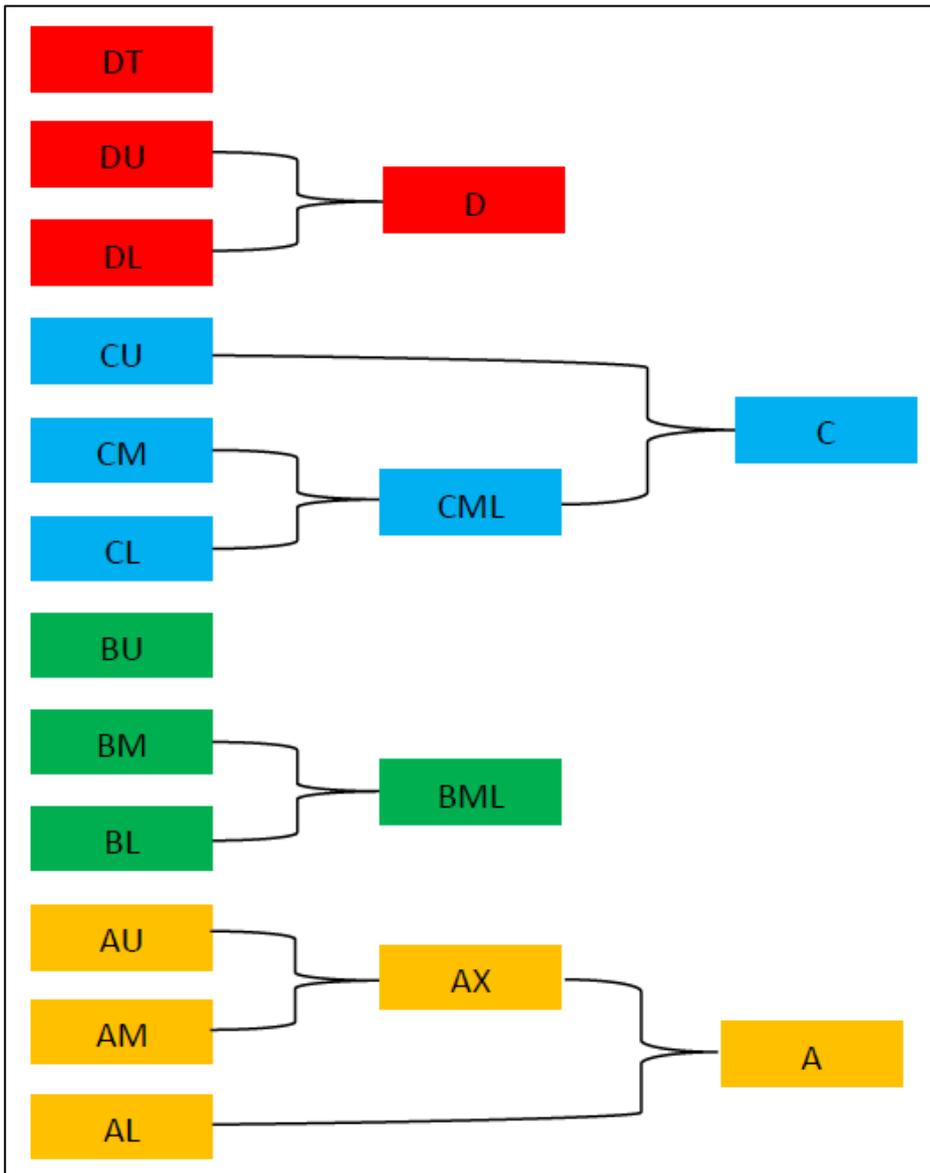


Figure 5.3: Woodbury geological model schema

\*\*Note: AX was a dummy seam used to force the A seam to split into three plies in MineScape™.

#### D Seam

The D seam includes ply DT and the daughter plies DU and DL. The thickness ranges between 0.16 m where the plies split and a maximum thickness of 3.9 m where the D seam coalesces. The thickness of overburden above the D seam ranges from 5 m to 53 m.



Summarised averages for the D seam are shown in Table 10.

**Table 10: D Seam statistics**

Analysis (basis)	Seam			
	D	DL	DT	DU
TM (arb)	-	5.9	7.9	6.3
IM (adb)	-	4.8	6.5	5.0
Ash (adb)	-	36.8	49.0	33.0
FC (adb)	-	10.2	7.1	10.3
TS (adb)	-	0.1	-	0.1
VM (adb)	-	4.6	5.9	3.7
RD (adb)	-	1.6	1.7	1.5
CV (adb)	-	19.3	13.4	20.9
Thickness (m)	2.29	0.86	0.44	0.50
Minimum Thickness (m)	0.80	0.38	0.16	0.22
Maximum Thickness (m)	3.90	1.42	0.64	0.69

**C Seam**

The C seam splits into the daughter plies CU, CM and CL. The thickness ranges between 0.1 m where the plies split and a maximum thickness of 2.6 m where the C seam coalesces. The thickness of overburden above the C seam ranges from 3 m to 99 m.

Summarised averages for the C seam are shown in Table 11.

**Table 11: C Seam statistics**

Seam	C	CL	CM	CU
TM (arb)	6.8	5.4	8.0	4.6
IM (adb)	5.5	4.6	6.6	3.5
Ash (adb)	40.6	32.9	49.4	64.0
FC (adb)	20.0	34.7	16.3	25.3
TS (adb)	0.2	0.3	0.1	0.2
VM (adb)	7.7	11.5	5.5	6.8
RD (adb)	1.7	1.6	1.7	2.0
CV (adb)	17.3	21.0	14.0	8.9
Thickness (m)	1.15	0.77	0.77	0.62
Minimum Thickness (m)	0.60	0.30	0.23	0.07
Maximum Thickness (m)	2.66	1.92	1.38	2.50



## B Seam

The B seam splits into the daughter plies BU, BM and BL. The thickness ranges between 0.1 m and a maximum thickness of 1.9 m for the BM ply. The thickness of overburden above the C seam ranges from 4.5 m to 135 m.

Summarised averages for the B seam are shown in Table 12.

**Table 12: B Seam statistics**

Seam	BL	BM	BML	BU
TM (arb)	5.7	5.8	6.0	4.9
IM (adb)	4.7	4.6	4.4	4.0
Ash (adb)	42.1	43.0	40.9	40.7
FC (adb)	33.3	28.2	46.6	43.7
TS (adb)	0.3	0.2	0.2	0.3
VM (adb)	10.7	9.4	8.1	11.6
RD (adb)	1.7	1.7	1.7	1.7
CV (adb)	17.3	17.6	21.0	17.8
Thickness (m)	0.56	0.76	0.78	0.58
Minimum Thickness (m)	0.10	0.13	0.67	0.10
Maximum Thickness (m)	1.20	1.90	0.85	1.06

## A Seam

The A seam splits into the daughter plies AU, AM and AL. The thickness ranges between 0.1 m where the plies split and a maximum thickness of 1.2 m where the A seam coalesces. The thickness of overburden above the A seam ranges from 41 m to 90 m.

Summarised averages for the A seam are shown in Table 13.

**Table 13: A Seam statistics**

Seam	A	AL	AM	AU
TM (arb)	4.2	4.6	6.1	8.1
IM (adb)	3.3	3.6	4.6	6.0
Ash (adb)	29.9	58.5	39.4	43.6
FC (adb)	52.4	-	27.8	37.6
TS (adb)	0.3	-	0.3	0.3
VM (adb)	14.3	-	6.1	8.8
RD (adb)	1.6	2.0	1.8	2.0
CV (adb)	22.5	10.4	18.2	22.7
Thickness (m)	0.73	0.10	0.44	0.52
Minimum Thickness (m)	0.19	0.07	0.28	0.16



Seam	A	AL	AM	AU
Maximum Thickness (m)	1.00	0.13	0.70	1.24

### 5.4.5 Coal Quality Models

The Relative Density (RD) used in the modelling is an in situ density calculated using the Preston Sanders correction:

$$RD = ARD \times (100 - IM) / (100 + ARD \times (TM - IM) - TM)$$

Where:

ARD = Apparent Relative Density

IM = Inherent Moisture

TM = Total Moisture

In the absence of moisture holding capacity Golder has used total moisture as the in situ moisture. The total moisture is likely to be close to but slightly different than the true in situ moisture but lacking an in situ moisture analysis the total moisture (arb) is still an acceptable value to use in the calculation and will give a more reliable RD than the air-dried RD that results from the AS 1038 analysis.

Base data checks were performed on the quality data by creating a histogram of the calorific value and conducting cross plots. Some outliers were found, however, they were not eliminated from the data set as the Woodbury area is known to contain igneous intrusions which could have affected the calorific value and volatile matter content. Additionally, quality samples were checked using cross plots for any significant trending between data. The raw proximate data was calculated to check that it added up to 100% (ash + fixed carbon + inherent moisture + volatile matter). The total moisture was calculated for all historic holes using a regression formula based on the total moisture versus inherent moisture regression analysis and scatter plot of the most recent data set. Scatter plot and regression analysis is shown in Figure 5.4, Total Moisture vs Inherent Moisture Regression Plot.

i.e.

$$TM = 1.1443 \times IM + 0.5133$$

Where:

IM = Inherent Moisture

TM = Total Moisture

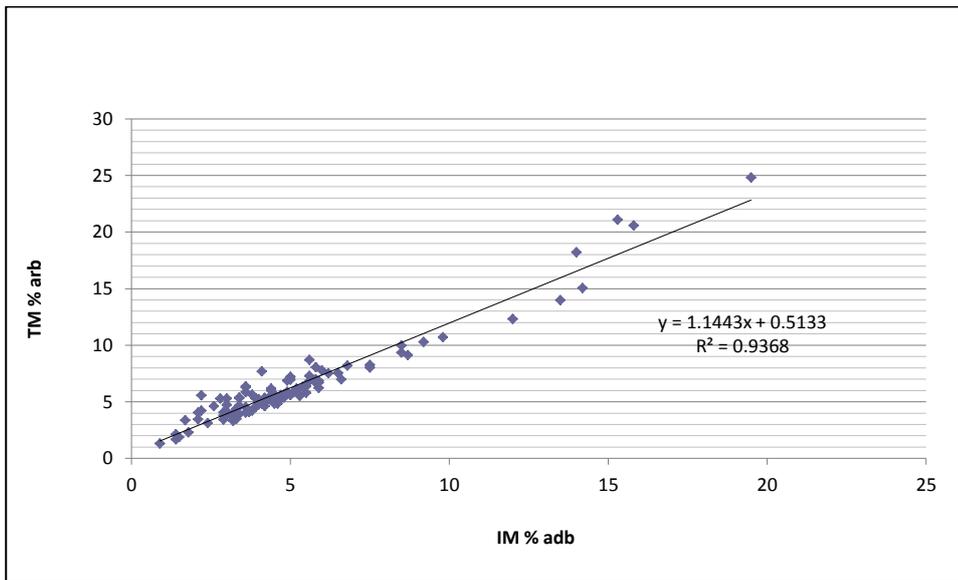


Figure 5.4: Total moisture v inherent moisture plot

A further regression calculation was conducted to generate data for missing calorific values for the historic holes based on the correlation between calorific value and ash content data for the recent analyses. The regression analysis and scatter plot was conducted on the ResGen data set. Scatter Plot and regression analysis are shown in Figure 5.5, Ash vs calorific value regression plot.

i.e.

$$CV = -0.4136 \times Ash + 34.634$$

Where:

CV = Calorific Value

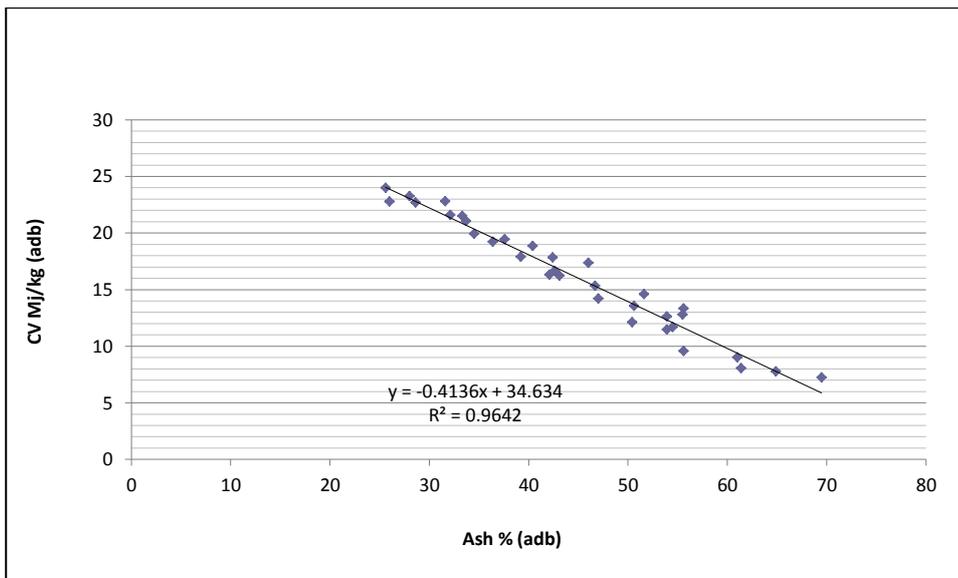


Figure 5.5: Ash vs calorific value regression plot

The quality data for each seam intercept was then composited and gridded and plots of contoured quality parameters created. The quality data was modelled using a height interpolator.



## 6.0 COAL RESOURCE ESTIMATION AND CLASSIFICATION

### 6.1 Basis of Estimation and Classification

Golder has generated and classified Resources for the WRA in accordance with the JORC Code 2012.

### 6.2 Coal Resource Constraints

#### 6.2.1 Cut-off Parameters

The D, C, B and A seams were selected based on overall seam thickness as well as midburden thickness and depth to be the seams most likely to be feasibly economically extracted in an open cut mining scenario.

#### 6.2.2 Relative Density

The basis of tonnage calculations from the modelled estimates of coal volumes on a per seam basis is the coal relative density (RD). As described previously (Section 5.4.5), the coal RD has been calculated from supplied apparent relative density (adb) and total moisture (arb) in accordance with the Preston-Sanders methodology, which is accepted as an industry standard. This calculated RD was then utilised in estimating Resource tonnage. The formula utilised is as follows:

$$RD=ARD*(100-IM)/(100+ARD*(TM-IM)-TM).$$

#### 6.2.3 Mining Assumptions

The only assumption that has been made is that the estimated Resources will be mined utilising open cut extraction methods.

### 6.3 Classification of Coal Resources

Classification categories for the determination of Resources were based on the number and relative distance between nominated Points of Observation (POO). Figures presented in APPENDIX D provide Resource outlines for each seam/ply estimated in addition to the specific POO used for each seam/ply's classification.

#### 6.3.1 Points of Observation

POO were defined based on the following criteria:

- Sample derived from a cored borehole that has been surveyed or an open borehole that possesses wireline geophysics
- Lithological logs defining sample and /or roof and floor depth.

#### 6.3.2 Geostatistical Evaluation for Coal Resource Classification

##### 6.3.2.1 Exploratory Data Analysis

The borehole coverage and spacing for Woodbury is shown in Figure 6.1. The WRA is triangular, defined on all sides by faults and is flanked by dolerite to the south. Geostatistics were carried out to define continuity in both coal quality (CQ) and structure thickness (ST) for consideration during Resource classification. For the geostatistical evaluation, only data within the WRA and outside the dolerite masks was used. In addition only boreholes validated and selected for modelling were used (see section Figure 6.1)

Statistics calculated for the CQ data by seam split show low sample counts in most splits (see Table 14). For meaningful statistics to be calculated, a generally accepted rule of thumb is that there should be at least 15 samples in the dataset. Ideally each split would have a sufficient data set to be considered separately. Only one split has greater than 15 samples. For spatial statistics such as variography, generally a larger dataset is required, with coverage across the entire study area Figure 6.1 shows much of the data selected for use in the geostatistical evaluation is contained within two north-south oriented lines of drilling. Each line contains boreholes with approximately 200 m spacing. Coverage to northwest and northeast portions of the WRA is very limited. Borehole coverage is more consistent in the southern portion of the WRA.



Statistics were therefore calculated for seam groupings to increase the sample counts per data set and provide more robust statistics. These statistics are presented in Table 15 and as box plots in Figure 6.2. The B, C and D seams show similar mean ash (AS) and calorific value (CV) values. A Seam has a slightly lower mean AS and higher CV. However, the A and C seams have slightly higher variances than the B and D seams. The A and B seams have similar moisture content. C seam has a similar range and variance but higher average inherent moisture (IM). Relative density (RD) and total sulphur (TS) is reasonably consistent for all seams and low variance. The coefficient of variation (COV) is below one for all seams and variables. The COV is the dispersion variance normalised to the mean. In domain definition for resource modelling, a COV of 1 or below is often considered to represent a data set with a sufficiently low variance that it can be considered consistent.

Figure 6.3 shows a correlation matrix for all data combined. This contains scatter plots of the CQ variables on the lower left side and corresponding correlation coefficients on the upper right side, along the diagonal are histograms of each variable. AS, CV, fixed carbon (FC) and RD all have strong correlations with correlation coefficients of 0.85 or above except for FC vs. RD which is 0.73.

**Table 14: CQ sample count per seam split**

Seam	Sample count							
	Ash	Calorific value	Fixed carbon	Inherent moisture	Relative density	Total moisture	Total sulfur	Volatile matter
A	6	6	6	6	6	6	6	6
AL	2	2	0	2	2	2	0	0
AM	6	6	3	6	6	6	3	3
AU	6	6	3	6	6	6	3	3
BL	10	10	9	10	10	10	9	9
BM	17	17	14	17	17	17	14	14
BML	1	1	1	1	1	1	1	1
BU	9	9	9	9	9	9	8	9
C	4	4	2	4	4	4	2	2
CL	6	6	4	6	6	6	4	4
CM	3	3	1	3	3	3	1	1
CU	3	3	2	3	3	3	2	2
D	0	0	0	0	0	0	0	0
DL	3	3	1	3	3	3	1	1
DT	3	3	1	3	3	3	1	1
DU	3	3	1	3	3	3	1	1

The scatter plot for AS vs. VM shown in Figure 6.3 (bottom left) shows two possible populations. This plot was for all data together, similar plots were generated for each seam separately. This indicates that only B seam contains the two separate populations, see Figure 6.4. The upper population when highlighted on a sample location map is to the north (Figure 6.1), possibly representing the north fold limb. This population mostly contains higher VM and IM and lower FC samples, see Figure 6.4. Normalising CQ data to a constant 4.5% moisture made no difference to the plots. In addition, the effect of lab location on IM was explored as a possible cause of the two populations and found to be unlikely.

Examination of the samples in three dimensional space shows there is a difference in split configuration between the two populations with no seam splits in B seam in the north, and splits developing towards the south. These two distinct statistical populations may therefore represent a different spatial domain. However,



Golder concluded there is insufficient data to establish if there is a separate domain, i.e. north and south limb of fold, or fault block related or if we need to treat the splits separately. Therefore the B seam was modelled as one domain; however there is lower confidence as a result. More borehole data is required to better define the domains present.



# WOODBURY 2013 JORC RESOURCES STATEMENT

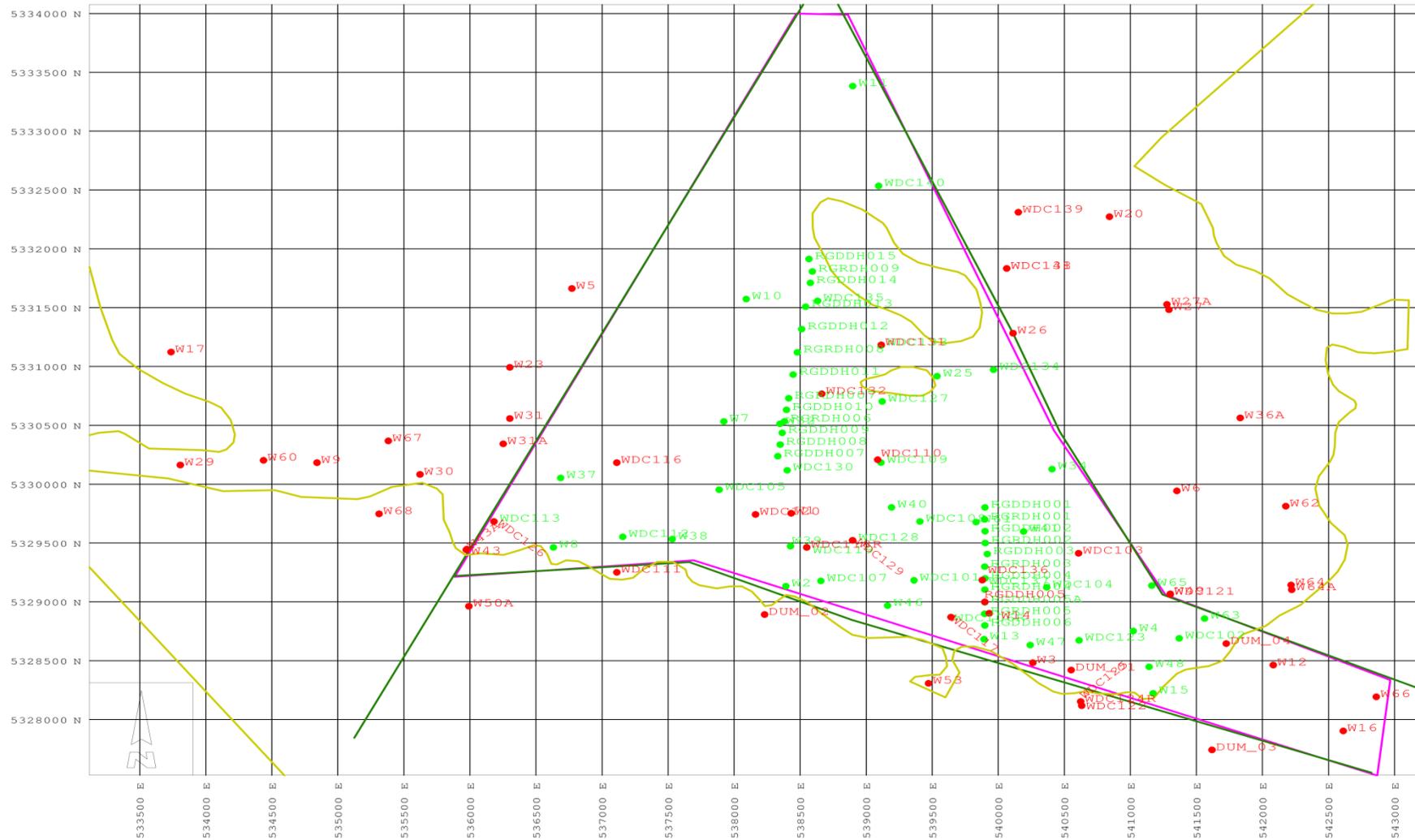


Figure 6.1: Plan view of WRA (pink), faults (green), dolerite mask (yellow) and boreholes used (green) and not used (red)



Table 15: Univariate statistics of coal quality data, by seam

Seam	Coal Quality	Number	Missing	Min	Max	Mean	Var.	COV
A	Ash	20	135	21.20	59.40	34.5	124.42	0.32
	Calorific value	20	135	10.07	25.95	20.29	20.75	0.22
	Fixed carbon	12	143	35.40	62.10	52.71	37.66	0.12
	Inherent moisture	20	135	2.10	8.30	4.17	2.61	0.39
	Relative density	20	135	1.47	2.15	1.68	0.03	0.10
	Relative density calculated*	20	135	1.45	2.121	1.67	0.03	0.10
	Total moisture	20	135	1.56	10.011	5.54	4.04	0.36
	Total sulfur	12	143	0.19	0.79	0.39	0.016	0.32
	Volatile matter	12	143	6.10	18.80	13.39	12.34	0.26
B	Ash	37	137	27.40	64.90	40.84	93.90	0.24
	Calorific value	37	137	7.78	23.30	17.86	15.59	0.22
	Fixed carbon	33	141	21.30	57.20	41.43	106.00	0.25
	Inherent moisture	37	137	1.80	7.74	4.41	2.54	0.36
	Relative density	37	137	1.49	1.98	1.68	0.014	0.07
	Relative density calculated*	37	137	1.48	1.95	1.67	0.013	0.07
	Total moisture	37	137	2.57	10.44	5.54	3.89	0.36
	Total sulfur	32	142	0.01	0.66	0.32	0.01	0.36
	Volatile matter	33	141	4.80	20.40	12.68	17.32	0.33
C	Ash	16	133	26.00	74.71	41.49	166.27	0.31
	Calorific value	16	133	7.62	22.88	17.31	24.65	0.29
	Fixed carbon	9	140	29.90	51.80	41.97	48.95	0.17
	Inherent moisture	16	133	1.70	8.02	5.10	2.55	0.31
	Relative density	16	133	1.46	2.09	1.68	0.03	0.11
	Relative density calculated*	16	133	1.43	2.08	1.66	0.03	0.10
	Total moisture	16	133	2.51	9.69	6.21	3.39	0.30
	Total sulfur	9	140	0.15	0.47	0.38	0.01	0.28
	Volatile matter	9	140	7.27	20.00	14.28	12.22	0.24
D	Ash	9	129	20.40	58.70	39.06	91.57	0.25
	Calorific value	9	129	7.99	25.77	18.16	20.20	0.25
	Fixed carbon	3	135	18.00	55.40	34.34	297.97	0.50
	Inherent moisture	9	129	4.18	8.50	5.27	1.76	0.25
	Relative density	9	129	1.45	1.86	1.62	0.01	0.07
	Relative density calculated*	9	129	1.44	1.84	1.61	0.01	0.07
	Total moisture	9	129	5.29	9.97	6.45	2.10	0.22
	Total sulfur	3	135	0.09	0.55	0.30	0.05	0.73
	Volatile matter	3	135	14.80	19.70	17.26	6.13	0.14

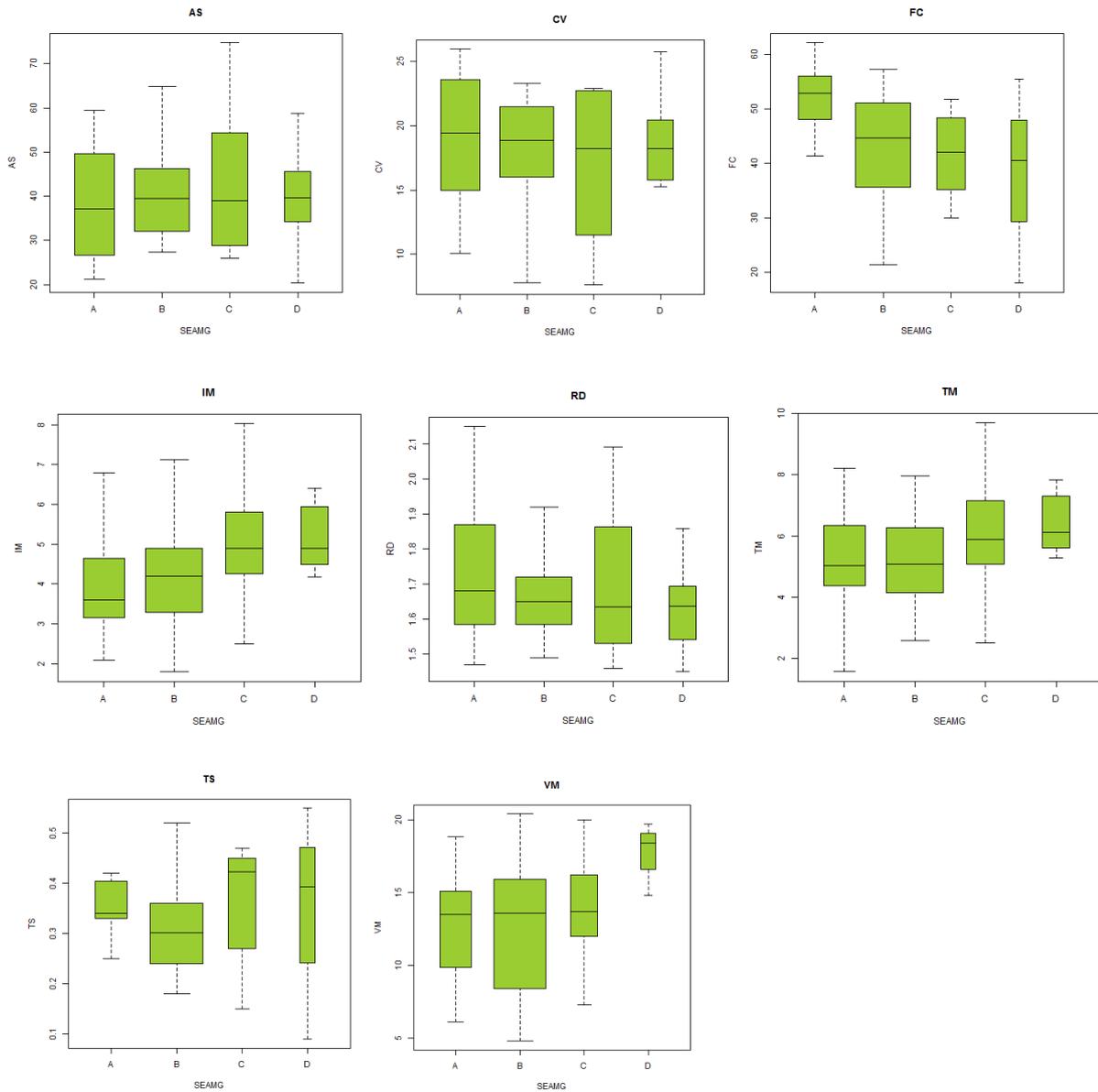


Figure 6.2: Boxplots for coal quality, per seam

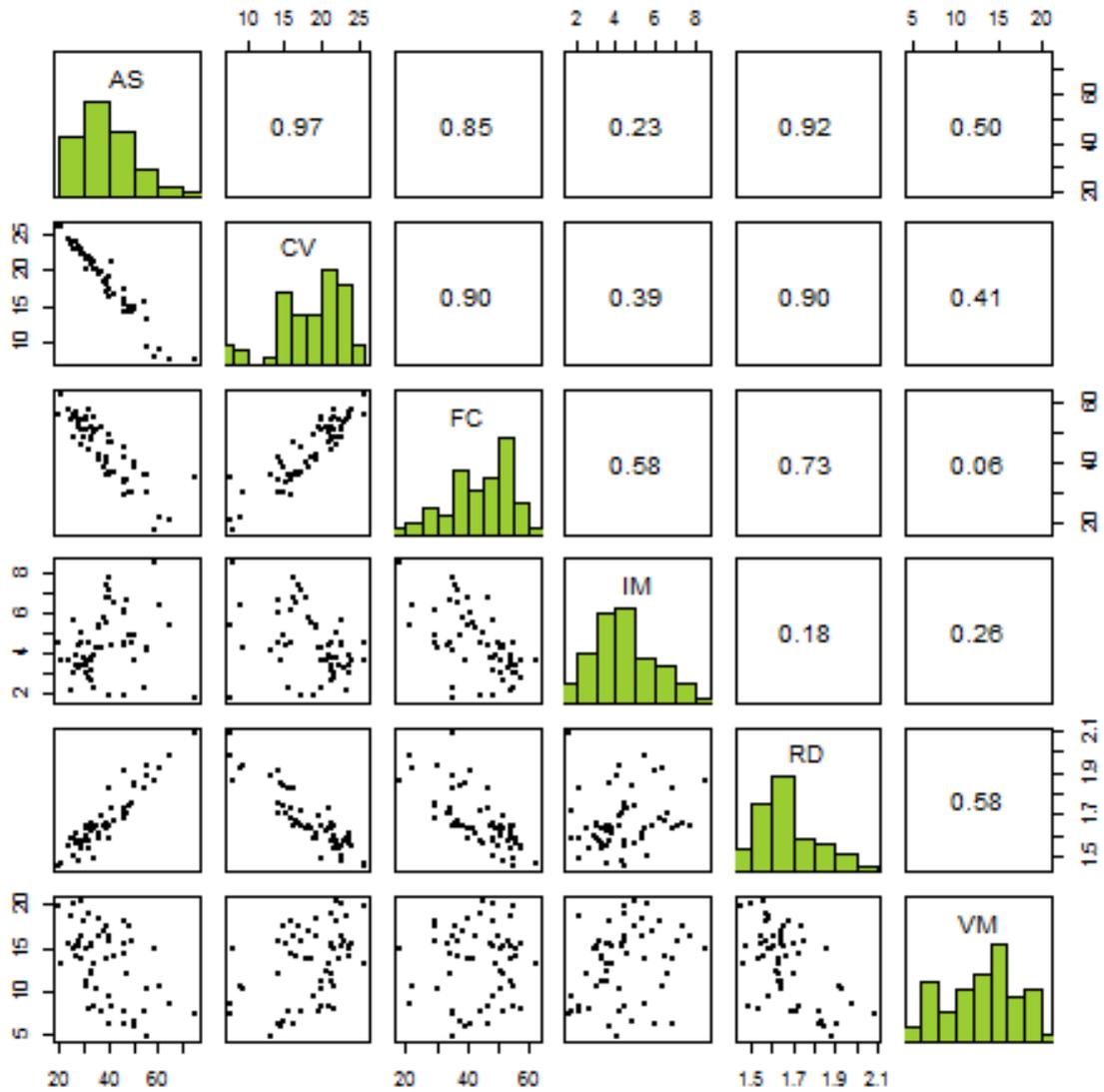


Figure 6.3: Correlation matrix, all CQ data

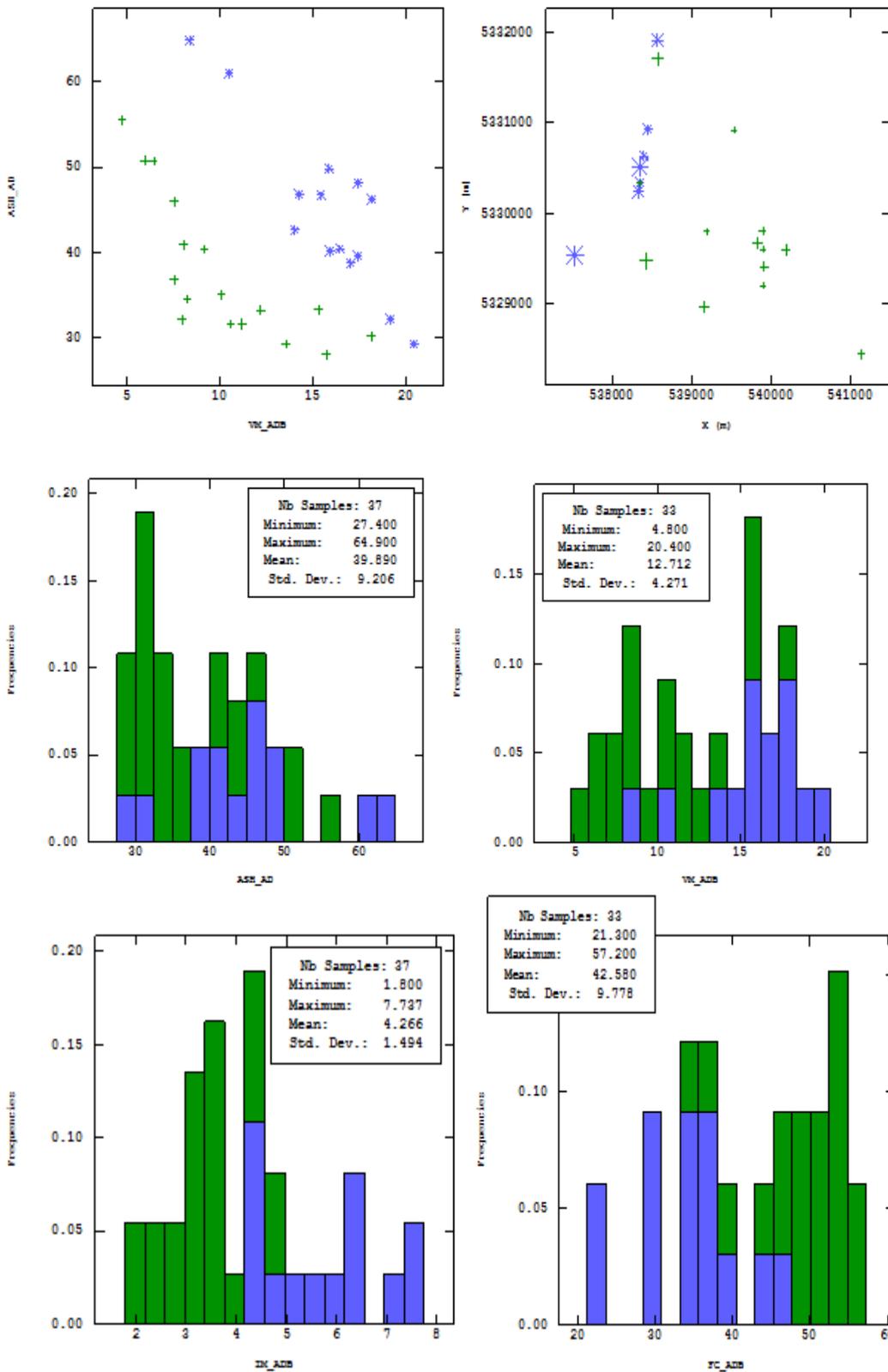


Figure 6.4: Scatter plot (top left), location base map (top right), and histograms (middle and bottom), Seam B. Blue shows highlighted upper population on all plots



Seam thickness statistics by split are shown in Table 16 and by seam in Table 17. This includes all borehole intersections, not only those with CQ data. Seam splits BL, BM, BU, CL and CU contain a reasonable amount of data (i.e. 15 intersections or greater), all other splits are insufficient for robust statistics. Figure 6.5 shows box plots of seam thickness by seam. Both the B and C seams both show a higher mean and variance in the cumulative seam thickness statistics; this is due to the large interburden units between the upper and middle seam splits. Therefore it is considered that it may be better to do semi-cumulative statistics and variograms for the B and C seams, i.e. BML and BU for the B seam and CML and CU for the C seam. However, there was insufficient data for BU and CU to give robust variograms. Therefore statistics and variograms were calculated on full seam accumulations.

**Table 16: Univariate statistics of seam thickness, by seam split**

SEAM	Number	Missing	Min	Max	Mean	Var	COV
A	11	0	0.19	1	0.68	0.057	0.35
AL	5	0	0.07	0.13	0.1	0	0.22
AM	10	0	0.28	0.7	0.44	0.016	0.29
AU	10	0	0.16	1.24	0.52	0.14	0.72
BL	25	0	0.12	1.2	0.61	0.09	0.49
BM	39	0	0.13	1.16	0.73	0.083	0.4
BML	3	0	0.67	0.85	0.78	0.009	0.12
BU	22	0	0.1	1.06	0.6	0.055	0.4
C	11	0	0.6	2.66	1.21	0.306	0.46
CL	19	0	0.3	1.92	0.81	0.173	0.52
CM	12	0	0.23	1.38	0.77	0.148	0.5
CML	2	0	0.98	1.58	1.28	0.18	0.33
CU	15	0	0.11	2.5	0.65	0.374	0.94
D	8	0	0.8	3.9	2.34	0.946	0.42
DL	7	0	0.38	1.42	0.86	0.139	0.43
DT	6	0	0.16	0.64	0.44	0.035	0.42
DU	6	0	0.22	0.69	0.5	0.029	0.35

**Table 17: Univariate statistics of seam thickness, by seam accumulations**

Seam Group	Number	Missing	Min	Max	Mean	Var	COV
A	21	0	0.19	2.67	1.22	0.597	0.63
B	45	0	0.1	22.88	4.36	18.916	1
C	32	0	0.48	13.92	3.81	12.421	0.93
D	15	0	0.8	5.67	2.47	1.552	0.5

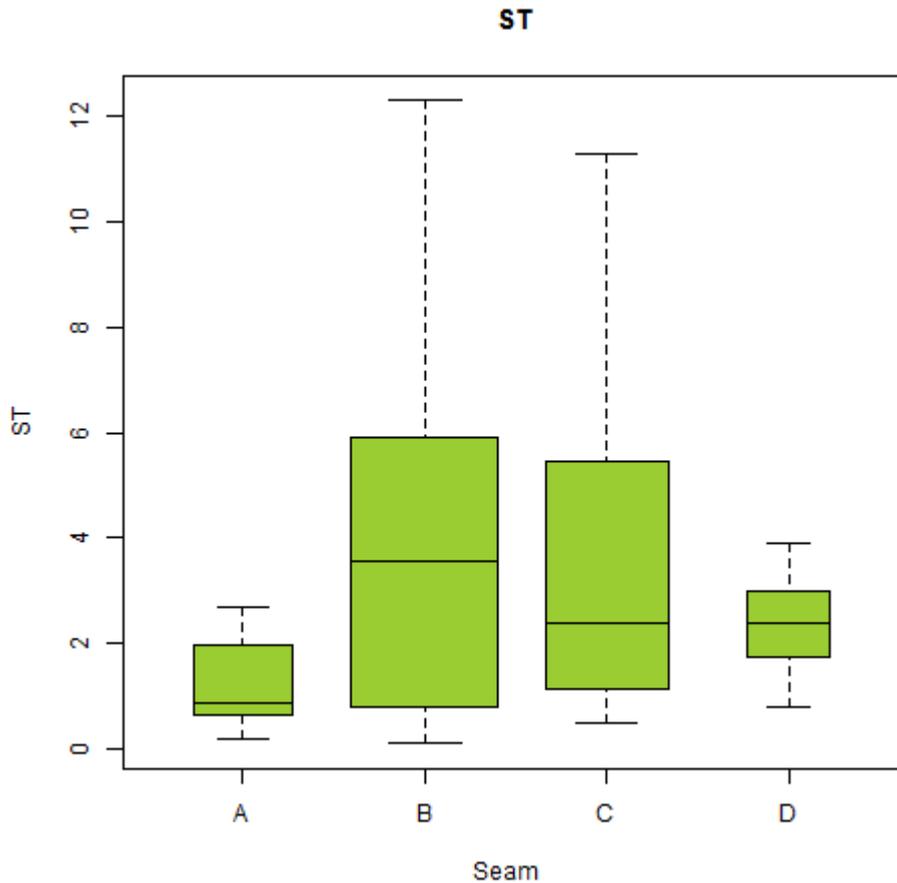


Figure 6.5: Box plot of seam thickness, by seam accumulations.

### 6.3.2.2 Variography

Variography was carried out on both seam thickness and key CQ parameters, where data was sufficient. This enabled a quantification of continuity per seam, for consideration when assigning confidence categories to Resources. There was insufficient data to carry out directional variography. Omni-directional experimental semi-variograms (variograms) were generated for each seam for ST and for AS, CV and RD for B seam only. The A, C and D seams possessed insufficient spatial coverage of data to carry out variography on CQ variables.

Lag distances used to calculate variograms were varied per domain to suit the highly variable data spacing. There are two lines of 100 - 200 m spaced boreholes and then a broader spaced dataset, mostly in the south, of 250 m - 1 km spaced holes. Figure 6.6 and Figure 6.8 show the coverage and spacing of the data used for seam thickness and coal quality.

The ST variogram for D seam was calculated masking one isolated sample to the north to improve the variogram structure. Sample count in this seam is fairly low and so the variogram could potentially be inaccurate. The ST variograms for C and B seams were calculated masking three thicker samples for seam C and one thicker sample from B seam, which appear to be outliers on the ST boxplots (Figure 6.5). No samples were masked for ST variogram for A seam or CQ variograms for B seam.

The resulting variograms and fitted variogram models are shown in Figure 6.7 and Figure 6.9. The variogram models fitted are not intended for use in a kriged estimate. The final variogram model ranges represent the maximum limit of continuity for that variable and seam.



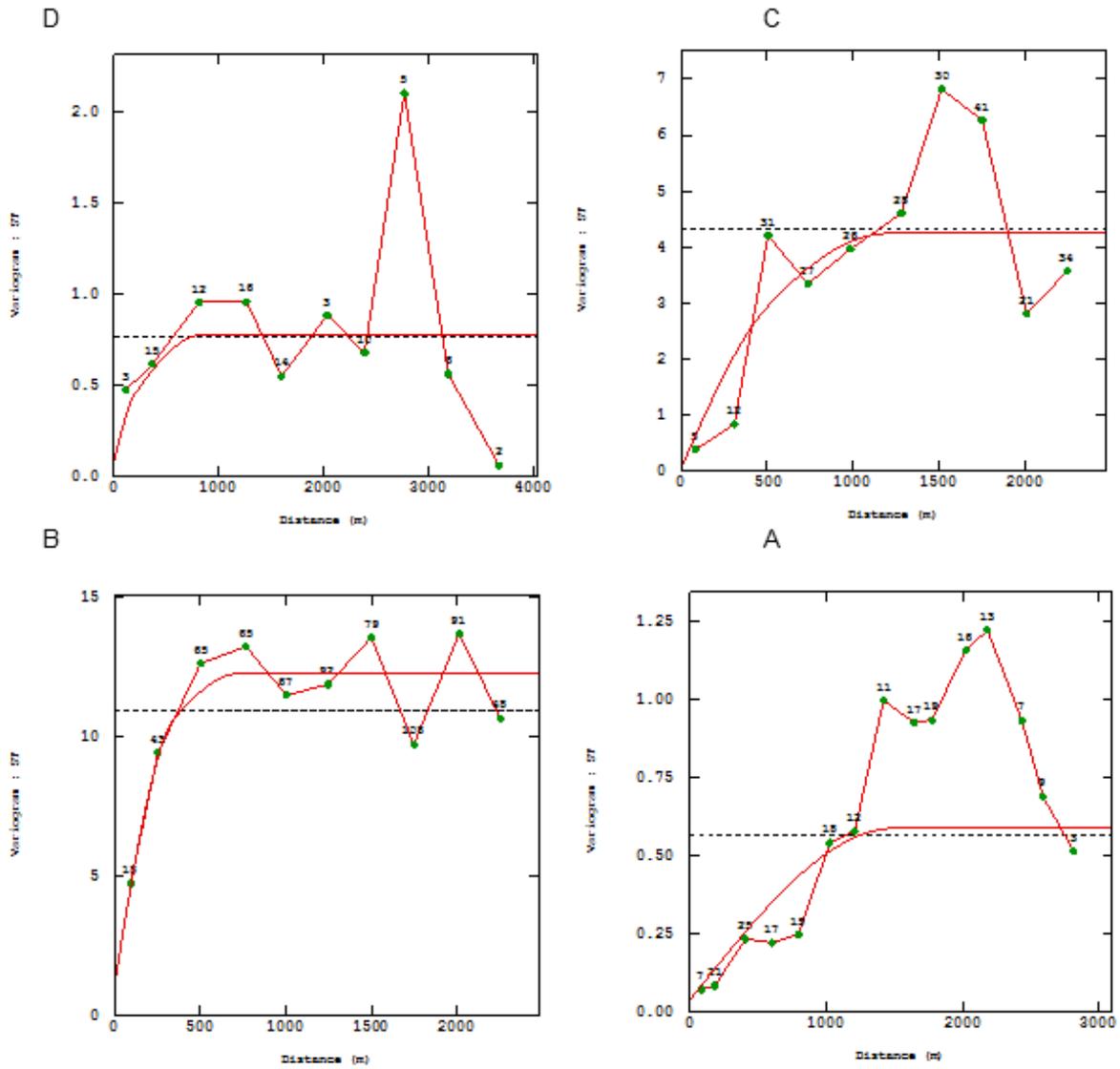


Figure 6.7: Variograms (thin red line) and variogram models (thicker red line), ST, by seam



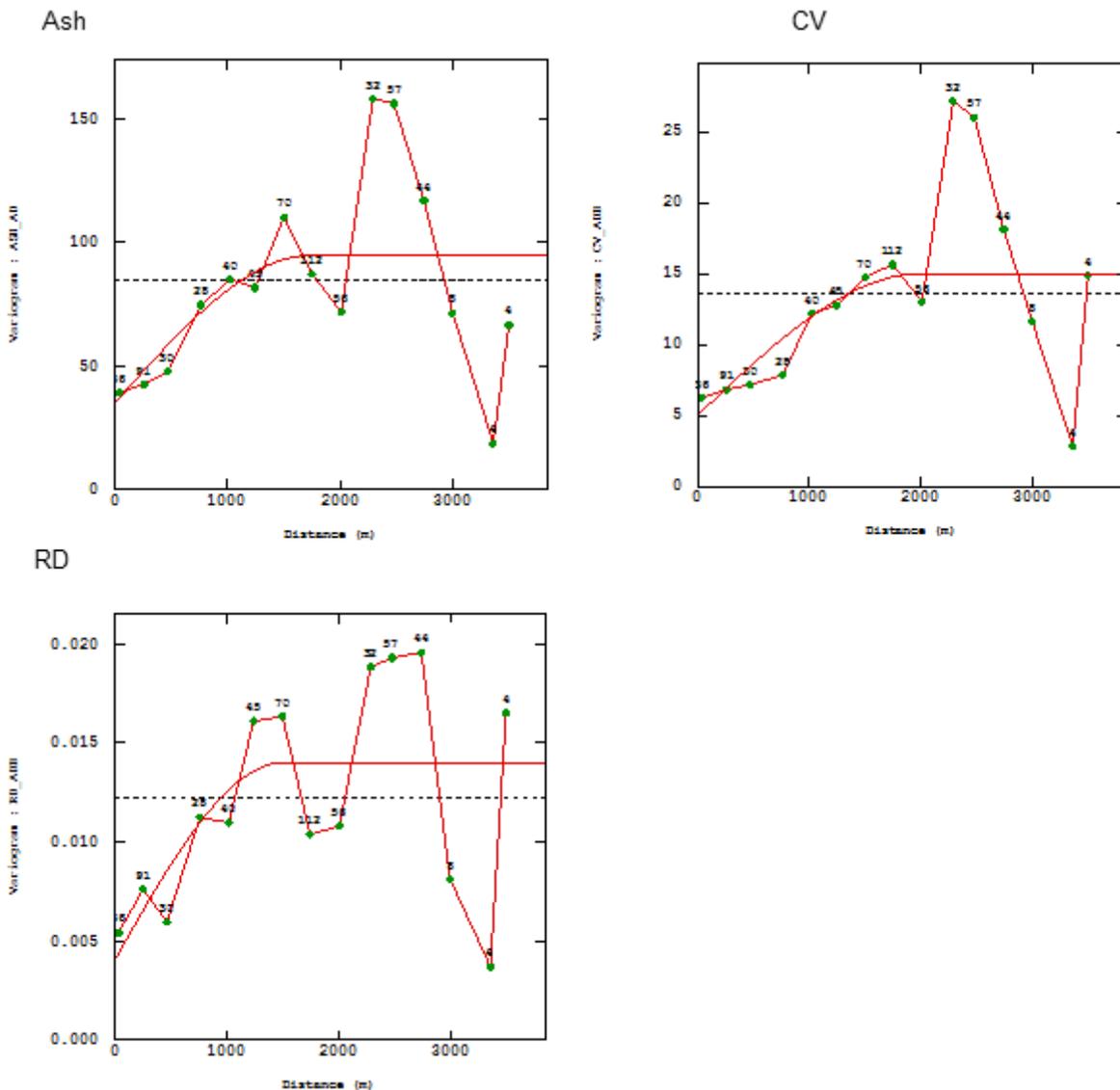


Figure 6.9: Variograms (thin red line and variogram models (thicker red line), CQ, Seam B

The ST histogram and base map for A seam show two possible populations, with a thickening to the SE. This reflects a seam split that is present in the SE, but not in the NW. The increase in thickness to the SE therefore represents interburden, as the coal thickness of the splits is fairly constant. Increased information from boreholes is required in this area to improve data coverage and variogram quality.

The number and coverage of data for A seam is largely limited to one line of drilling data. The seam splits towards the south east, which may represent a separate domain. The variogram indicates a maximum range of continuity for seam thickness of approximately 1,500 m. Continuity of CQ could not be confirmed through variography.

B seam has the most data for ST and for CQ as well as a good spatial coverage of data, and therefore the variograms can be considered more reliable than for other seams. However, there appears to be two domains and more data is required to define the exact location of the domain boundary. The variograms indicate a maximum range of continuity for seam thickness of approximately 800 m and coal quality of approximately 1,500 m – 2,000 m. A distance of 1,000 m is considered appropriate for use as a “maximum continuity” for B seam.



The number and coverage of data for C seam is reasonable for seam thickness, but poor for coal quality. The variogram indicates a maximum range of continuity for seam thickness of approximately 1,200 m. Continuity of CQ could not be confirmed through variography.

The number and coverage of data for D seam is limited for both seam thickness and coal quality. The variogram indicates a maximum range of continuity for seam thickness of approximately 850 m. Continuity of CQ could not be confirmed through variography.

### 6.3.3 Measured Resources

No Measured Coal Resources were defined due to moderate levels of uncertainty surrounding the lack of detailed geological, mining and geotechnical data.

### 6.3.4 Indicated Resources

Indicated Coal Resources have been defined using the following criteria:

- Cored borehole that had intersected the seam/ply and where the seam/ply had been sampled and raw coal quality data was available
- Seam D – No Indicated Resources estimated
- Seam C – No Indicated Resources estimated
- Seam B – Distance between POO no more than 600 m and extrapolation of no more than 300 m from a POO
- Minimum of 3 POO to define an area of influence.

### 6.3.5 Inferred Resources

Inferred Coal Resources have been defined using the following criteria:

- Cored borehole that had intersected the seam/ply and where the seam/ply had been sampled and raw coal quality data was available plus open boreholes that had wireline geophysical logging data
- Seam D - Distance between POO no more than 850 m and extrapolation of no more than 425 m from a POO
- Seam C - Distance between POO no more than 1,200 m and extrapolation of no more than 600 m from a POO
- Seam B - Distance between POO no more than 1,200 m and extrapolation of no more than 600 m from a POO
- Seam A - Distance between POO no more than 1,500 m and extrapolation of no more than 750 m from a POO
- Minimum of 2 POO to define an area of influence.

## 6.4 Coal Resource Estimation

Golder has prepared a resource estimate within the WRA of EL65/2007 that was reported in accordance with the “*Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, the JORC Code 2012*”. The estimate was prepared with reference to the “*Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves*”. Accompanying the estimation is the JORC 2012 Table 1 “*Check List of Assessment and Reporting Criteria*”, shown in APPENDIX C completed by Golder.



## WOODBURY 2013 JORC RESOURCES STATEMENT

The regional and local geology, structure, coal quality and other factors have been described in the preceding sections of this report. The estimate was produced using the geological model “woodbury\_1310” described in Figure 6.1

The polygons used to estimate the resources are shown in APPENDIX D. The estimated in situ resource is shown below in Table 18. The total resource estimate is 23 million tonnes. The table shows that only 8.2% of the total resource is in the Indicated category and 91.8% of the total resource is in the Inferred category. Additional resource drilling at targeted locations would significantly increase the Inferred and Indicated Resources.

**Table 18: 2013 JORC Resources estimate**

SEAM	JORC Resources Category	Tonnes Mt	Raw Ash % (adb)	Calorific Value MJ/kg (adb)	Fixed Carbon % (adb)	Inherent Moisture % (adb)	Relative Density g/cc (adb)	Total Moisture% (arb)	Total Sulphur % (adb)	Volatile Matter % (adb)
BU	Indicated	0.5	33.1	20.8	51.8	3.4	1.6	4.3	0.3	11.7
BM		0.8	37.9	19.5	48.5	3.2	1.7	4.3	0.2	11.9
BL		0.5	37.6	19.2	50.0	3.8	1.6	4.8	0.4	9.7
<b>Sub-Total</b>	<b>Indicated</b>	<b>2</b>	<b>36.5</b>	<b>19.8</b>	<b>49.8</b>	<b>3.4</b>	<b>1.6</b>	<b>4.4</b>	<b>0.3</b>	<b>11.2</b>
A	Inferred	3.2	34.1	21.4	49.6	2.9	1.6	3.8	0.3	13.4
AU		1.2	39.0	18.4	46.8	4.9	1.7	6.4	0.4	9.3
AM		1.1	41.0	17.5	50.3	4.6	1.8	5.9	0.6	10.0
BU		0.3	34.2	20.4	51.0	3.5	1.6	4.3	0.3	11.4
BM		7.3	41.4	17.8	41.6	4.5	1.7	5.7	0.3	12.7
BL		2.2	39.6	18.3	42.4	4.5	1.6	5.6	0.4	14.0
C		2.2	35.9	19.2	*	4.7	1.6	5.9	*	*
CM		0.2	43.6	16.2	*	6.7	1.7	8.2	*	*
CL		2.1	31.3	21.6	47.4	4.3	1.5	5.2	0.5	15.3
DU		0.3	30.3	22.0	*	4.8	1.5	6.0	*	*
DL		0.7	36.6	19.4	*	4.8	1.6	5.8	*	*
<b>Sub-Total</b>	<b>Inferred</b>	<b>21</b>	<b>38.0</b>	<b>19.1</b>	<b>45.0</b>	<b>4.3</b>	<b>1.6</b>	<b>5.4</b>	<b>0.4</b>	<b>12.8</b>
<b>Total</b>	<b>Indicated + Inferred</b>	<b>23</b>	<b>37.8</b>	<b>19.2</b>	<b>45.4</b>	<b>4.2</b>	<b>1.6</b>	<b>5.4</b>	<b>0.3</b>	<b>12.7</b>

\*Insufficient data to be used in JORC Resources estimate.

\*\*Resources reported at a minimum coal thickness cut-off of 0.10m and a maximum raw ash cut-off of 45% (adb)



## 6.5 Exploration Target

In addition to the JORC Resources estimated, Golder also generated a JORC Exploration Target (Table 19) for the WRA. The exploration target estimated is exclusive of the JORC Resources estimated (Indicated plus Inferred Resources) and its extents are limited by the boundary of the WRA. A JORC Exploration Target was estimated due to boreholes possessing incomplete datasets, therefore being unsuitable to be utilised as POO in the estimation of JORC Resources. The potential quantity and coal quality is conceptual in nature and there has been insufficient exploration to estimate a Coal Resource and it is uncertain if further exploration will result in the estimation of a Coal Resource.

Golder conducted a geostatistical analysis of ST, AS, CV, FC, IM, RD, TM, TS and VM data to aid the estimation of both upper and lower limit tonnages and coal qualities at a 95% confidence interval in order to provide an estimate of potential. As a result, Golder has estimated a JORC Exploration Target of between 11-19 Mt of coal with a range in coal quality of between 29.8-42.1% raw ash (adb), 17.5-21.6MJ/kg calorific value (adb), 3.4-4.0% total moisture (adb), 0.2-0.4% total sulphur (adb) and 10.0-10.8% volatile matter (adb).

The estimated JORC Exploration Target is reported at a minimum coal thickness cut-off of 0.10m and a maximum raw ash cut-off of 45% (adb).

**Table 19: 2013 JORC Exploration Target**

Tonnes Mt	Raw Ash % (adb)	Calorific Value MJ/kg (adb)	Total Moisture% (arb)	Total Sulphur % (adb)	Volatile Matter % (adb)
11-19	29.8-42.1	17.5-21.6	3.4-4.0	0.2-0.4	10.0-10.8

\*Exploration target is

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Geological Work

Golder recommends the following geological tasks be completed as the project progresses:

- Due to the complexity and current geological uncertainty of the Woodbury resource, Golder recommends a cored drilling program to verify the continuity of the geological structure and coal quality of the resource. Increasing the borehole density with the aim of raising the resource classification and quantities
- Golder suggests that approximately three open boreholes be drilled within the WRA to assist in the confirmation of the thickness of the dolerite bodies and will also confirm whether these are intrusions or an overlying sill
- Expand the drilling to include some scout drilling in the area to the north-west and north-east of the WRA
- Include geotechnical sampling and analysis as part of future drilling programs
- Include Moisture Holding Capacity (MHC) analysis of cored seam sections as part of all future exploration programs
- Develop a Limit of Oxidation (LOX) line drilling program to assist in defining the edge of crop. This will also give greater confidence in the base of weathering as opposed to visual identification of the oxidised boundary
- Locate missing data from historical drilling programs. Contact Mineral Resources Tasmania to arrange a viewing of all historical data that associated with the project



- Targeted shallow drilling is required to further delineate both the D and C seams as currently, the number of intersections within these seams is few. This has resulted in the estimation of only limited Inferred Resources
- Golder recommends that the exploration plan developed by Marston in 2011 would be suitable as an initial program. A plan detailing the proposed Marston program, as well as those boreholes recommended by Golder is included as APPENDIX E.

## 8.0 QUALIFICATIONS AND DECLARATIONS

### 8.1 Qualifications

This Coal Resource Statement has been compiled and prepared by Mr Stephen Kidcaff who holds the position of Senior Geologist with Golder Associates. Mr Kidcaff is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) with over 10 years' experience in coal mining industry.

The Coal Resource statement has been reviewed by Mr Aaron Radonich who holds the position of Senior Geologist with Golder Associates. Mr Radonich is a qualified geologist with over 12 years' experience in coal geology and resource evaluation. He is also a Member of AusIMM and certified by that organisation as a Chartered Professional in the field of Geology.

### 8.2 Declarations

This Coal Resource Statement has been prepared under the guidelines of the JORC Code 2012. Neither the authors nor Golder have any material interest or entitlement, direct or indirect, in the securities of Midland Energy nor any companies associated with Joint Venture participants.

## 9.0 LIMITATIONS

Your attention is drawn to the document - "Limitations", which is included in of this report. The statements presented in this document and associated Appendices are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks associated with the services provided for this project. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.



### 10.0 REFERENCES (INCLUSIVE OF APPENDIX C)

- AMC (AMC Consultants Pty Ltd), 2008, *Independent Geological Review of the Energy Investments Limited Tasmanian Coal Project*, Prepared for Energy Investments Limited, Submitted 29 January 2008.
- Baker, C K 1985, *Woodbury Coal Project, Tasmania, Six Monthly Report for Exploration Licence EL31/80 Volume1*, Prepared for Costain Australia Ltd Mining Division, Submitted January 1985, 164pp.
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- Marston (Marston International Pty Ltd), 2011, *Exploration Plans for Woodbury EL65/2007*, Prepared for Resource Generation Limited, Submitted April 2011.



## Report Signature Page

GOLDER ASSOCIATES PTY LTD

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Derek Langgons  
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A.B.N. 64 006 107 857

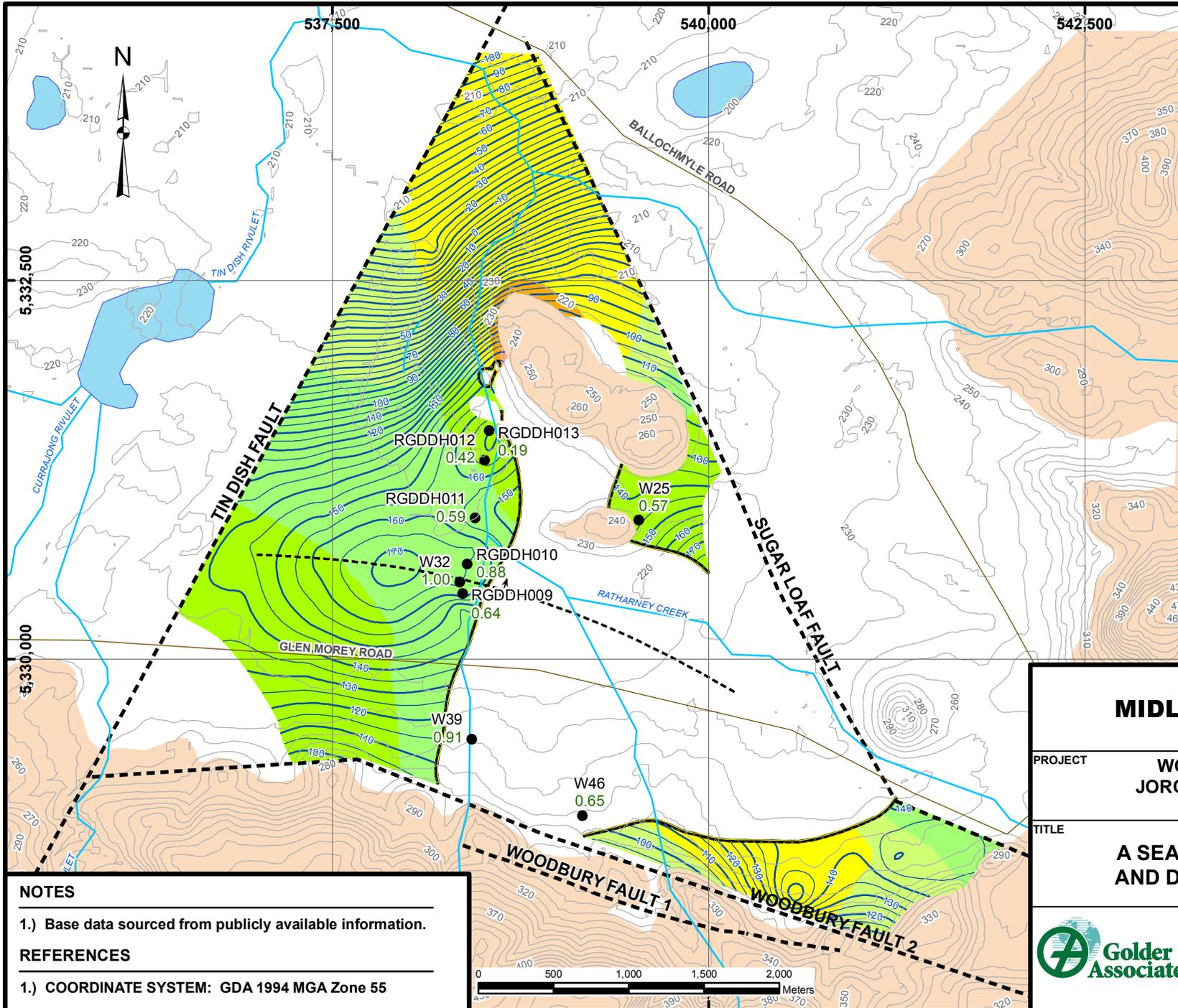
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# **APPENDIX A**

## **Seam Structure Thickness and Floor Contours**



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography Contour Interval = 10m
- Depth To Floor Contour Interval = 5m
- A Seam Split
- Drill Hole Location Structure Thickness (m)

**Structure Thickness (m)**

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

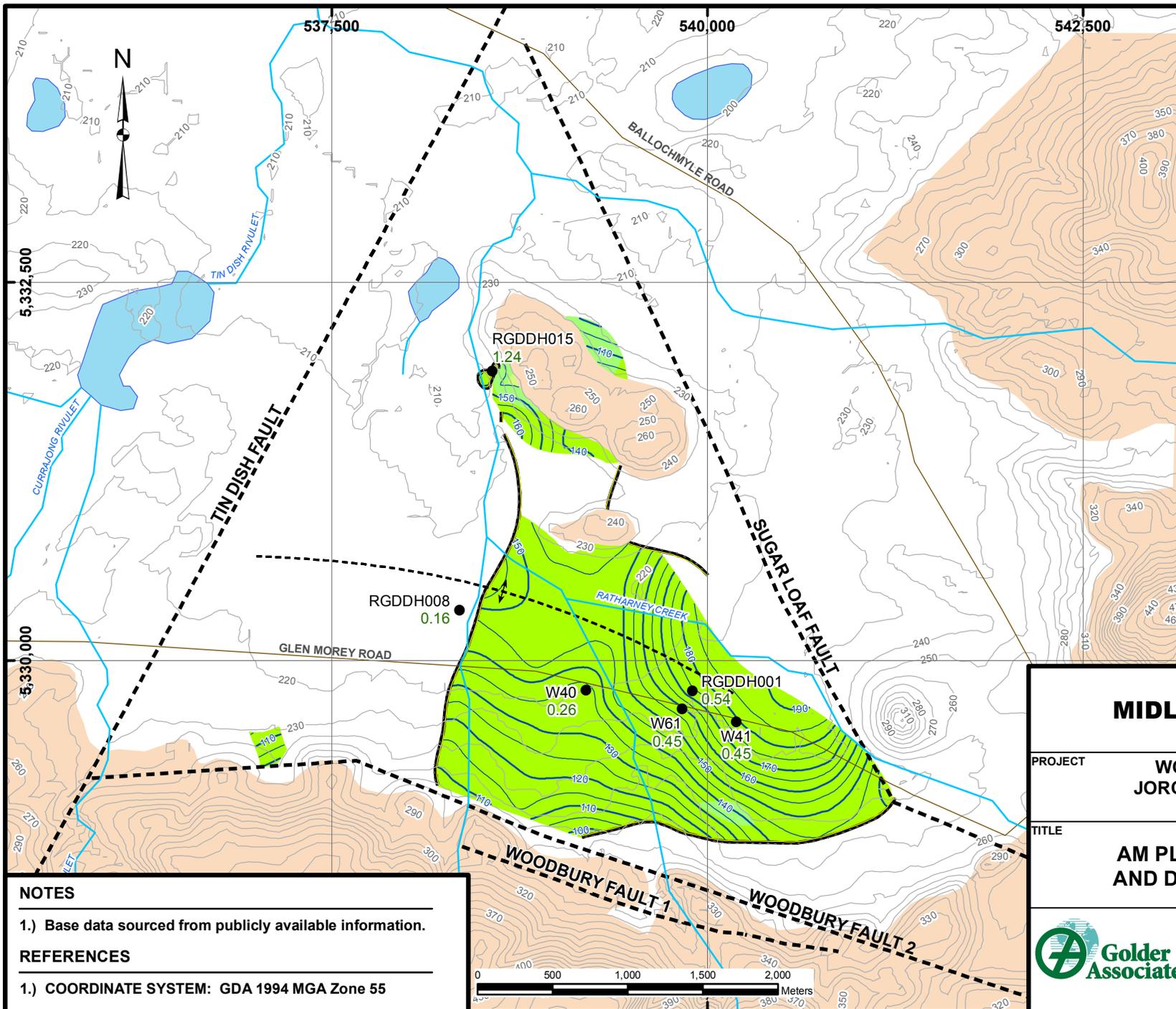
**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **A SEAM STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4		SCALE AS SHOWN
GIS	MMW	11/4/2013	<b>APPENDIX A</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	

**Golder Associates**



### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- A Seam Split
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

## MIDLAND ENERGY LIMITED

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **AM PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No. 137621114		DATE NOVEMBER 2013	
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REVIEW	RRY	11/4/2013	

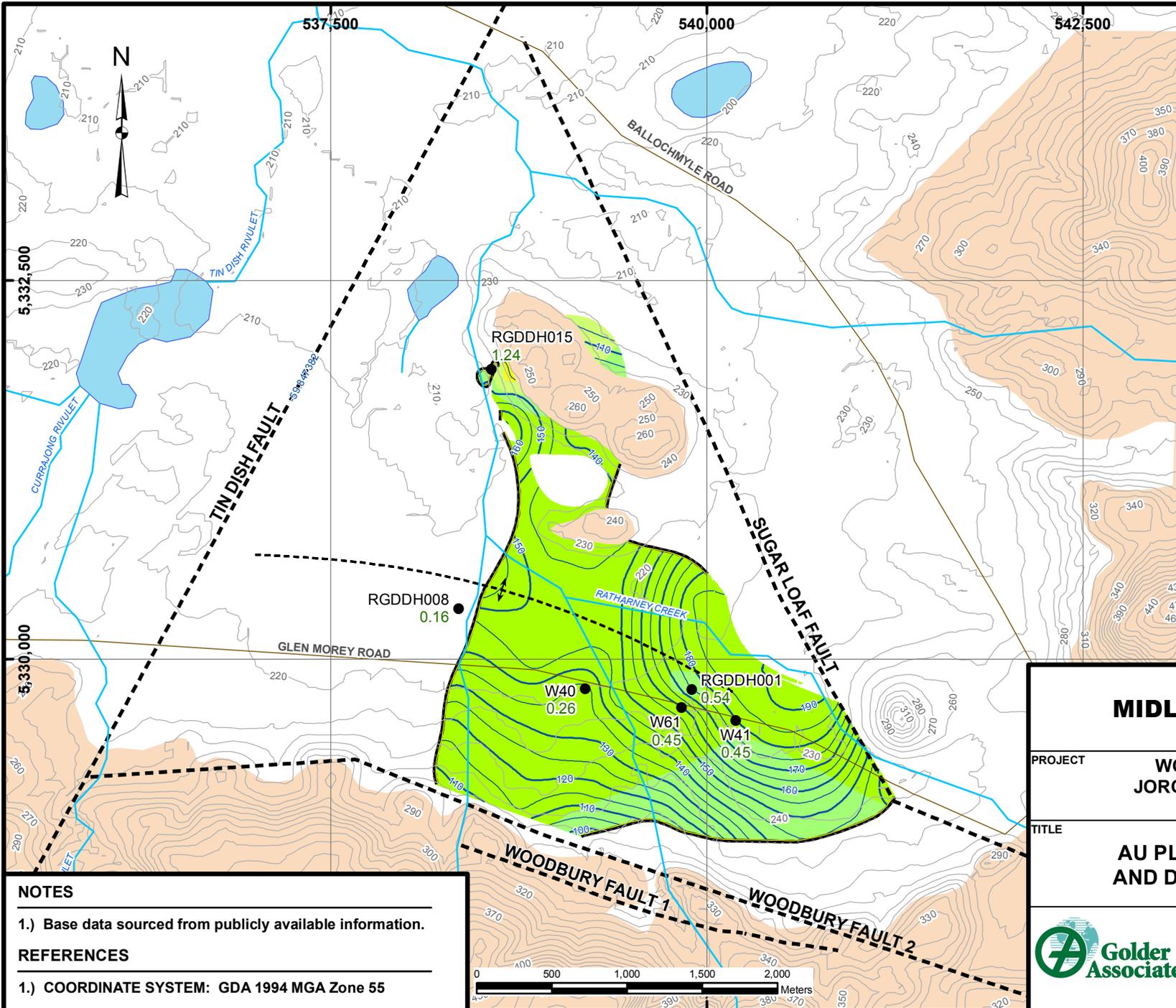
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- A Seam Split
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

## MIDLAND ENERGY LIMITED

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **AU PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

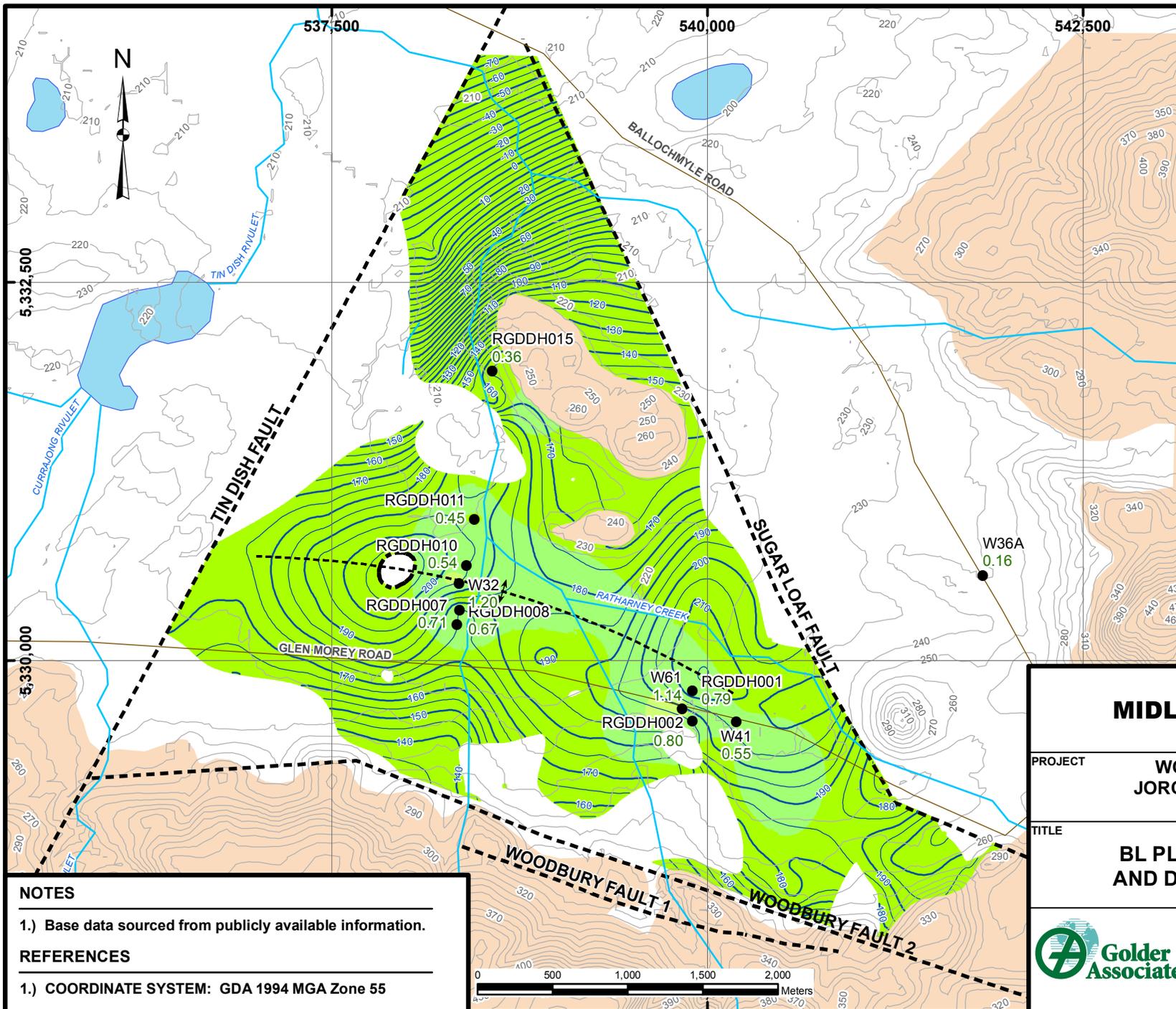
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CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- BL Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

## MIDLAND ENERGY LIMITED

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **BL PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No. 137621114		DATE NOVEMBER 2013	
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REVIEW	RRY	11/4/2013	

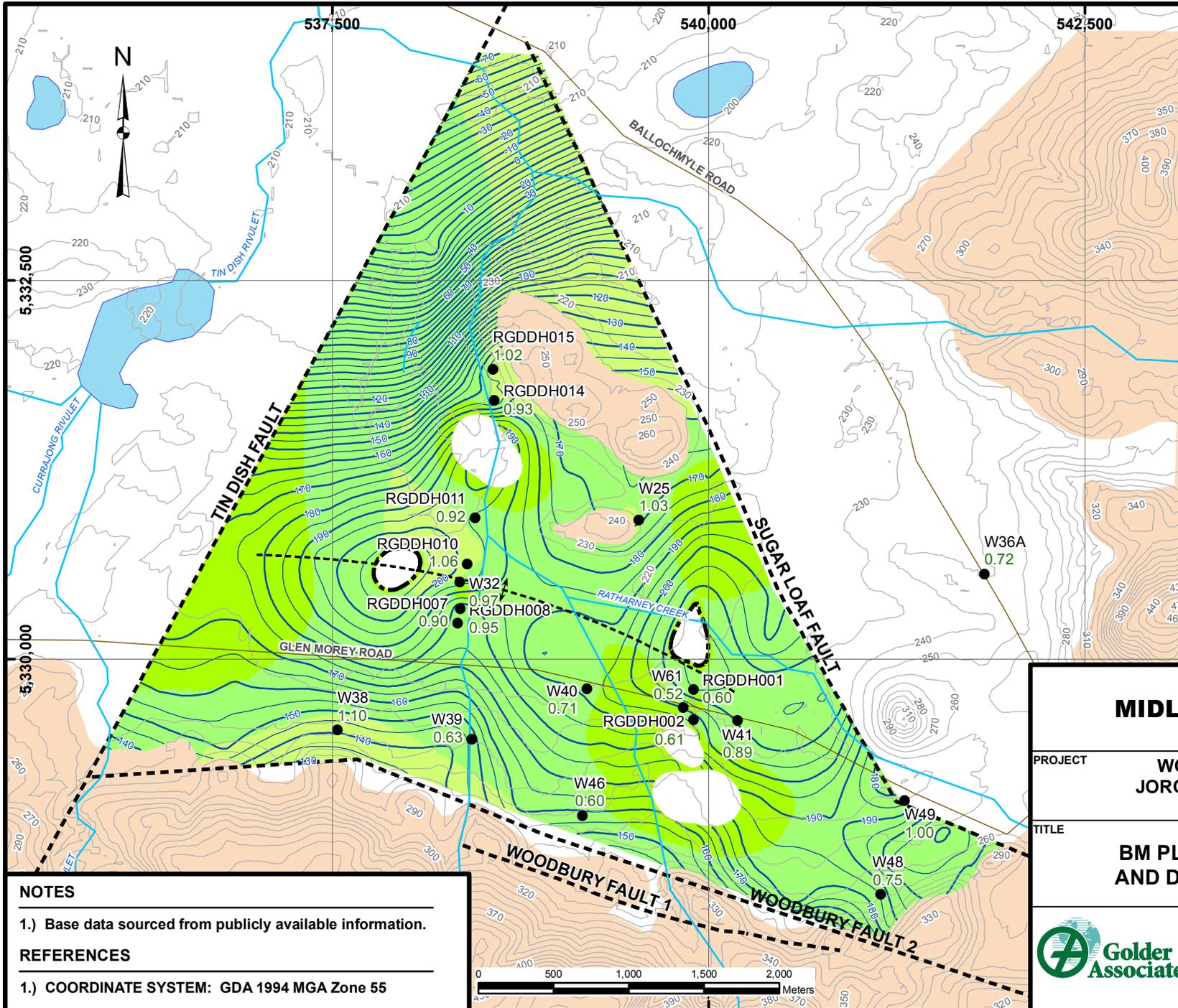
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- BM Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

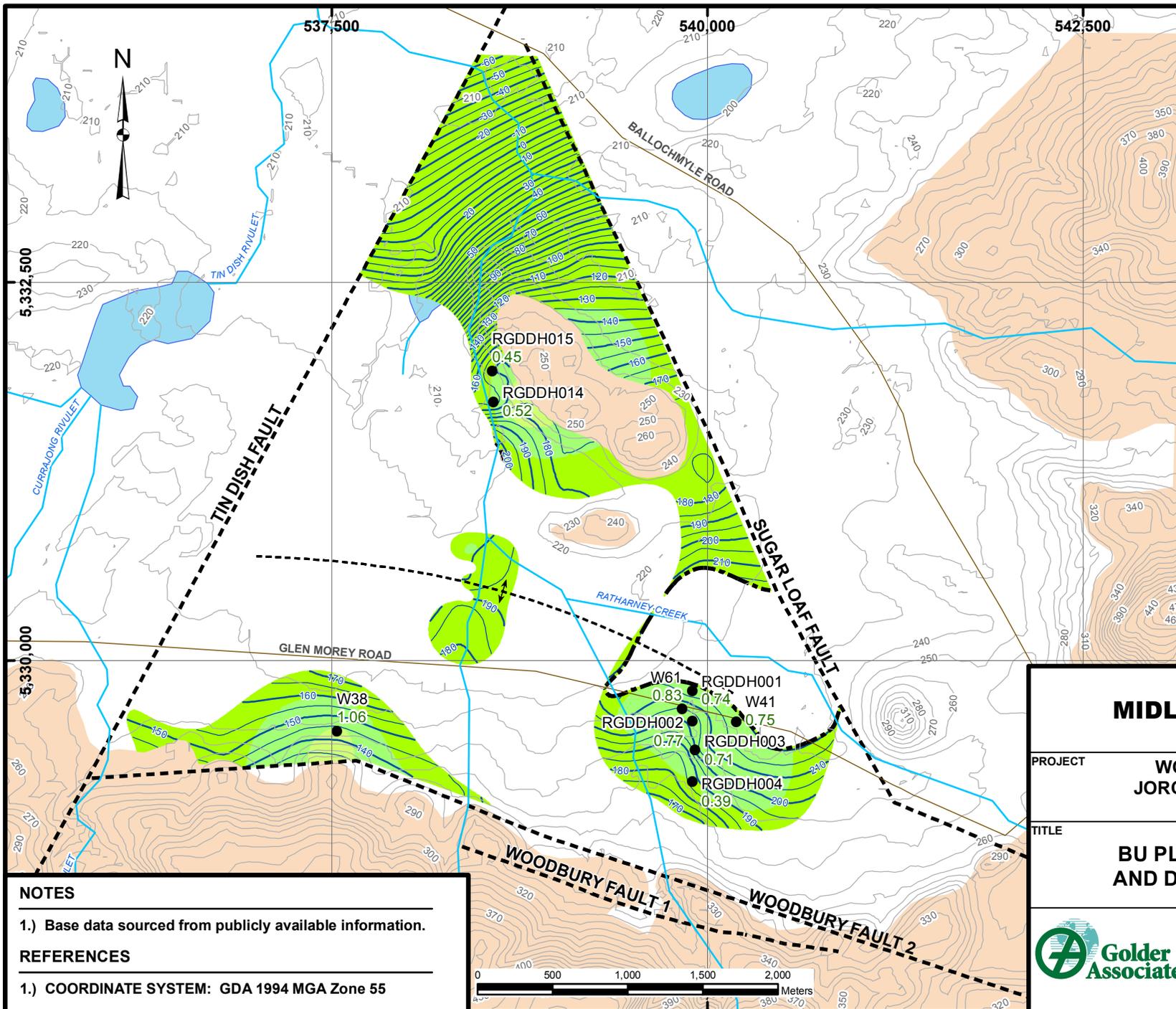
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## MIDLAND ENERGY LIMITED

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **BM PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No. 137621114		DATE NOVEMBER 2013	
DESIGN	A4	SCALE AS SHOWN	
GIS	MMW	11/4/2013	<b>APPENDIX A</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	



### LEGEND

- Dolerite
- Road
- Faults
- + Anticline
- ~ Existing Topography  
Contour Interval = 10m
- ~ Depth To Floor  
Contour Interval = 5m
- ~ BU Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

## MIDLAND ENERGY LIMITED

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **BU PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No. 137621114		DATE NOVEMBER 2013	
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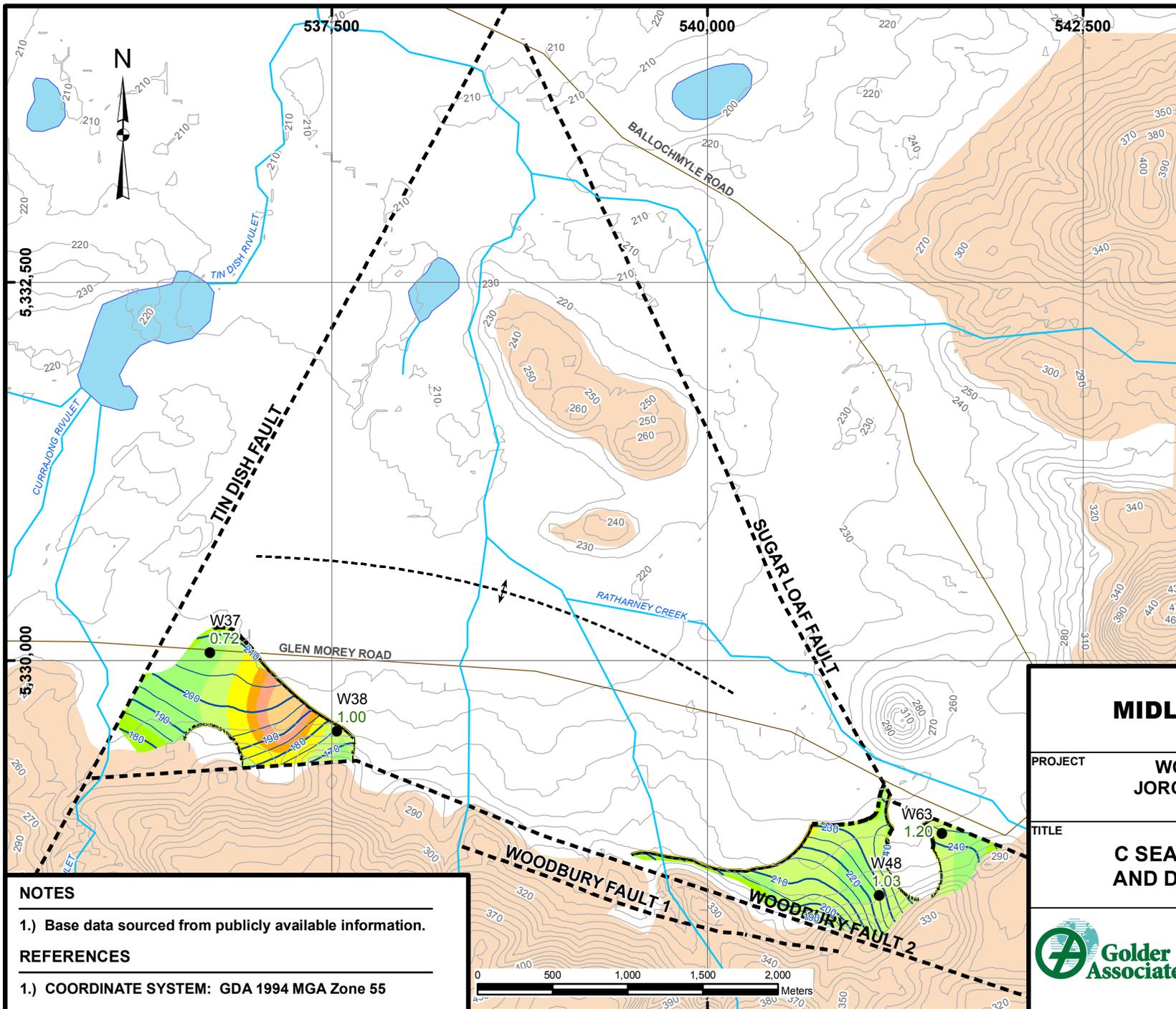
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- Depth To Floor
- Contour Interval = 5m
- C Seam Split
- C Seam Subcrop
- Drill Hole Location
- Structure Thickness (m)

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<span style="display: inline-block; width: 20px; height: 10px; background-color: #90ee90; border: 1px solid black; margin-right: 5px;"></span> 0.10 - 0.50	<span style="display: inline-block; width: 20px; height: 10px; background-color: #ffcc99; border: 1px solid black; margin-right: 5px;"></span> 2.50 - 2.75
<span style="display: inline-block; width: 20px; height: 10px; background-color: #90ee90; border: 1px solid black; margin-right: 5px;"></span> 0.50 - 1.00	<span style="display: inline-block; width: 20px; height: 10px; background-color: #ff9933; border: 1px solid black; margin-right: 5px;"></span> 2.75 - 3.00
<span style="display: inline-block; width: 20px; height: 10px; background-color: #90ee90; border: 1px solid black; margin-right: 5px;"></span> 1.00 - 1.50	<span style="display: inline-block; width: 20px; height: 10px; background-color: #ff4500; border: 1px solid black; margin-right: 5px;"></span> 3.00 - 3.25
<span style="display: inline-block; width: 20px; height: 10px; background-color: #ffff00; border: 1px solid black; margin-right: 5px;"></span> 1.50 - 2.00	<span style="display: inline-block; width: 20px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> 3.25 - 3.50
<span style="display: inline-block; width: 20px; height: 10px; background-color: #ff8c00; border: 1px solid black; margin-right: 5px;"></span> 2.00 - 2.25	<span style="display: inline-block; width: 20px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> > 3.50

MIDLAND ENERGY LIMITED

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PROJECT WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA

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TITLE C SEAM STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH

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REVIEW	RRY	DATE	11/4/2013

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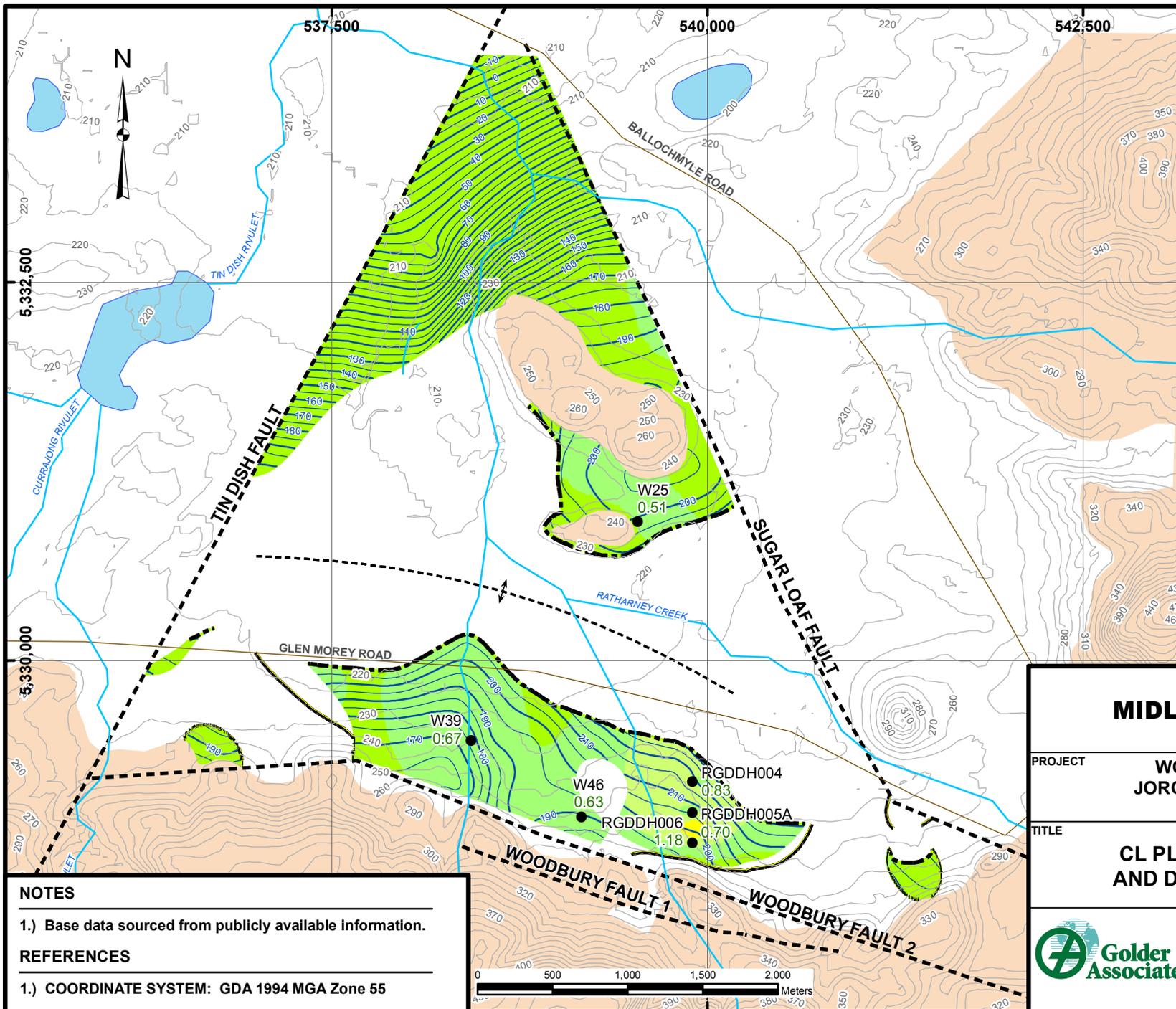
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



APPENDIX A



### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- C Seam Split
- CL Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

**MIDLAND ENERGY LIMITED**

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PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

---

TITLE **CL PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

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PROJECT No.	137621114	DATE	NOVEMBER 2013
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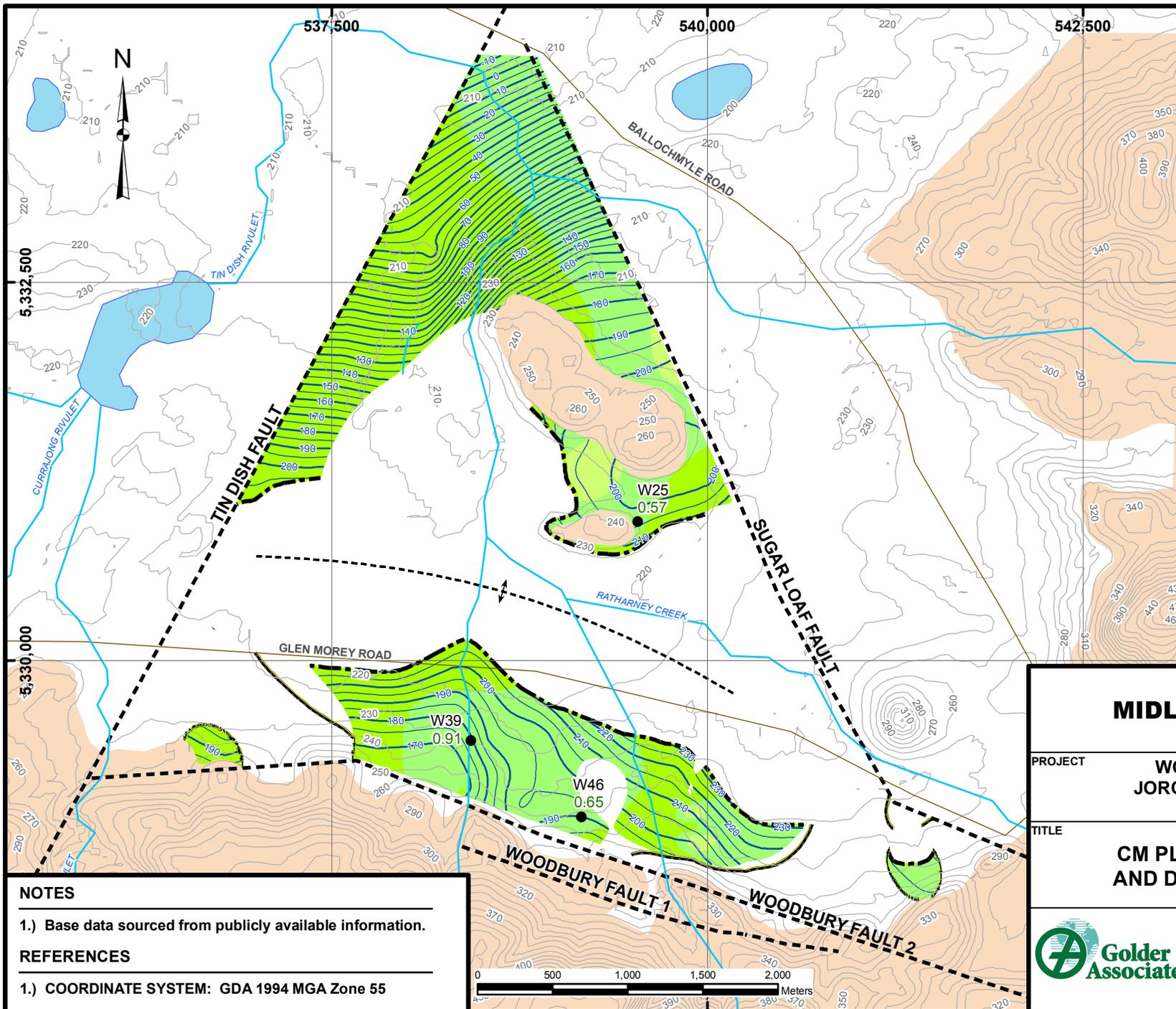
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- C Seam Split
- CM Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

	<= 0.10		2.25 - 2.50
	0.10 - 0.50		2.50 - 2.75
	0.50 - 1.00		2.75 - 3.00
	1.00 - 1.50		3.00 - 3.25
	1.50 - 2.00		3.25 - 3.50
	2.00 - 2.25		> 3.50

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **CM PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4	SCALE	AS SHOWN
GIS	MMW	11/4/2013	<b>APPENDIX A</b>
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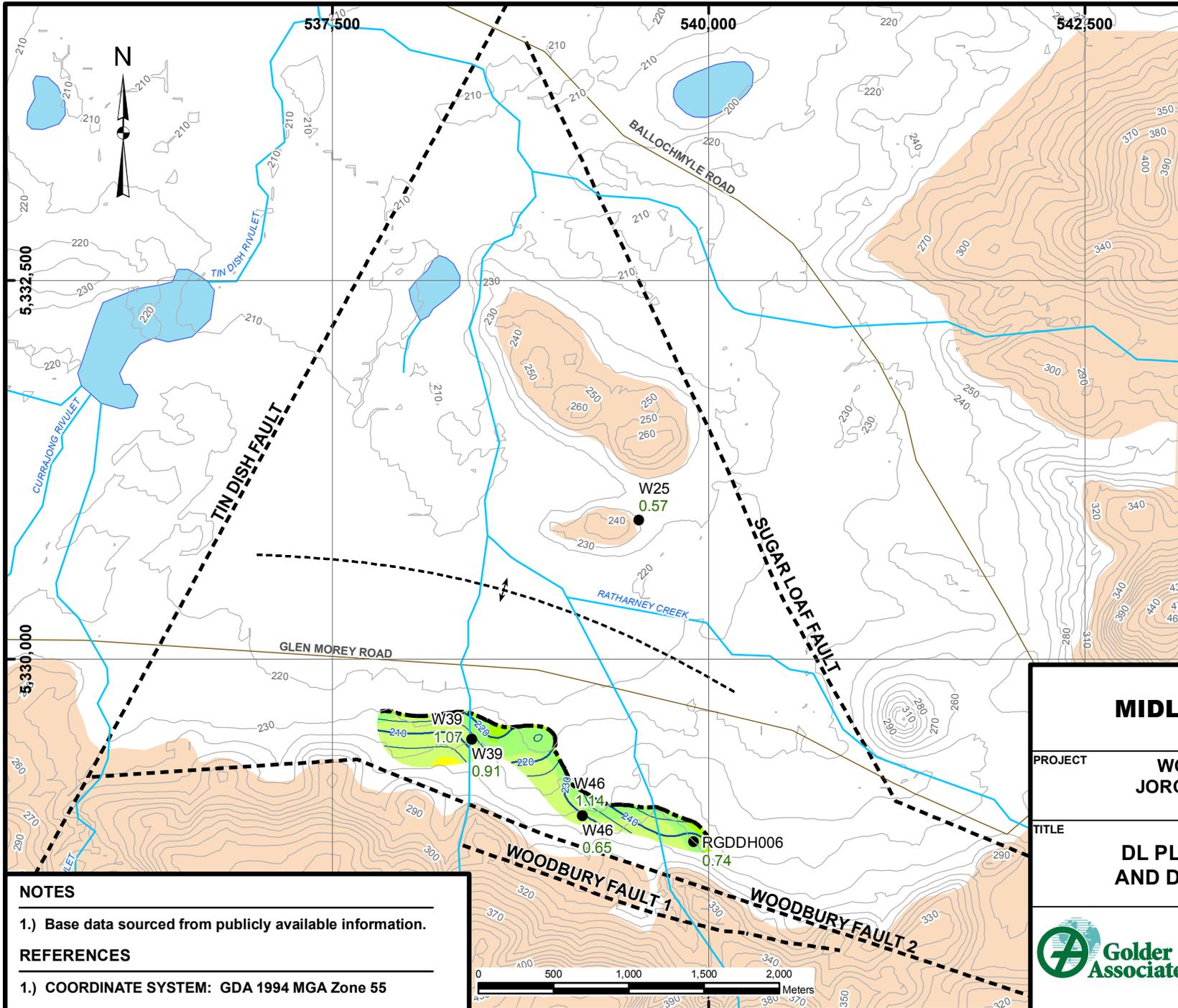
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- DL Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

<span style="display: inline-block; width: 15px; height: 15px; background-color: #006400; border: 1px solid black;"></span> <= 0.10	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff8c00; border: 1px solid black;"></span> 2.25 - 2.50
<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> 0.10 - 0.50	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffcc99; border: 1px solid black;"></span> 2.50 - 2.75
<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> 0.50 - 1.00	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff9933; border: 1px solid black;"></span> 2.75 - 3.00
<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> 1.00 - 1.50	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff4500; border: 1px solid black;"></span> 3.00 - 3.25
<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00; border: 1px solid black;"></span> 1.50 - 2.00	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff0000; border: 1px solid black;"></span> 3.25 - 3.50
<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff8c00; border: 1px solid black;"></span> 2.00 - 2.25	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff0000; border: 1px solid black;"></span> > 3.50

## MIDLAND ENERGY LIMITED

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **DL PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

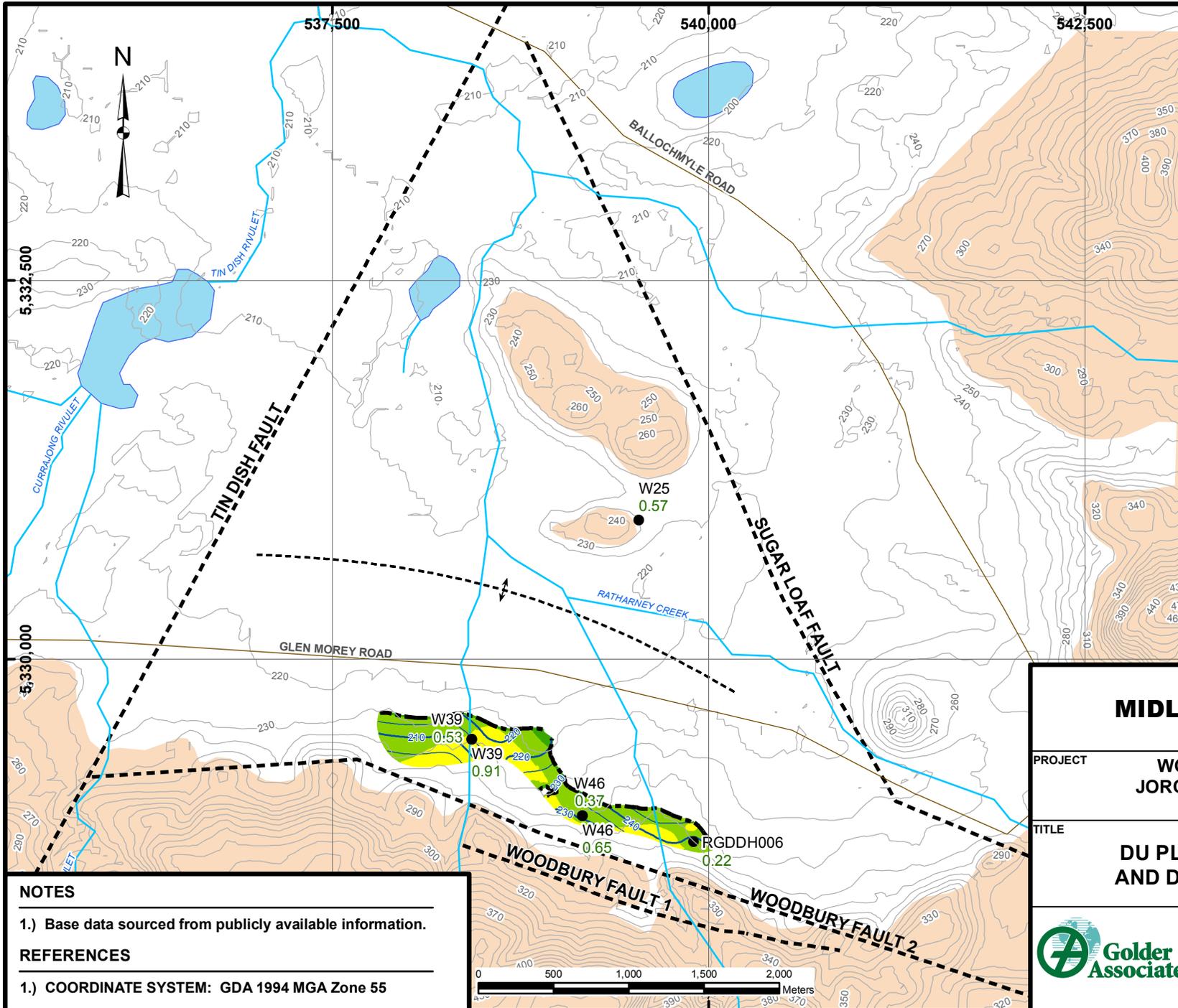
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CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Depth To Floor  
Contour Interval = 5m
- DU Seam Subcrop
- Drill Hole Location  
Structure Thickness (m)

#### Structure Thickness (m)

<span style="display: inline-block; width: 15px; height: 15px; background-color: #006400;"></span> <= 0.10	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff8c00;"></span> 2.25 - 2.50
<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90;"></span> 0.10 - 0.50	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffcc99;"></span> 2.50 - 2.75
<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90;"></span> 0.50 - 1.00	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff9933;"></span> 2.75 - 3.00
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<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00;"></span> 1.50 - 2.00	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff0000;"></span> 3.25 - 3.50
<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff8c00;"></span> 2.00 - 2.25	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff0000;"></span> > 3.50

## MIDLAND ENERGY LIMITED

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **DU PLY STRUCTURE THICKNESS  
AND DEPTH TO FLOOR ISOPLETH**

PROJECT No. 137621114		DATE NOVEMBER 2013	
DESIGN	A4	SCALE AS SHOWN	
GIS	MMW	11/4/2013	<b>APPENDIX A</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

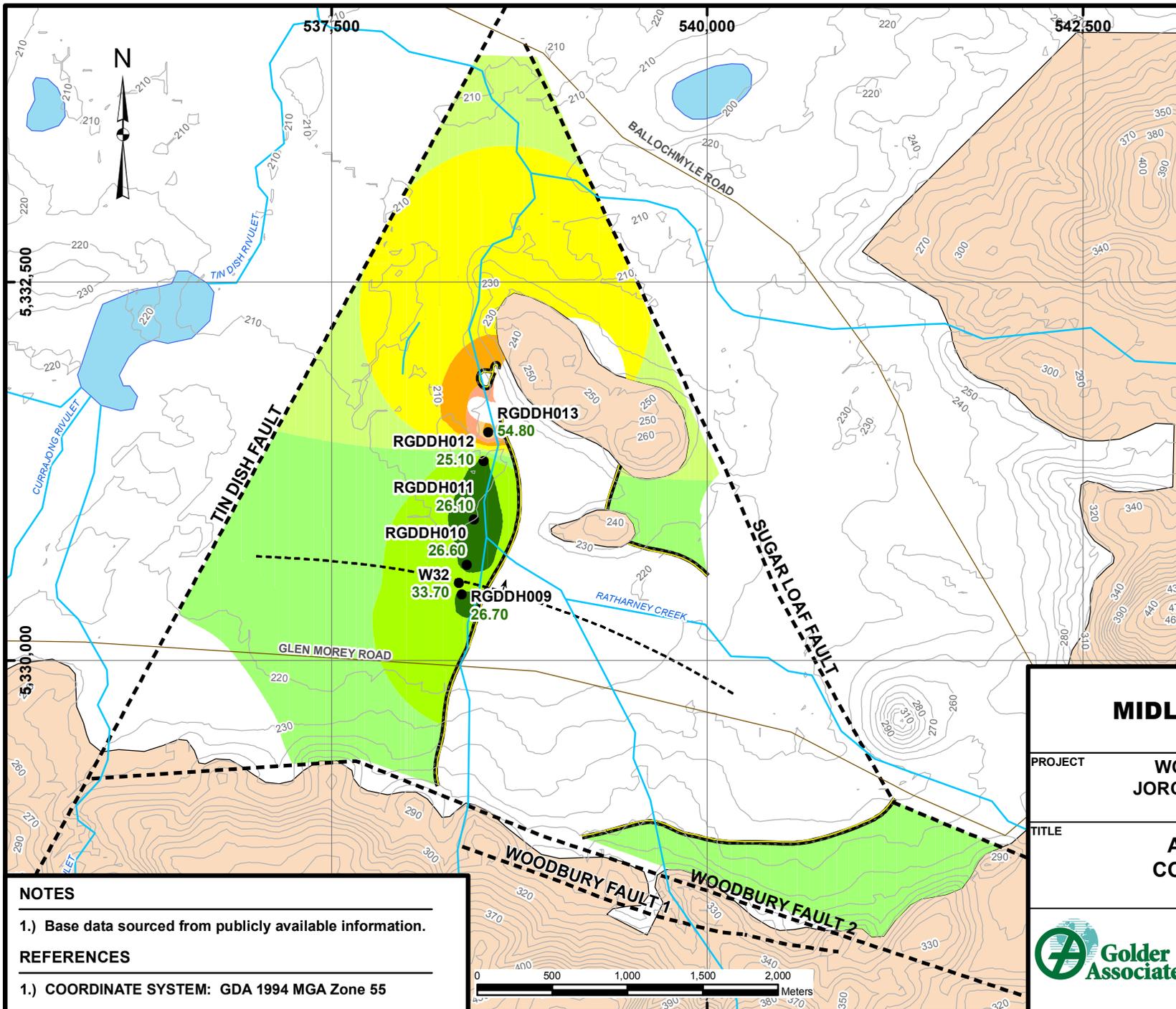
1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





# **APPENDIX B**

## **Seam Ash Content Contours**



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- A Seam Split

**Ash Content = % (adb)**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

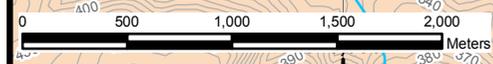
TITLE: **A SEAM ASH CONTENT  
COAL QUALITY ISOPLETH**

**NOTES**

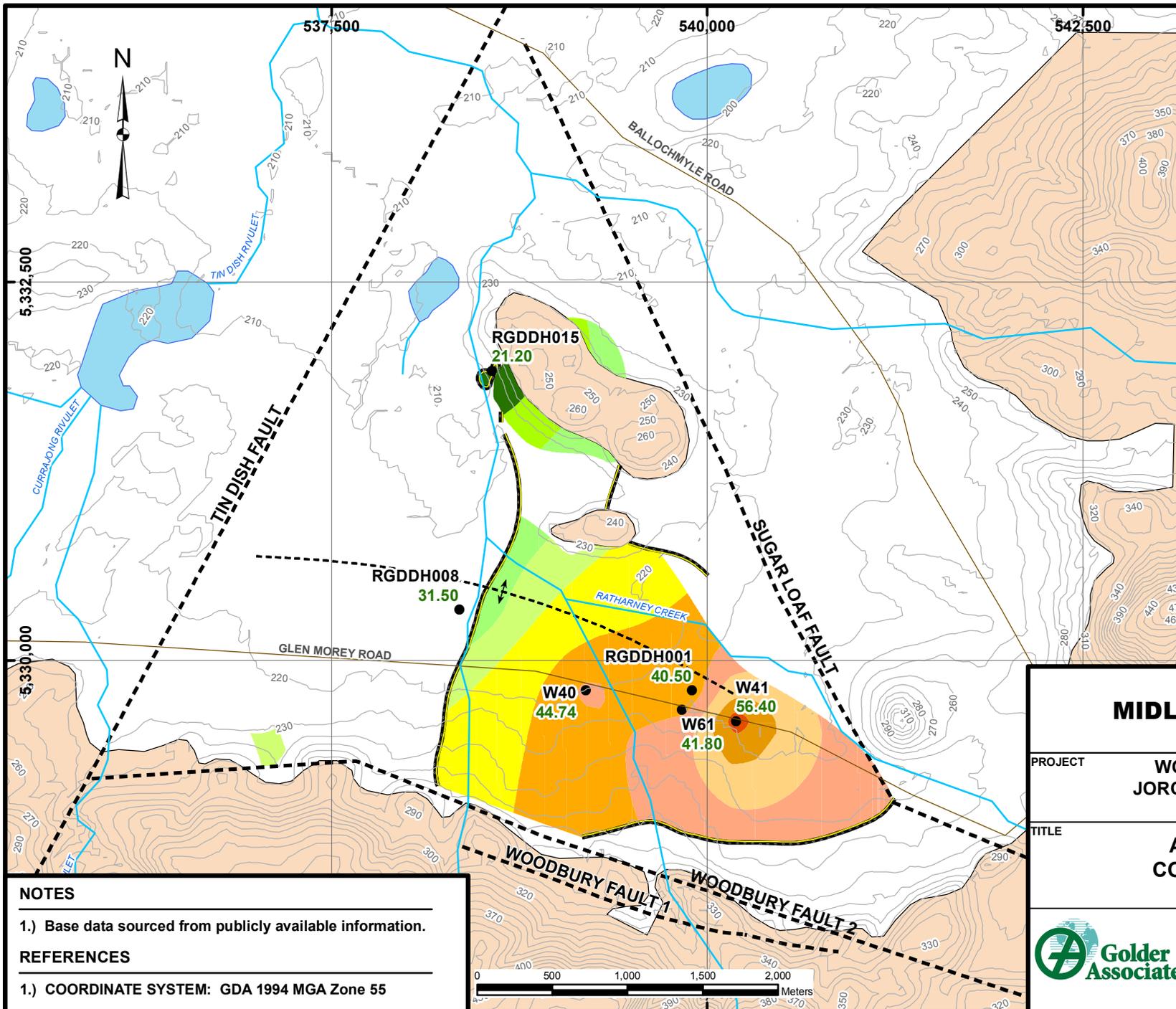
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Road
- Faults
- Anticline
- Existing Topography Contour Interval = 10m
- A Seam Split
- A Seam Split
- Drill Hole Location
- Ash Content % (adb)

**Ash Content = % (adb)**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

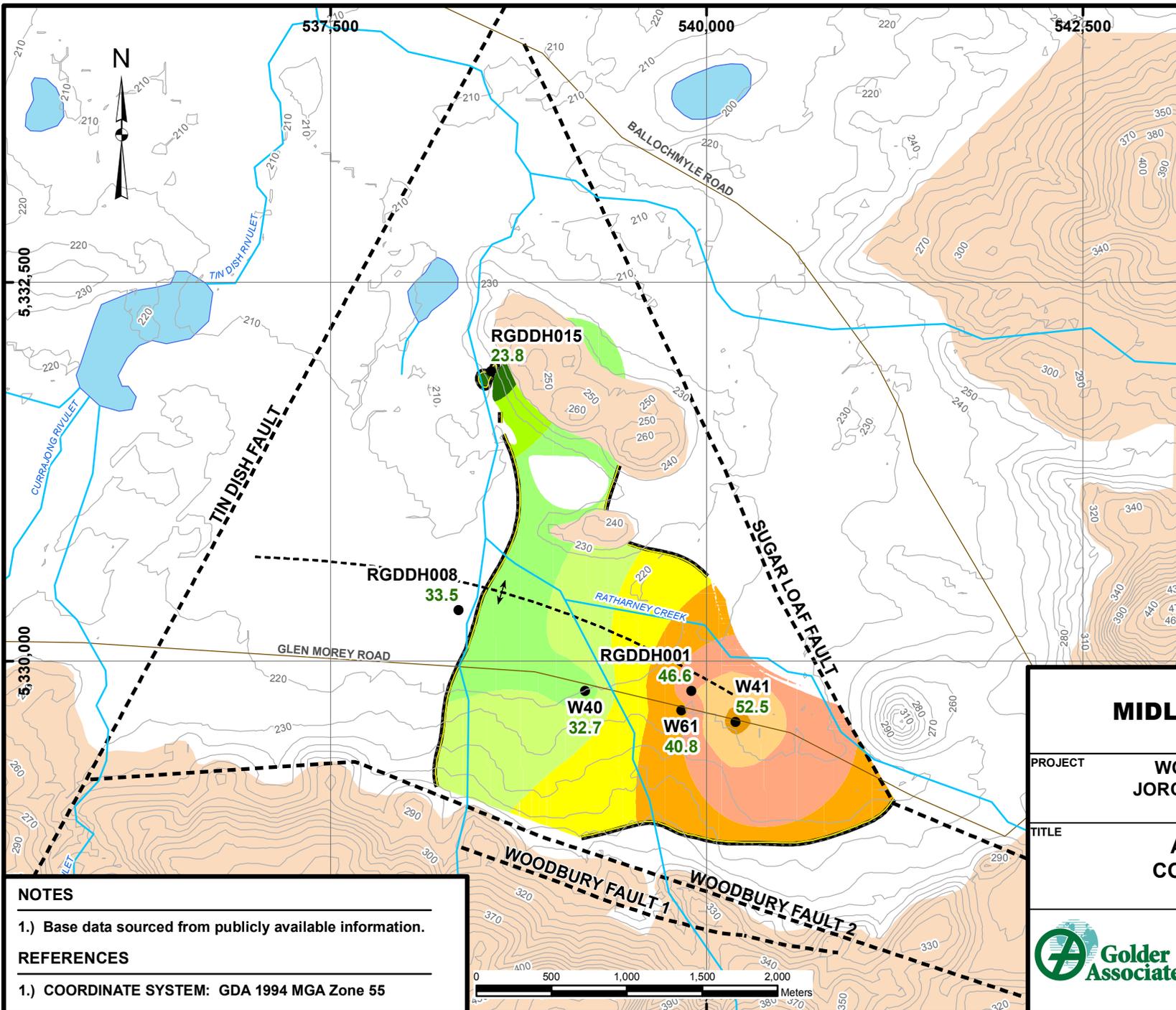
1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **AM PLY ASH CONTENT  
COAL QUALITY ISOPLETH**

PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4	-	SCALE AS SHOWN
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- A Seam Split
- Drill Hole Location
- Ash Content % (adb)

**Ash Content = % (adb)**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE: **AU PLY ASH CONTENT  
COAL QUALITY ISOPLETH**

**NOTES**

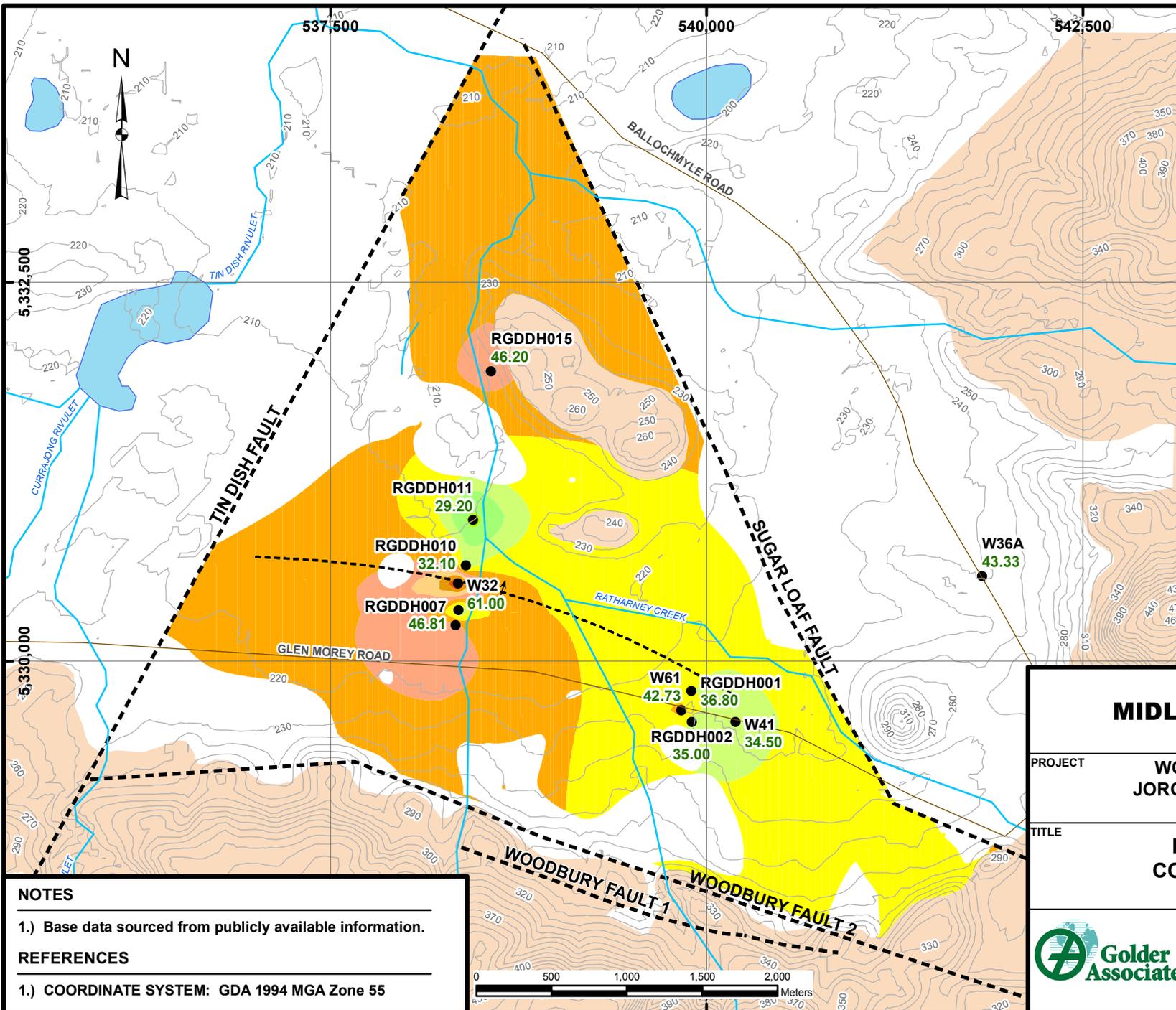
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

PROJECT No. 137621114		DATE	NOVEMBER 2013
DESIGN	A4	SCALE AS SHOWN	
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

#### Ash Content = % (adb)

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

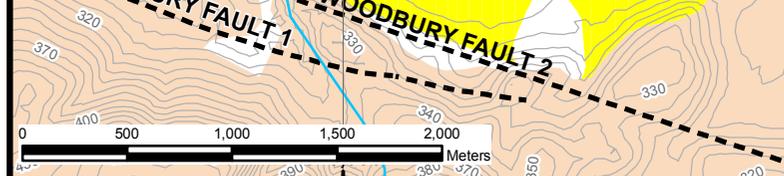
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COAL QUALITY ISOPLETH**

**NOTES**

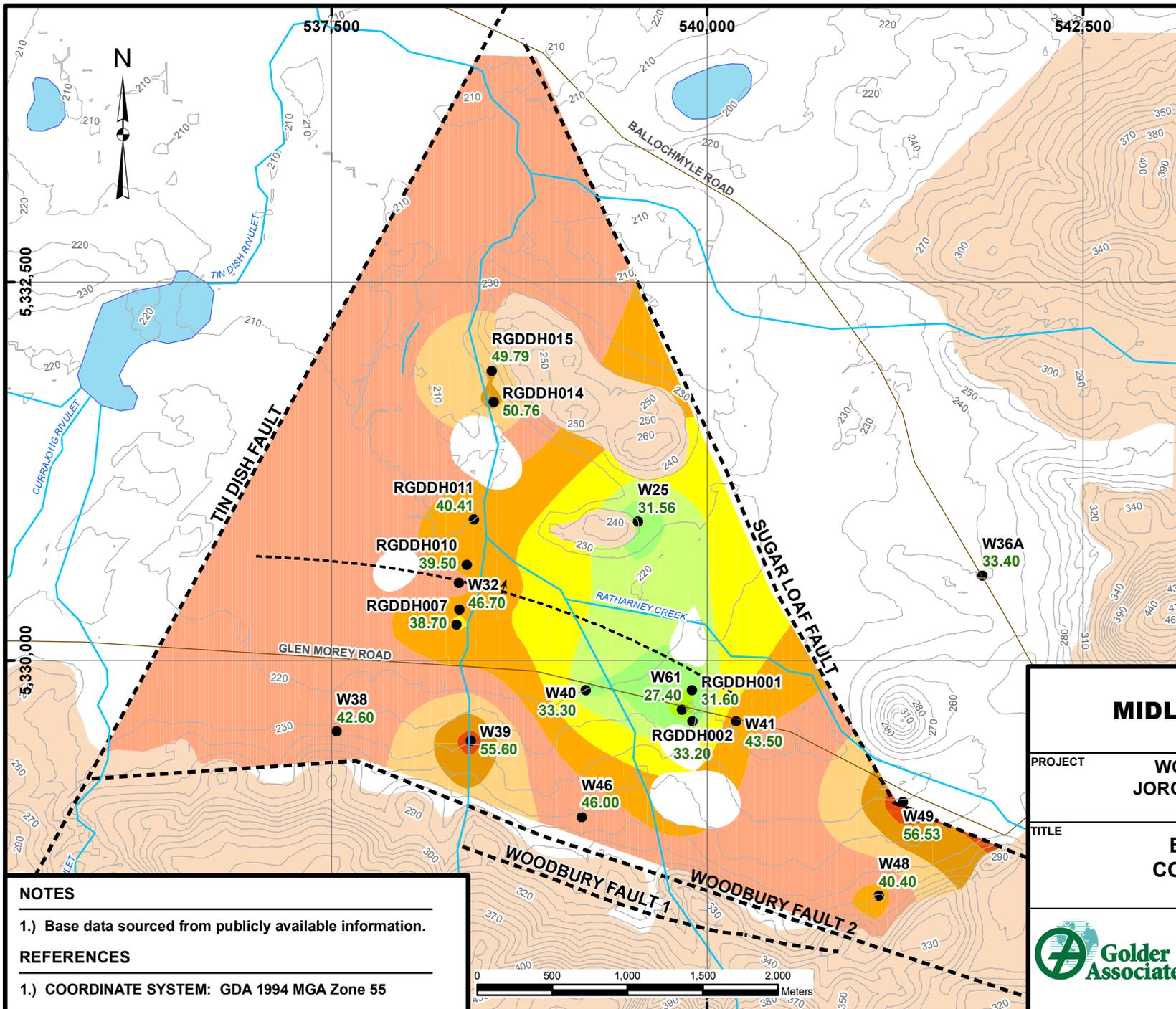
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



		PROJECT No.	137621114	DATE	NOVEMBER 2013
		DESIGN	A4	-	SCALE AS SHOWN
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>		
CHECK	SK	11/4/2013			
REVIEW	RRY	11/4/2013			



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

**Elevation**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **BM PLY ASH CONTENT  
COAL QUALITY ISOPLETH**

**NOTES**

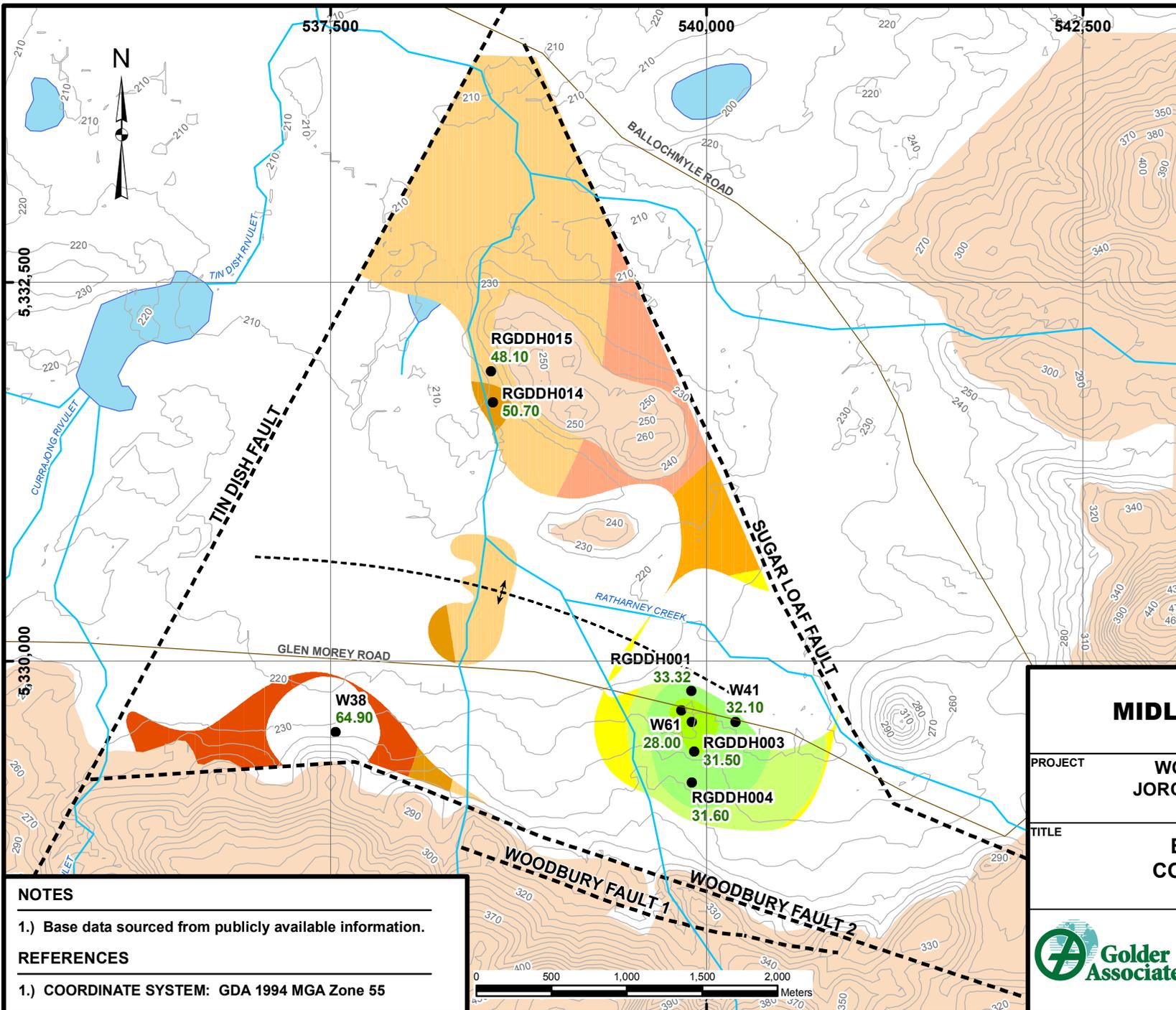
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4		SCALE AS SHOWN
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	



**LEGEND**

- Dolerite
  - Road
  - Faults
  - Anticline
  - Existing Topography  
Contour Interval = 10m
  - Drill Hole Location  
Ash Content % (adb)
- Ash Content = % (adb)**
- Less than 29
  - 29 - 32
  - 32 - 35
  - 35 - 37
  - 37 - 40
  - 40 - 43
  - 43 - 46
  - 46 - 49
  - 49 - 52
  - 52 - 56
  - Greater than 56

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

**MIDLAND ENERGY LIMITED**

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PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

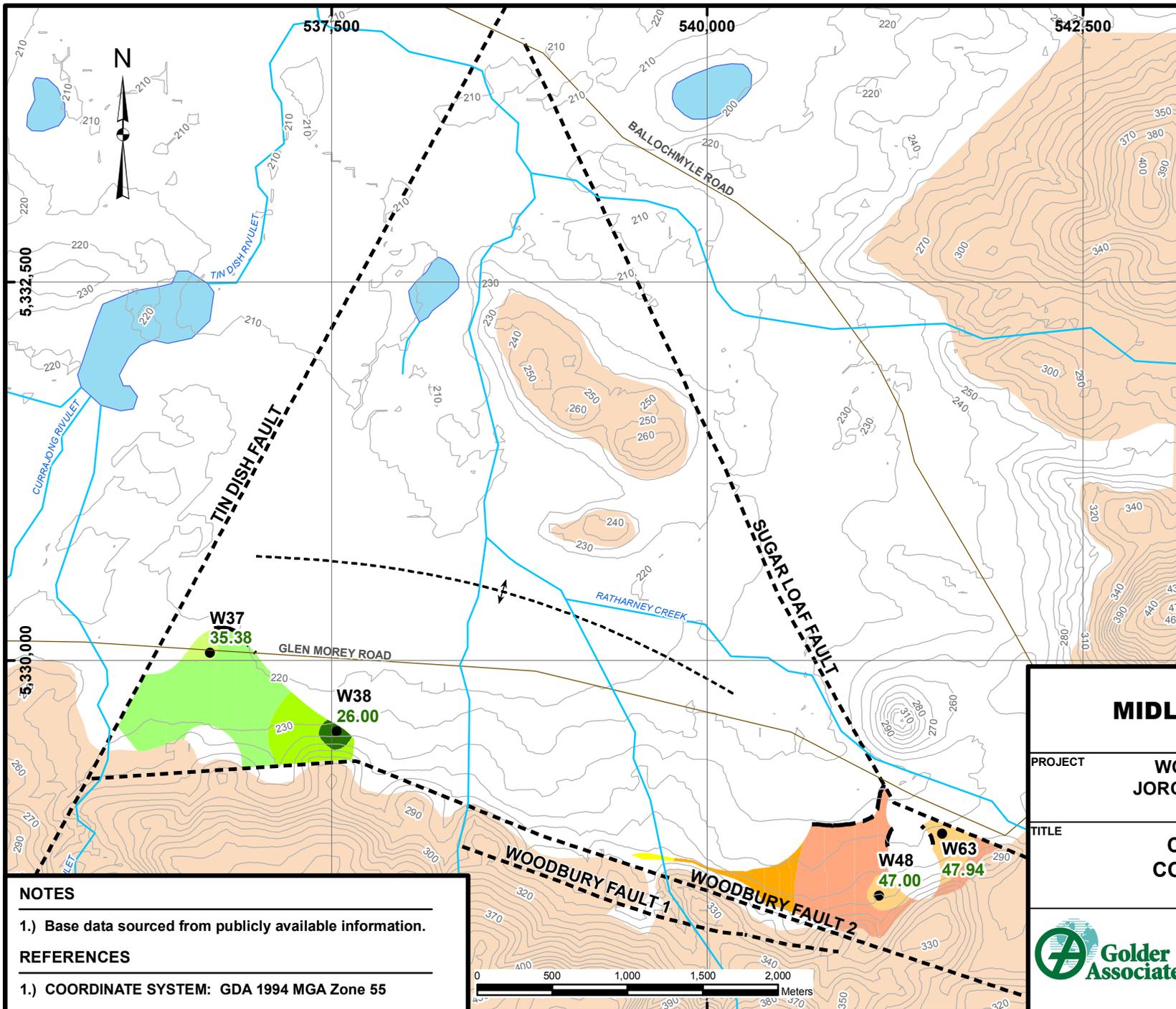
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TITLE **BU PLY ASH CONTENT  
COAL QUALITY ISOPLETH**

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PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4		SCALE AS SHOWN
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	





### LEGEND

- Dolerite
- Road
- Faults
- Anticline
- C Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

#### Ash Content = % (adb)

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

## MIDLAND ENERGY LIMITED

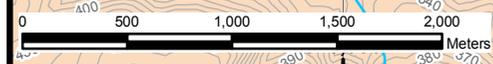
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TITLE	C SEAM ASH CONTENT COAL QUALITY ISOPLETH		
PROJECT No.	137621114	DATE	NOVEMBER 2013
DESIGN	A4		SCALE AS SHOWN
GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	

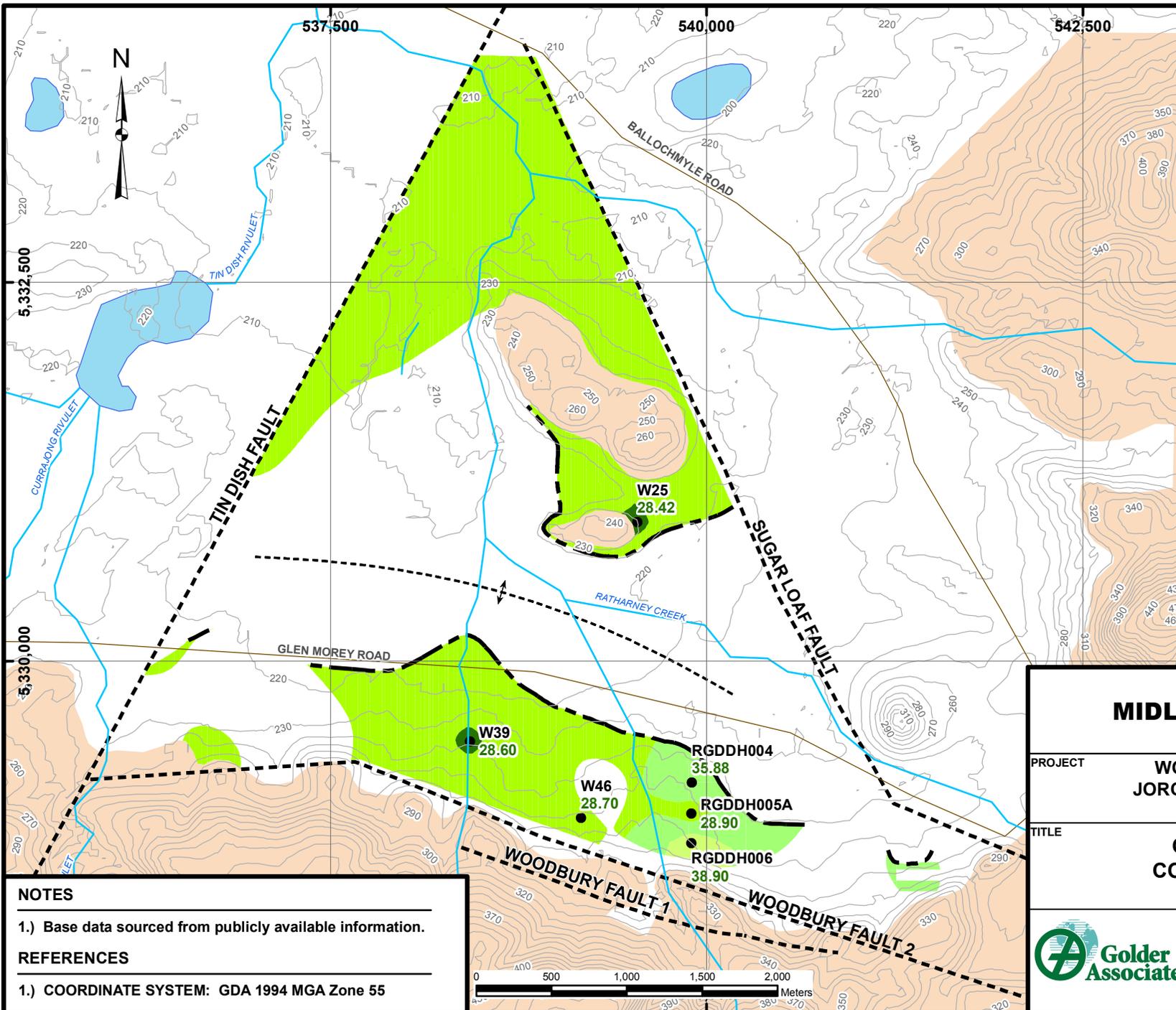
**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55





**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- CL Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

**Ash Content = % (adb)**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

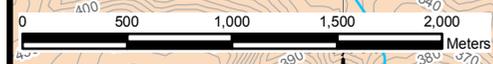
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COAL QUALITY ISOPLETH**

**NOTES**

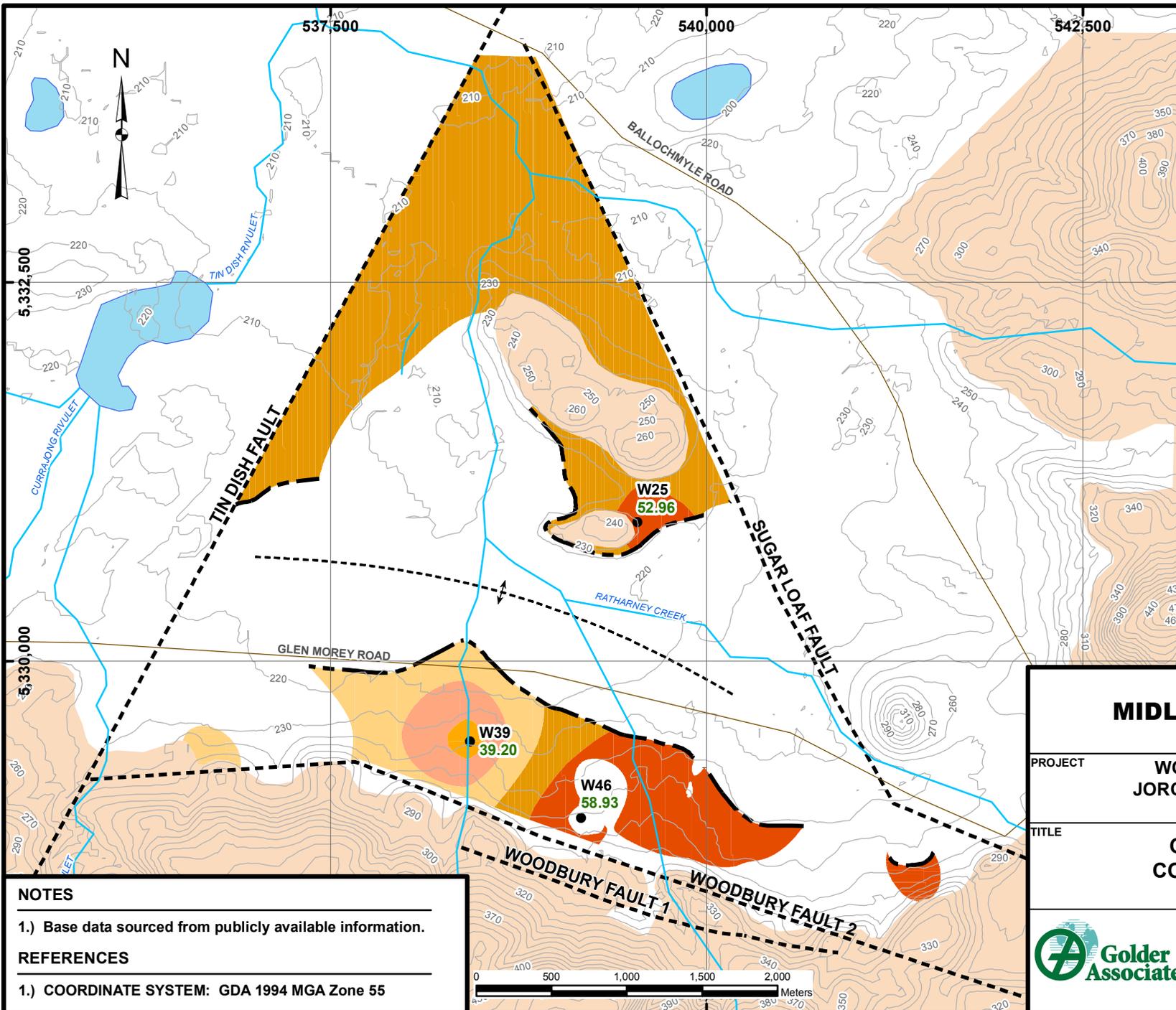
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- CM Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

**Elevation**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT: **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

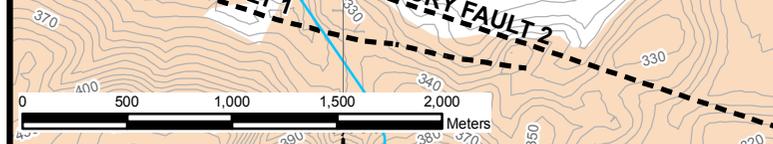
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COAL QUALITY ISOPLETH**

**NOTES**

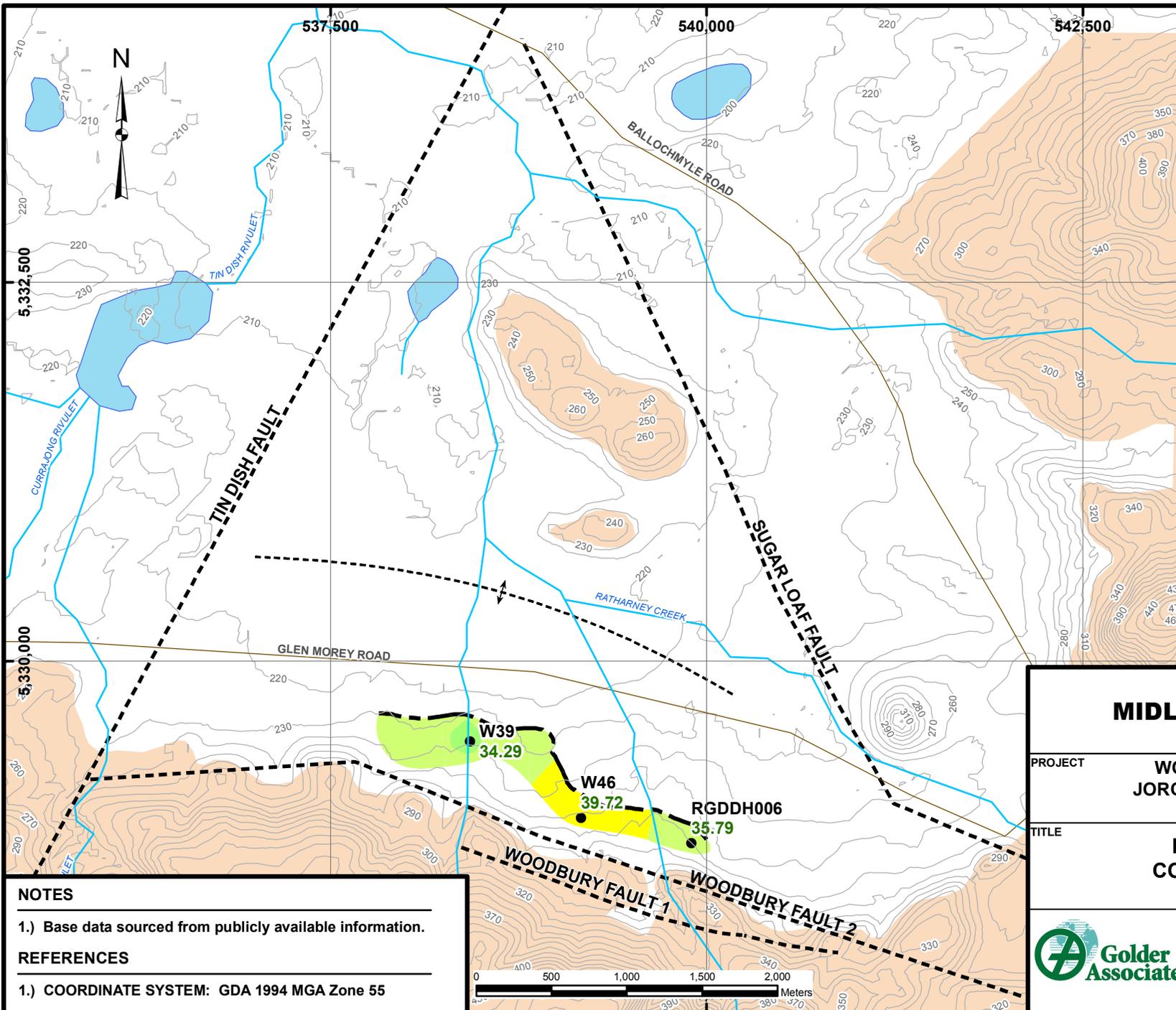
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4		SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- DL Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Drill Hole Location
- Ash Content % (adb)

**Ash Content = % (adb)**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

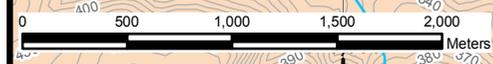
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COAL QUALITY ISOPLETH**

**NOTES**

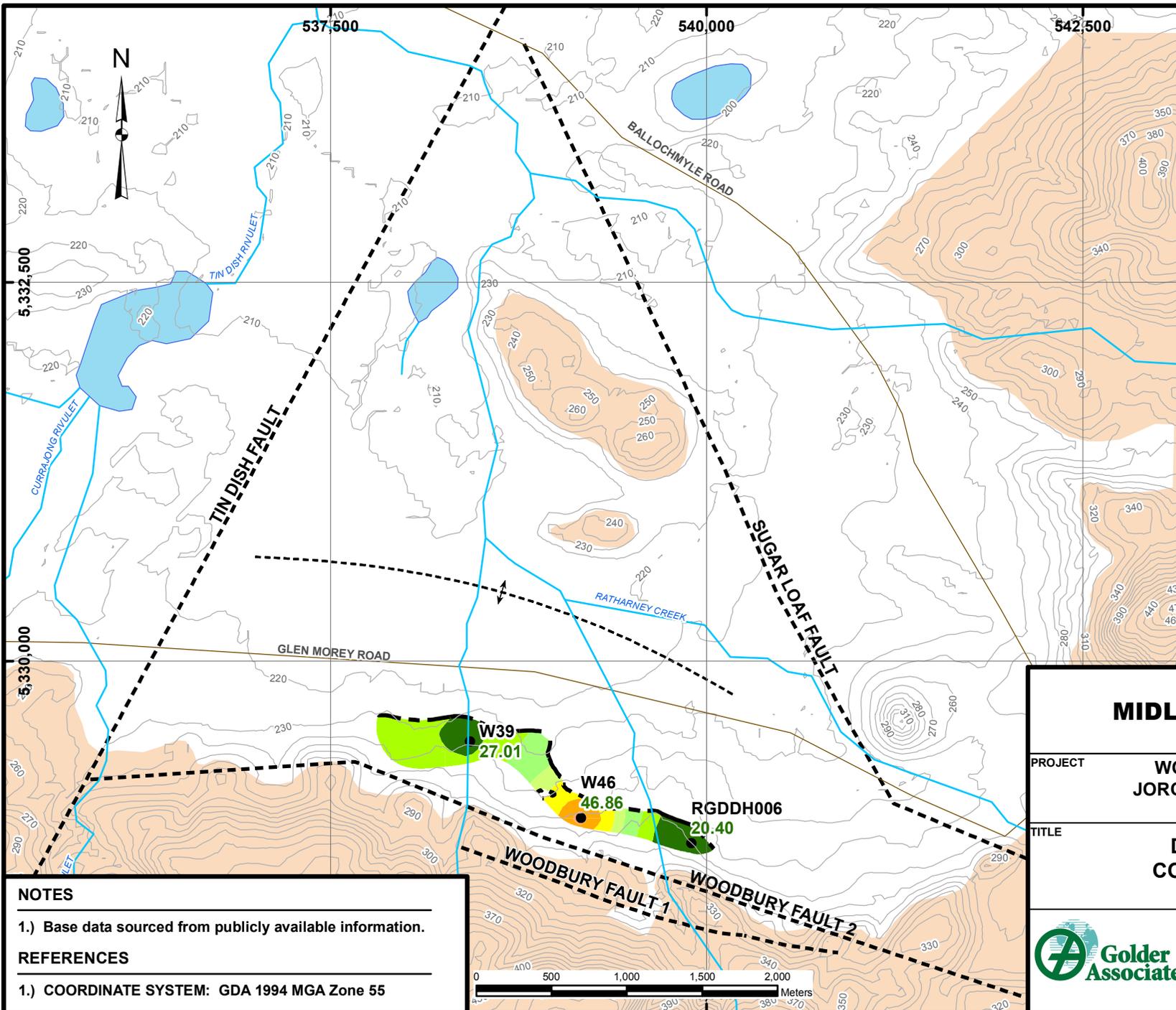
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



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	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Drill Hole Location  
Ash Content % (adb)

**Elevation**

- Less than 29
- 29 - 32
- 32 - 35
- 35 - 37
- 37 - 40
- 40 - 43
- 43 - 46
- 46 - 49
- 49 - 52
- 52 - 56
- Greater than 56

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

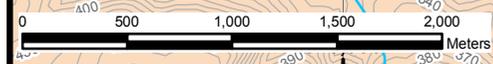
TITLE **DU PLY ASH CONTENT  
COAL QUALITY ISOPLETH**

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX B</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



# **APPENDIX C**

## **JORC 2012 Table 1: Check List of Assessment and Reporting Criteria**



**APPENDIX C**  
**Table 1**

**JORC CODE, 2012 EDITION – TABLE 1 REPORT TEMPLATE**

**Section 1 Sampling Techniques and Data**

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
<i>Sampling techniques</i>	<ul style="list-style-type: none"> <li>■ Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>■ Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>■ Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>■ In cases where ‘industry standard’ work has been done this would be relatively simple (eg ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>■ Coal sampling was conducted on a total of 31 (15 x Resource Generation Ltd exploration program &amp; 16 x W series bore holes) of cored bore holes to correlated depths picked from geophysical logs</li> <li>■ The coal seams are located within a triangular shaped polygon (the WRA) which is defined by three major faults</li> <li>■ Previous to this study, Marston International Pty Ltd. submitted 108 samples to SGS Australia Pty Ltd (Newcastle laboratory) for analysis</li> <li>■ Groundsearch Australia Pty Ltd supplied Golder with the calibration block for the density tool used to geophysically log the Resource Generation Ltd bore holes</li> </ul>
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li>■ Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by</li> </ul>	<ul style="list-style-type: none"> <li>■ 1) In 1981, Victor Petroleum Pty Ltd completed a program of 74 cored and open rotary bore holes.</li> <li>■ 2) In 1984, Costain Australia Ltd/ Victor Petroleum Pty Ltd/Northwest Bay Company Pty Ltd completed a program of 39</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
	<p>what method, etc).</p>	<p>bore holes (25 x open, 11 x partly and fully cored, 3 x 200mm cored in-seam intersections).</p> <ul style="list-style-type: none"> <li>■ 3) In 2010, Resource Generation Ltd completed a program of 15 x cored bore holes and 9 x open bore holes, details are as follows:</li> <li>■ Blade to between 1m and 9m (bore hole diameter of 171 mm) and installation of 150mm PVC surface set casing</li> <li>■ Hole then bladed a further 1m to 3m (bore hole diameter of 140 mm) and cased off with HWT</li> <li>■ HQ cored in 3m lengths (diamond impregnated bit, triple tube, bore hole size 96.1 mm, core size 63.5mm) to total depth (TD)</li> <li>■ For open holes, bore holes were drilled with either a blade or a tri-cone bit (outside bore hole diameter of 171 mm), then cased with PVC to between 1 m and 3 m depending on bore hole competence, then drilled to TD using a 5 inch percussion hammer bit and truck mounted compressor</li> <li>■ A 6 m sump was drilled below the basal target seam and geophysically logged by Groundsearch Australia Pty Ltd</li> </ul>
<p><i>Drill sample recovery</i></p>	<ul style="list-style-type: none"> <li>■ Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>■ Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>■ Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to</li> </ul>	<ul style="list-style-type: none"> <li>■ Core recovery is reported to have been measured on site at the time of geological logging.</li> <li>■ A triple-tube inner tube system was used to obtain optimum core recovery, using a 3 m barrel.</li> <li>■ Open hole recoveries were not routinely monitored, however,</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
	preferential loss/gain of fine/coarse material.	open holes were not utilised to assess coal quality.
<i>Logging</i>	<ul style="list-style-type: none"> <li>■ Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>■ Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>■ The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>■ All bore holes were geologically logged by an on-site geologist to produce lithological logs.</li> <li>■ Core collected from the 2010 Resource Generation Ltd exploration program was photographed.</li> <li>■ Lithological data, graphic logs and english logs corrected to geophysics have been provided</li> <li>■ Historical reports (pre 1990) indicate all bore holes were geophysically logged. All bore holes in the 2010 drilling program were geophysically logged using calibrated equipment.</li> </ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>■ If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>■ If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>■ For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>■ Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>■ Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>■ Whether sample sizes are appropriate to the grain size of the</li> </ul>	<ul style="list-style-type: none"> <li>■ Core samples were taken in the field as per industry standard practices.</li> <li>■ All samples were bagged and transported to the laboratory for testing.</li> <li>■ Sample preparation was undertaken at NATA certified laboratories (SGS and ACIRL) in accordance with the relevant Australian Standard.</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
	material being sampled.	
<p><i>Quality of assay data and laboratory tests</i></p>	<ul style="list-style-type: none"> <li>■ The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>■ For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>■ Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>■ Limited historical coal quality data is available</li> <li>■ As part of their 1981 exploration program, Victor Petroleum Pty Ltd submitted 237 samples to SGS Australia Pty Ltd (Sydney laboratory) for analysis. The samples included coal, roof and floor units. Analyses reported included inherent moisture (adb), ash (adb), volatile matter (adb), fixed carbon (adb), specific energy (adb), total sulphur (adb) and apparent relative density (adb). Individual plies were sampled on a geological basis and in some cases composited.</li> <li>■ All of the above analyses were completed according to AS 1038</li> <li>■ A total of three seam sections (W39 22.54-25.47 m, W41 11.50-12.25 m, 16.55-19.32 m and 22.75-23.30 m and W46 (18.30-20.76 m) from the above exploration program were submitted to SGS Australia Pty Ltd for sizing and washability analysis. In each case a composite was prepared from plies with designated coal sections, utilizing the maximum amount of available sample. These composites, comprising coal of nominal topsize 12.7 mm were first sized at 0.5 mm. The plus 0.5 mm fraction was then float/sink separated at gravities of 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.80, 1.90 and 2.00. Ash was determined on each fraction. The minus 0.5 mm fraction was further sized at 250, 125 and 75 microns. Ash was determined on each size fraction.</li> <li>■ SGS Australia Pty Ltd (Sydney laboratory) is NATA certified.</li> <li>■ Marston International Pty Ltd. submitted 108 samples to SGS Australia Pty Ltd (Newcastle laboratory) for analysis. The</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>samples included coal, roof and floor units. Analyses reported included total moisture (ar), inherent moisture (adb), ash (adb), volatile matter (adb), fixed carbon (adb), total sulphur (adb), gross calorific value (adb) and apparent relative density (adb).</p> <ul style="list-style-type: none"> <li>■ Total moisture analyses were completed according to AS 1038.1, inherent moisture, ash, volatile matter and fixed carbon analyses were completed according to AS 1038.4, total sulphur analyses were completed according to AS 1038.6.3.3, gross calorific value analyses were carried out according to AS 1038.5 and relative density analyses were carried out according to AS 1038.21.1.</li> <li>■ SGS Australia Pty Ltd (Newcastle laboratory) is NATA certified.</li> <li>■ As part of the above exploration program a total of 50 composite and single seam samples were submitted for testing to SGS Australia Pty Ltd (Newcastle laboratory) from seams A, B, C and D. 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.</li> <li>■ Groundsearch Australia Pty Ltd supplied Golder with the calibration block for the density tool used to geophysically log the Resource Generation Ltd bore holes.</li> </ul>
<p><i>Verification of sampling and assaying</i></p>	<ul style="list-style-type: none"> <li>■ The verification of significant intersections by either independent or alternative company personnel.</li> <li>■ The use of twinned holes.</li> <li>■ Documentation of primary data, data entry procedures, data</li> </ul>	<ul style="list-style-type: none"> <li>■ All coal intersections utilised in the generation of the geological model have been validated. Any intersections that failed validation tests were excluded from the geological model (refer Table 4, Section 5.2.3 of the 2013 JORC Resource estimate report).</li> <li>■ No twin bore holes have been completed, however, results from</li> </ul>



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Criteria	JORC Code explanation	Commentary
	<p>verification, data storage (physical and electronic) protocols.</p> <ul style="list-style-type: none"> <li>■ Discuss any adjustment to assay data.</li> </ul>	<p>bore hole data as well as other sources i.e. wireline geophysics etc. are considered consistent enough for Golder to consider the supplied bore hole information accurate.</p> <ul style="list-style-type: none"> <li>■ All coal quality analyses have been cross-referenced against original laboratory reports by Golder</li> <li>■ Golder was supplied with an existing MineScape™ geological model which was validated and updated, an MS Access geological database which was validated, various format company reports, geological logs, core photos, site photos, wireline geophysical logs, laboratory reports, Mineral Resources Tasmania reports etc. which were all utilised in the construction of the geological model and subsequent Resource estimate. All data supplied was stored on Golder's file servers.</li> <li>■ In order to generate a more realistic tonnage estimate Golder calculated a density from supplied relative density and total moisture data in accordance with the Preston-Sanders methodology, which is accepted as an industry standard. This calculated density was then utilised in estimating Resource tonnage. The formula utilised is as follows: <b><math>RD=ARD*(100-IM)/(100+ARD*(TM-IM)-TM)</math></b>.</li> </ul>
<p><i>Location of data points</i></p>	<ul style="list-style-type: none"> <li>■ Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>■ Specification of the grid system used.</li> <li>■ Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>■ In relation to the Resource Generation Ltd exploration program, all bore holes were surveyed by a registered surveyor (Peter Binney Surveys from Granton Tasmania).</li> <li>■ According to Mineral Resources Tasmania reports supplied that relate to the other two exploration programs, all bore hole collars were surveyed.</li> <li>■ Golder validated all borehole collars against the current</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>topographic model supplied by Midland Energy Ltd. Any bore holes with &gt;2 m discrepancy against the current topographic model were excluded from geological model construction.</p> <ul style="list-style-type: none"> <li>■ Topographic data was provided to Marston International Pty Ltd in the form of a DXF data file by Resource Generation Ltd. The modelled topographic surface (grid model) was generated using 5 m grid cell spacing. The data was provided in the GDA 1994 MGA Zone 55 co-ordinate system.</li> </ul>
<p><i>Data spacing and distribution</i></p>	<ul style="list-style-type: none"> <li>■ Data spacing for reporting of Exploration Results.</li> <li>■ Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>■ Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>■ A total of 25 bore holes were drilled by Resource Generation Ltd, comprising 15 cored holes and 9 open holes in a N/S orientation (up/down dip) in two parallel lines, the first line comprising a total of 12 bore holes were spaced at an approximate 100 m distance apart, whilst the second line were drilled between 100 and 200 m apart. These bore holes were drilled to increase geological certainty due to a lack of good quality data from the previous 115 bore holes completed.</li> <li>■ Spacing of cored bore holes ranges from 250 to 500 m over the project area</li> <li>■ Spacing of open bore holes ranges from 250 to 500 m over the project area</li> <li>■ Golder has determined that the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied</li> <li>■ In relation to the Resource Generation Ltd exploration program, individual plies were composited and proximate analysis was available for all seams that were sampled. In other instances,</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>Marston International Pty Ltd used the composite analysis for the complete interval.</p> <ul style="list-style-type: none"> <li>■ In relation to the Victor Petroleum Pty Ltd exploration program, individual plies were sampled on a geological basis and in some cases composited. Proximate analysis was available for all seams sampled.</li> </ul>
<p><i>Orientation of data in relation to geological structure</i></p>	<ul style="list-style-type: none"> <li>■ Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>■ If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>■ Bore holes have been vertically. No downhole deviation logs were supplied to Golder, therefore it is unknown whether or not bore holes have deviated from the vertical during drilling. Based on the average bore hole depth of approximately 70 m, any downhole deviation is not expected to be significant or affect the overall geological understanding of the deposit in a material way.</li> <li>■ The dip of the coal seams over the entire deposit range between 4° and 8° towards the south.</li> <li>■ The Tin Dish, Sugar Loaf and Woodbury Faults as well as a local anticline north of the Woodbury Fault comprise the major structures within the project area.</li> <li>■ Vertical drilling is considered the most suitable method to assess the geological setting based on the current understanding of the deposit.</li> <li>■ A total of 25 bore holes were drilled by Resource Generation Ltd, comprising 15 cored holes and 9 open holes in a N/S orientation (up/down dip) in two parallel lines, the first line comprising a total of 12 bore holes were spaced at an approximate 100 m distance apart, whilst the second line were drilled between 100 and 200 m apart. These bore holes were drilled to increase geological certainty due to a lack of good quality data from the previous 115</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>bore holes completed. Golder considers that the overall orientation of data in relation to geological structure does not result in a biased sampling of possible structures.</p> <ul style="list-style-type: none"><li>■ The conducting of downhole deviation/verticality surveys for all bore holes is recommended for any future exploration drilling conducted.</li></ul>
<i>Sample security</i>	<ul style="list-style-type: none"><li>■ The measures taken to ensure sample security.</li></ul>	<ul style="list-style-type: none"><li>■ For all three exploration programs, core logging and sampling was undertaken by professional geologists on private property with locked gates. Once coal quality samples to be analysed were delivered to the relevant laboratory, a sample listing was cross-checked and confirmed with the client sending the samples. Golder has assessed the risk of sabotage and/or sample interference/theft as minimal.</li></ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"><li>■ The results of any audits or reviews of sampling techniques and data.</li></ul>	<ul style="list-style-type: none"><li>■ After an initial review of the Mining and Exploration Geological Modelling Services Pty Ltd geological model, Marston International Pty Ltd made some minor re-correlations based on the 2010 Resource Generation Ltd drilling results. The base of weathering was determined by using field logs based on field geologist's interpretations. Rod Davis (contracted by Resource Generation Ltd) correlated seams for the 25 bore holes drilled during the 2010 exploration program Marston International Pty Ltd later reviewed these seam/ply picks and chose to re-assign some seam names based on new geological modelling data generated.</li><li>■ AMC Consultants Pty Ltd provided an independent geological review of the Energy Investments Limited Tasmanian Coal Project. The review included exploration programs and previous non-JORC estimates of quality and quantity.</li></ul>



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Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>■ Golder conducted a thorough review of all data within the current geological database and model; resulting in the exclusion of any data that failed certain geological criteria (refer Section 5.2.3 of the 2013 JORC Resource estimate report).</li> <li>■ Golder conducted a review and subsequent re-correlation of the current seam/ply picks as part of the Resource estimation project (refer Section 5.3 of the 2013 JORC Resource estimate report).</li> <li>■ SGS and ACIRL undertook internal audits and checks in line with Australian Standards and their NATA certification.</li> </ul>

**Section 2 Reporting of Exploration Results**

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>■ Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>■ The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>■ EL65/2007 was granted to Energy Investments Ltd (EIL) in September of 2008.</li> <li>■ In October of 2008, EIL was sold by its owners to Resource Generation Ltd). Resource Generation Ltd conducted extensive exploration within the tenement.</li> <li>■ Midland Energy Ltd purchased EIL in September of 2011 and continued exploration works within the EL65/2007 tenement.</li> <li>■ In May of 2013, after extensive negotiations, Midland Energy Ltd signed an option agreement, giving South East Asia Energy Resources Singapore (SEARS), a wholly owned</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>subsidiary of South East Asia Resources Ltd (SXI) the right to purchase EIL from Midland Energy Ltd after completion of a JORC Resource estimate on EL65/2007.</p> <ul style="list-style-type: none"> <li>■ EL65/2007 is currently pending renewal, with Mineral Resources Tasmania waiting for the provision of a JORC Resource estimate and further plan of works prior to renewal being granted.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li>■ Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>■ An initial exploration program of 74 cored and open rotary bore holes was conducted in 1981 by Victor Petroleum Pty Ltd within EL31/80. In-situ Measured and Indicated resources (non-JORC compliant) were estimated based on 18 of these bore holes.</li> <li>■ In 1984, a joint venture between Costain Australia Limited (50%), Victor Petroleum and Resources Ltd (40%) and Northwest Bay Company Pty Ltd (10%), conducted another exploration program consisting of 39 bore holes within EL31/80. The program consisted of 25 x open bore holes, 11 x partly and fully cored HQ diamond bore holes and 3 x 200 mm cored seam intersections. The aim of this program was to further delineate the geological structure and coal seam stratigraphy.</li> <li>■ Resource Generation Ltd completed a 2010 program consisting 25 bore holes (15 cored and 9 open bore holes).</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li>■ Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>■ The project is located within the Woodbury Coalfield of Tasmania.</li> <li>■ The target coal seams are Triassic in age. The host rock in which the coal seams occur is lithic sandstone belonging to the</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>Upper Parmeener Supergroup.</p> <ul style="list-style-type: none"> <li>■ Structurally, the geology within the resource area appears to contain some localised small scale faulting.</li> <li>■ The resource area was delineated by Mining and Exploration Geological Modelling Services Pty Ltd in the initial geological model based on the three major fault structures surrounding the deposit. Marston International Pty Ltd has utilised this same resource area in the previous and current geological models to estimate coal tonnages.</li> </ul>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>■ A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:               <ul style="list-style-type: none"> <li>■ easting and northing of the drill hole collar</li> <li>■ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>■ dip and azimuth of the hole</li> <li>■ down hole length and interception depth</li> <li>■ hole length.</li> </ul> </li> <li>■ If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>■ Exploration results are not being reported.</li> <li>■ The available/supplied geological information has been utilised to produce a Resource estimate.</li> <li>■ All information material to the Resource estimate is contained within the 2013 JORC Resource estimate report and associated appendices.</li> </ul>



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Criteria	JORC Code explanation	Commentary
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>■ In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>■ Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>■ The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>■ Exploration results are not being reported.</li> <li>■ The available/supplied geological information has been utilised to produce a Resource estimate.</li> <li>■ All information material to the Resource estimate is contained within the 2013 JORC Resource estimate report and associated appendices.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li>■ These relationships are particularly important in the reporting of Exploration Results.</li> <li>■ If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>■ If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>■ Seam A is difficult to define laterally, although statistically it is possibly the most continuous seam.</li> <li>■ Table 6, Section 5.2.3 of the 2013 JORC Resource estimate report demonstrates the number of intercepts and average thickness of seams/plies.</li> <li>■ All bore holes are assumed vertical i.e. down hole thicknesses reported, true thicknesses not known.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>■ Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>■ All bore hole locations are presented in Figure 3.1, Section 3.1 of the 2013 JORC Resource estimate report.</li> <li>■ Floor contours for all seams/plies are presented in Appendix A of the 2013 JORC Resource estimate report.</li> <li>■ Structure thickness contours are presented in Appendix A of</li> </ul>



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Criteria	JORC Code explanation	Commentary
		<p>the 2013 JORC Resource estimate report.</p> <ul style="list-style-type: none"> <li>■ Representative geological cross-sections are presented in Figure 4.3 of the 2013 JORC Resource estimate report.</li> <li>■ All JORC Resource category polygons are presented in are presented in Appendix D of the 2013 JORC Resource estimate report.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>■ Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>■ Exploration results are not being reported.</li> <li>■ The available/supplied geological information has been utilised to produce a Resource estimate.</li> <li>■ All information material to the Resource estimate is contained within the 2013 JORC Resource estimate report and associated appendices.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>■ Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<ul style="list-style-type: none"> <li>■ Geophysical logs were available for the all 25 Resource Generation Ltd bore holes and 33 of the historic bore holes.</li> <li>■ Known dolerite intrusions in the area overly the coal in some instances.</li> <li>■ Tonnage estimated in both the Marston International Pty Ltd report and the Golder 2013 JORC Resource estimate report excludes coal found beneath igneous intrusions as insufficient data exists to verify geological continuity.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>■ The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out</li> </ul>	<ul style="list-style-type: none"> <li>■ Due to the complexity and current geological uncertainty of the Woodbury resource, Golder recommends a cored drilling program with the aim being to verify the continuity of both the</li> </ul>



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Criteria	JORC Code explanation	Commentary
	<p>drilling).</p> <ul style="list-style-type: none"><li>■ Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li></ul>	<p>geological structure and coal quality of the resource. It is expected that conducting this work would result in an increase in bore hole (with complete datasets) density with the aim of raising the resource classifications and tonnage estimates.</p> <ul style="list-style-type: none"><li>■ Golder suggests that approximately three open bore holes be drilled within the Woodbury Resource Area (WRA) to assist in the confirmation of the location and thickness of the dolerite body as well as confirming whether these are in fact intrusions, or an overlying sill.</li><li>■ Expand the drilling to include some scout drilling to the north-west and north-east of the WRA and also in the south of the WRA to check for possible southern extensions of the coal seams beneath the dolerite.</li><li>■ Include geotechnical sampling and analysis as part of future drilling programs.</li><li>■ Develop a Limit of Oxidation (LOX) line drilling program to assist in defining the edge of crop. This will also give greater confidence in the base of weathering as opposed to visual identification of the oxidised boundary.</li><li>■ Locate missing data from historical drilling programs. Contact the Mineral Resources department of Tasmania to arrange a viewing of all historical data (drill cores) that may be associated with the project.</li><li>■ Golder recommends that the exploration plan developed by Marston International Pty Ltd in 2011 would be suitable as an initial program. The Marston International Pty Ltd report detailing the proposed program is included Appendix E of the</li></ul>



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Criteria	JORC Code explanation	Commentary
		2013 JORC Resource estimate report.

### Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
<i>Database integrity</i>	<ul style="list-style-type: none"> <li>■ Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>■ Data validation procedures used.</li> </ul>	<ul style="list-style-type: none"> <li>■ All data within the supplied MS Access geological database was validated by Golder as was the supplied MineScape™ geological model prior to Golder completing a re-correlation exercise and subsequent geological database update and geological model update.</li> <li>■ Discrepancies between lithology and total depth were checked.</li> <li>■ Bore holes with miscorrelations were corrected in the geological database prior to the geological model being updated.</li> <li>■ Refer to Section 5.2.3 of the 2013 JORC Resource estimate report</li> </ul>
<i>Site visits</i>	<ul style="list-style-type: none"> <li>■ Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>■ If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>■ A site visit was undertaken by Mr. Aaron Radonich (Senior Geologist, Golder Associates Pty Ltd) and Ms. Faye Jones (Senior Geostatistician, Golder Associates Pty Ltd) on October 1 to 3, 2013. The site was visited to establish an understanding of the site geography/geomorphology, road/rail access and proximity, proposed open cut mine location, proposed infrastructure i.e. CHPP and any potential community issues etc.</li> </ul>
<i>Geological interpretation</i>	<ul style="list-style-type: none"> <li>■ Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit.</li> </ul>	<ul style="list-style-type: none"> <li>■ A total of 123 bore holes (24 excluded from the geological model build) have been drilled in the deposit. This data set has been used</li> </ul>



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Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>■ Nature of the data used and of any assumptions made.</li> <li>■ The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>■ The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>■ The factors affecting continuity both of grade and geology.</li> </ul>	<p>to develop a sound understanding of the geological/structural setting of the project area.</p> <ul style="list-style-type: none"> <li>■ Marston International Pty Ltd previously reviewed possible additional exploration requirements to provide sufficient data to increase confidence levels and enable coal resource estimates to be stated at the Indicated category level for a significant portion of the deposit.</li> <li>■ The principle structure containing the coal bearing sequence on the Woodbury plain is a narrow graben trending north-south with an elongate dolerite intrusion lying to both the east and south. It has been suggested in previous reviews of the area that the coal bearing sequence possibly extends southward beneath the dolerite intrusion that dominates the region; however, there is no bore hole data available to support this theory at this time.</li> </ul>
<i>Dimensions</i>	<ul style="list-style-type: none"> <li>■ The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>	<ul style="list-style-type: none"> <li>■ The geological model for the project area covers a total of 132km<sup>2</sup> within the bounds of EL65/2007.</li> <li>■ EL65/2007 covers a total area of 237km<sup>2</sup>.</li> <li>■ There is no depth limit on the current geological model nor is there a cut-off depth in terms of Resource estimation.</li> </ul>
<i>Estimation and modelling techniques</i>	<ul style="list-style-type: none"> <li>■ The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</li> <li>■ The availability of check estimates, previous estimates and/or</li> </ul>	<ul style="list-style-type: none"> <li>■ Exploration bore hole information was utilised to develop a geological model, which was used as the basis for Resource estimation.</li> <li>■ Coal seams were identified from lithological logging of bore holes by a trained geologist and validated/cross-referenced against various sources of data i.e. wireline geophysics and coal quality analyses.</li> <li>■ Seam/ply correlation was previously completed by Marston International Pty Ltd and subsequently by Golder, with the geological</li> </ul>



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**Table 1**

Criteria	JORC Code explanation	Commentary
	<p>mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</p> <ul style="list-style-type: none"> <li>■ The assumptions made regarding recovery of by-products.</li> <li>■ Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>■ In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>■ Any assumptions behind modelling of selective mining units.</li> <li>■ Any assumptions about correlation between variables.</li> <li>■ Description of how the geological interpretation was used to control the resource estimates.</li> <li>■ Discussion of basis for using or not using grade cutting or capping.</li> <li>■ The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> </ul>	<p>database and model being subsequently updated.</p> <ul style="list-style-type: none"> <li>■ Coal quality samples taken from cored bore holes were sent to NATA accredited laboratories for analysis according to the appropriate standards.</li> <li>■ Geological data was utilised in geological modelling software MineScape™ version 5.4, in the form of three separate .csv files containing bore hole collars, seam/ply picks and raw coal quality. All data was validated prior to importation.</li> <li>■ Once data import was completed a grid based geological and coal quality model was developed.</li> <li>■ Four dummy bore holes were used in the model along the southern boundary of the resource area to control seam structure. This gave the model better extrapolation in areas where there was insufficient bore hole coverage.</li> <li>■ Any missing seams/plies were interpolated and set to zero above bore hole collar RL and below bore hole total depth. This includes dummy bore holes.</li> <li>■ Once generated, the geological model was interrogated/validated with cross sections, contours and reports generated through MineScape and updated as deemed necessary.</li> <li>■ Resources were reported from the geological model using the Resource categorisation polygons for each seam/ply to limit the estimate to within the areas defined by each set of relevant polygons.</li> <li>■ Masks were created in the structural model to delimit all dolerite within the resource area. The masks prevented the model from</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
		<p>estimating coal tonnage beneath the dolerite, as data was not available to verify the continuity of the seams/plies beneath these units.</p> <ul style="list-style-type: none"> <li>■ A total of 99 bore holes were used in the generation of the geological model (with 24 excluded, refer to Table 4, Section 5.2.3 of the 2013 JORC Resource estimate report)</li> <li>■ The Relative Density (RD) used in the modeling is an in situ density calculated using the Preston Sanders correction.</li> </ul>
<i>Moisture</i>	<ul style="list-style-type: none"> <li>■ Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>	<ul style="list-style-type: none"> <li>■ Tonnage was reported to include natural moisture</li> <li>■ Total moisture content reported averages 5.80% (ar).</li> <li>■ Inherent moisture content reported averages 4.62% (adb).</li> <li>■ A slight trend towards decreasing moisture content in the southeast area of the resource area is present.</li> </ul>
<i>Cut-off parameters</i>	<ul style="list-style-type: none"> <li>■ The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>	<ul style="list-style-type: none"> <li>■ Total Resources were not limited by depth.</li> <li>■ All seam roofs and floors were truncated by the Base of weathering (BOW) surface.</li> <li>■ All Resources estimated were limited to a minimum seam/ply thickness of 0.10 m and a raw ash of ≤ 45% (adb).</li> <li>■ Seams/plies are generally high ash due to their interbedded nature. It is expected that high ash seams/plies would be recovered as Resource during mining and subsequent processing would improve quality to a more acceptable market specification.</li> </ul>



## APPENDIX C

### Table 1

Criteria	JORC Code explanation	Commentary
<i>Mining factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>The only assumption that has been made is that the estimated Resources will be mined utilising open cut extraction methods.</li> <li>Resource estimates represent in-situ tonnages and no mining roof and floor loss or dilution parameters have been applied.</li> </ul>
<i>Metallurgical factors or assumptions</i>	<ul style="list-style-type: none"> <li>The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>No metallurgical assumptions have been applied during the Resource estimation process.</li> <li>In 2011, Resource Generation Ltd commissioned Golder to plan and supervise a float-sink test program on HQ core samples obtained from the 2010 drilling program (refer "Quality of assay data and laboratory tests" section of this table). The study concluded that a product with average ash content of 20% (adb) could theoretically be achieved through washing with an average apparent yield of 61%.</li> </ul>
<i>Environmental factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>No environmental assumptions have been incorporated into the geological modelling or Resource estimation process.</li> <li>Golder is not aware of any significant environmental risk associated with EL65/2007. The land is currently utilised for farming, dominantly cropping purposes and there is no residential housing in the immediate area surrounding the proposed mine or infrastructure sites.</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
<i>Bulk density</i>	<ul style="list-style-type: none"> <li>■ Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> <li>■ The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</li> <li>■ Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	<ul style="list-style-type: none"> <li>■ Golder calculated an in-situ density from supplied relative density and total moisture determinations in accordance with the Preston-Sanders methodology, which is accepted as an industry standard. This calculated density was then utilised in estimating Resource tonnage. The formula utilised is as follows: <b><math>RD = \frac{ARD \cdot (100 - IM)}{100 + ARD \cdot (TM - IM) - TM}</math></b>.</li> <li>■ Relative density and Preston-Sanders relative density grid models were developed for all seams/plies estimated.</li> <li>■ Coal Resources are estimated and reported on an as received basis.</li> </ul>
<i>Classification</i>	<ul style="list-style-type: none"> <li>■ The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>■ Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>■ Whether the result appropriately reflects the Competent Person's view of the deposit.</li> </ul>	<ul style="list-style-type: none"> <li>■ Resources were classified by defining Points of Observation (POO) on a ply by ply basis and by generating Resource confidence polygons around the designated POO for each ply.</li> <li>■ POO for Indicated Resource confidence polygons were defined as cored bore holes that intersected the seam/ply and where the seam/ply had been sampled and had coal quality available.</li> <li>■ POO for Inferred Resource confidence polygons included the above plus open boreholes that had wireline geophysical logging data available.</li> <li>■ The following distances between POO were used to generate the corresponding Resource categorisation polygons:</li> <li>■ D Seam Measured Resources = None estimated</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"><li data-bbox="1211 341 1832 368">■ D Seam Indicated Resources = None estimated</li> <li data-bbox="1211 405 2063 464">■ D Seam Inferred Resources = 850 m (minimum of 2 POO to form a polygon)</li>  <li data-bbox="1211 555 1843 582">■ C Seam Measured Resources = None estimated</li><li data-bbox="1211 619 1832 646">■ C Seam Indicated Resources = None estimated</li><li data-bbox="1211 683 2085 742">■ C Seam Inferred Resources = 1,200 m (minimum of 2 POO to form a polygon)</li>  <li data-bbox="1211 833 1843 860">■ B Seam Measured Resources = None estimated</li><li data-bbox="1211 896 2074 956">■ B Seam Indicated Resources = 600 m (minimum of 3 POO to form a polygon)</li><li data-bbox="1211 992 2085 1051">■ B Seam Inferred Resources = 1,200 m (minimum of 2 POO to form a polygon)</li>  <li data-bbox="1211 1142 1843 1169">■ A Seam Measured Resources = None estimated</li><li data-bbox="1211 1206 1832 1233">■ A Seam Indicated Resources = None estimated</li><li data-bbox="1211 1270 2085 1329">■ A Seam Inferred Resources = 1,500 m (minimum of 2 POO to form a polygon)</li></ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>■ Inferred Mineral Resources have been classified on geostatistically derived POO distances based on thickness values</li> <li>■ Indicated Mineral Resources have been classified on geostatistically derived POO distances based on both raw ash (adb) and thickness values obtained from bore hole intercepts.</li> <li>■ Insufficient ash data in seams A, C and D precluded CQ variography and confirmation of CQ continuity. Therefore Resources for these seams were limited to Inferred only.</li> <li>■ POO that possessed seam/ply thickness and raw coal quality from cored bore holes were used for Indicated Resource. These POO plus open bore holes that possess downhole geophysical logs were used for Inferred Resource.</li> <li>■ Increased bore hole density (particularly cored bore holes with coal quality analysis) would allow the coal Resource estimate to be stated at a higher confidence level.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>■ The results of any audits or reviews of Mineral Resource estimates.</li> </ul>	<ul style="list-style-type: none"> <li>■ The geological database review/update, geological model review/update and Resource estimation were conducted by Mr. Stephen Kidcaff (Senior Geologist, Golder Associates).</li> <li>■ Mr. Aaron Radonich (Senior Geologist, Golder Associates) conducted the site visit and acted as Competent Person (CP) as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (The 2012 JORC Code).</li> <li>■ Ms. Faye Jones (Senior Geostatistician, Golder Associates)</li> </ul>



**APPENDIX C**  
**Table 1**

Criteria	JORC Code explanation	Commentary
		<p>conducted all geostatistical analysis work as well as the site visit.</p> <ul style="list-style-type: none"> <li>■ All supplied data was reviewed by Golder and updated as necessary prior to generation of the current geological model.</li> <li>■ The geological model was reviewed against supplied raw data.</li> <li>■ The geological model was interrogated by way of a series of representative cross-sections and a full set of contour plans.</li> <li>■ Mr. David Arnott (Group Manager – Mining) provided technical expertise throughout the entire project timeframe.</li> <li>■ Mr. Sam Reich (Principal Mining Consultant) peer reviewed the Resource estimate and accompanying 2013 JORC Resource estimate report and found it to be satisfactory with no fatal flaws.</li> </ul>
<p><i>Discussion of relative accuracy/ confidence</i></p>	<ul style="list-style-type: none"> <li>■ Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</li> <li>■ The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> </ul>	<ul style="list-style-type: none"> <li>■ The geological model utilised for Resource estimation purposes was constructed by Golder. All data was reviewed/validated and updated as necessary prior to inclusion in the geological model.</li> <li>■ Resource estimation was undertaken utilizing standard industry best practice methodology deemed appropriate for this deposit type.</li> <li>■ Inferred Mineral Resources have been classified on geostatistically derived POO distances based on thickness values obtained from bore hole intercepts.</li> <li>■ Indicated Mineral Resources have been classified on geostatistically derived POO distances based on both raw ash (adb) and thickness values obtained from bore hole intercepts.</li> <li>■ Insufficient ash data in seams A, C and D precluded CQ variography</li> </ul>



## APPENDIX C

### Table 1

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"><li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li></ul>	<p>and confirmation of CQ continuity. Therefore Resources for these seams were limited to Inferred only.</p> <ul style="list-style-type: none"><li>No production data is available at this stage.</li></ul>

## POTENTIAL FOR EVENTUAL ECONOMIC EXTRACTION - JORC RESOURCES 2013

Mine planning studies have not yet been completed by Midland Energy or Golder. Golder believes that with regard to their location, quantity and quality, the resources identified herein have a reasonable prospect for eventual economic extraction.

Midland Energy Ltd proposes either an excavator/shovel open cut mining method or a small dragline method, either of which are appropriate for this style of deposit. Careful mining practices and equipment selection, which are successfully used at other similar deposits, will be required in order to maximize coal recovery and minimize dilution in the thin shallow dipping coal seams.

Run of mine (ROM) coal would need to be washed to produce thermal coal products suitable for power station consumption, that could then be trucked and/or railed to port for ship loading.

The deposit is proximal to both the Midlands Highway as well as the north-south rail line linking Launceston and Hobart. . Coal of similar quality is currently being used in power stations and cement plants in Australia and internationally, and the Woodbury Coal Project could potentially supply these and other markets

Further detailed exploration, Resource estimation and detailed feasibility studies are required to confirm economic viability and obtain the necessary regulatory approvals.



## APPENDIX C

### Table 1

## COAL QUALITY

The raw coal qualities for the seams/plies present at the Woodbury Project are summarized in Table 1 below:

Table 1: 2013 JORC Resources estimate

SEAM	JORC Resources Category	Tonnes Mt	Raw Ash % (adb)	Calorific Value MJ/kg (adb)	Fixed Carbon % (adb)	Inherent Moisture % (adb)	Relative Density g/cc (adb)	Total Moisture% (arb)	Total Sulphur % (adb)	Volatile Matter % (adb)
BU	Indicated	0.5	33.1	20.8	51.8	3.4	1.6	4.3	0.3	11.7
BM		0.8	37.9	19.5	48.5	3.2	1.7	4.3	0.2	11.9
BL		0.5	37.6	19.2	50.0	3.8	1.6	4.8	0.4	9.7
Sub-Total	<b>Indicated</b>	<b>2</b>	<b>36.5</b>	<b>19.8</b>	<b>49.8</b>	<b>3.4</b>	<b>1.6</b>	<b>4.4</b>	<b>0.3</b>	<b>11.2</b>
A	Inferred	3.2	34.1	21.4	49.6	2.9	1.6	3.8	0.3	13.4
AU		1.2	39.0	18.4	46.8	4.9	1.7	6.4	0.4	9.3
AM		1.1	41.0	17.5	50.3	4.6	1.8	5.9	0.6	10.0
BU		0.3	34.2	20.4	51.0	3.5	1.6	4.3	0.3	11.4
BM		7.3	41.4	17.8	41.6	4.5	1.7	5.7	0.3	12.7
BL		2.2	39.6	18.3	42.4	4.5	1.6	5.6	0.4	14.0
C		2.2	35.9	19.2	*	4.7	1.6	5.9	*	*
CM		0.2	43.6	16.2	*	6.7	1.7	8.2	*	*
CL		2.1	31.3	21.6	47.4	4.3	1.5	5.2	0.5	15.3
DU		0.3	30.3	22.0	*	4.8	1.5	6.0	*	*
DL		0.7	36.6	19.4	*	4.8	1.6	5.8	*	*
Sub-Total	<b>Inferred</b>	<b>21</b>	<b>38.0</b>	<b>19.1</b>	<b>45.0</b>	<b>4.3</b>	<b>1.6</b>	<b>5.4</b>	<b>0.4</b>	<b>12.8</b>
<b>Total</b>	<b>Indicated + Inferred</b>	<b>23</b>	<b>37.8</b>	<b>19.2</b>	<b>45.4</b>	<b>4.2</b>	<b>1.6</b>	<b>5.4</b>	<b>0.3</b>	<b>12.7</b>

\*Insufficient data to be used in JORC Resources estimate.

\*\*Resources reported at a minimum coal thickness cut-off of 0.10m and a maximum raw ash cut-off of 45% (adb).



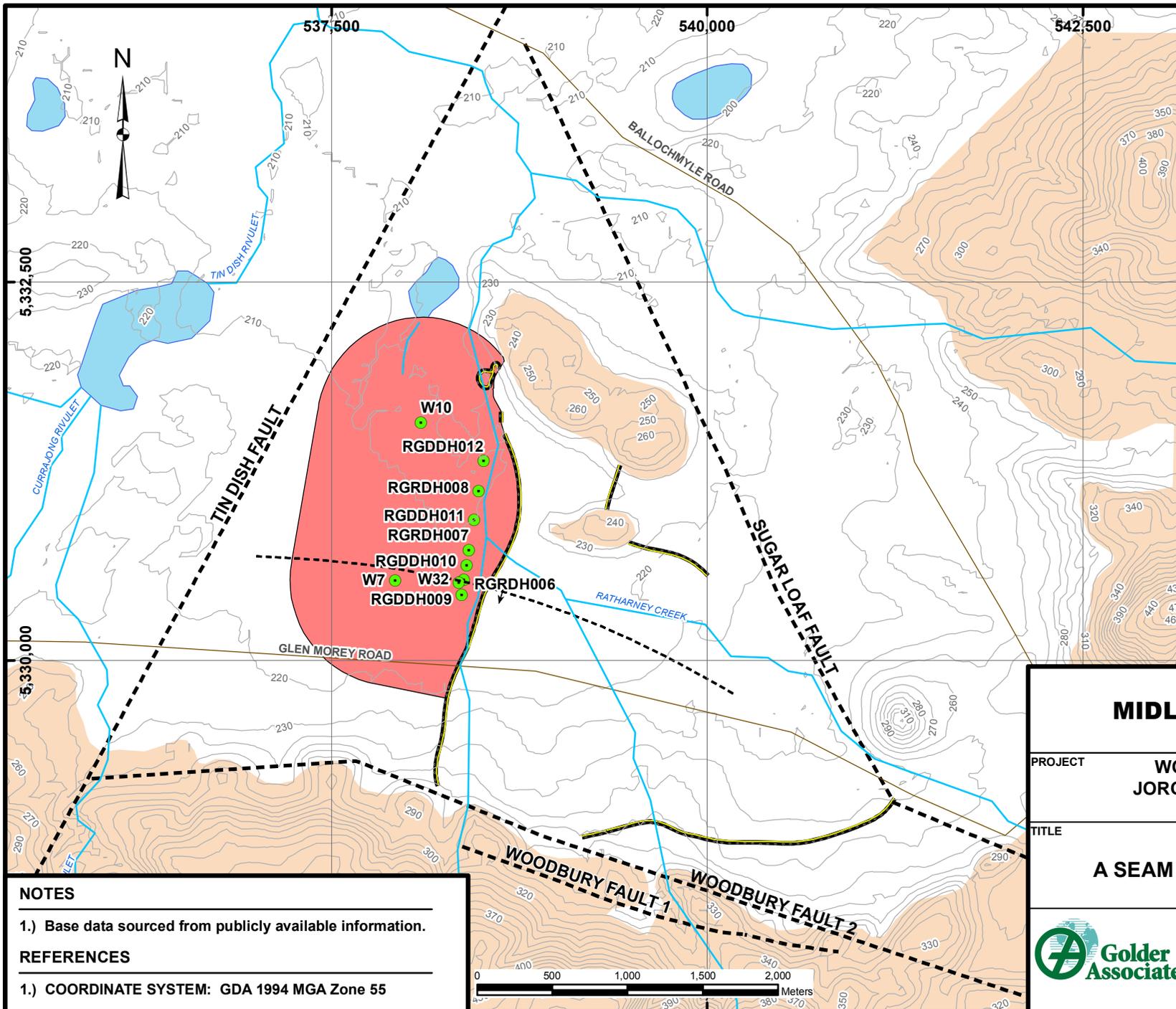
## **COMPETENT PERSON STATEMENT**

The information in this report that relates to the Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Stephen Kidcaff, Senior Geologist, a full time employee of Golder Associates Pty Ltd. and Mr Aaron Radonich, Senior Geologist, a full time employee of Golder Associates Pty Ltd. Mr Kidcaff is a member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Radonich is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) and certified by that organisation as a Chartered Professional in the field of Geology. Mr Radonich is also a member of the Australian Institute of Geoscientists (AIG). Mr Radonich has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which is being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (The 2012 JORC Code). Mr Radonich consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



# APPENDIX D

## JORC Resource Classification Polygons



**LEGEND**

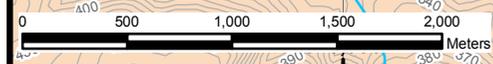
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- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- A Seam Split
- Points of Observation

**NOTES**

1.) Base data sourced from publicly available information.

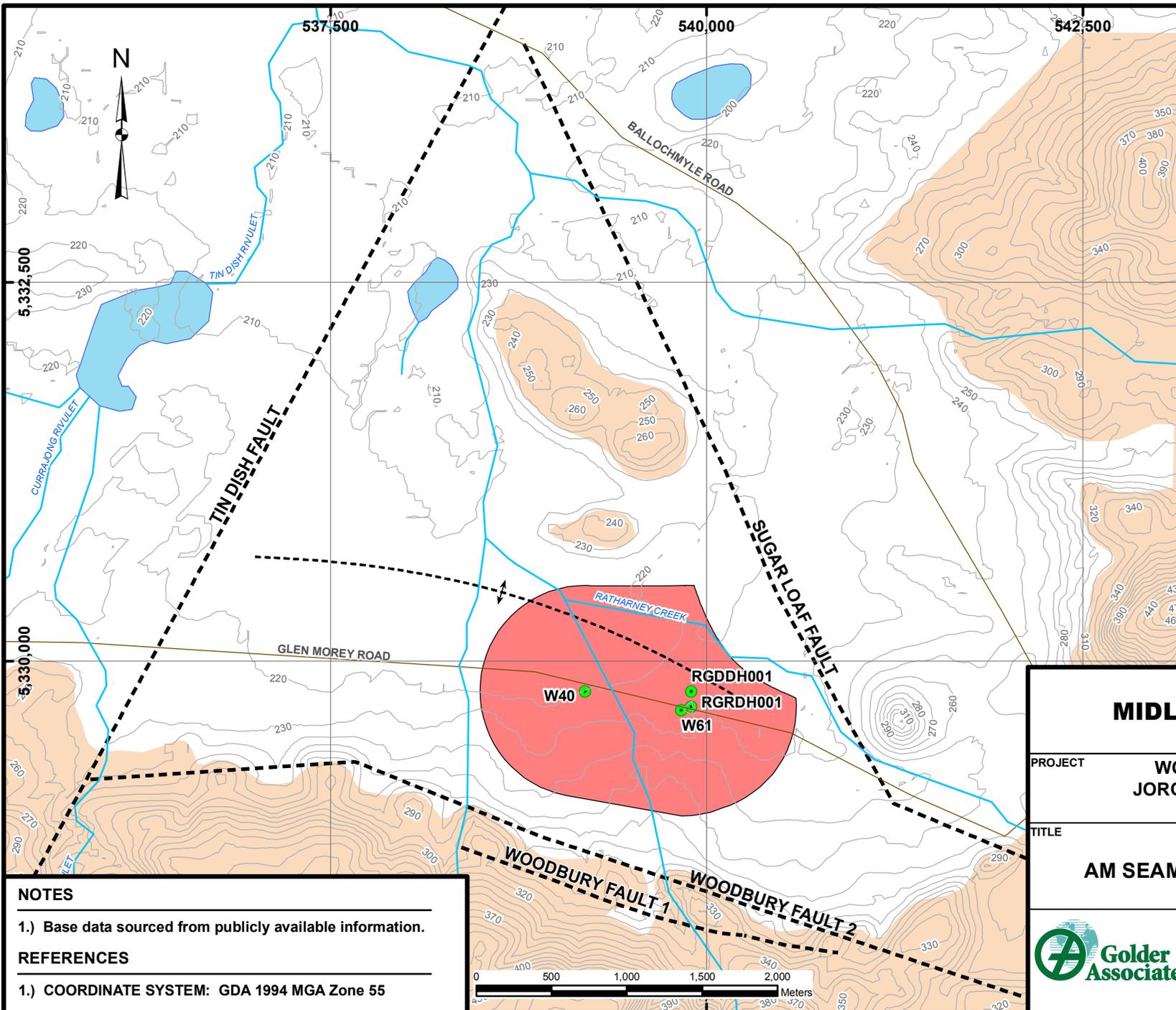
**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



<b>MIDLAND ENERGY LIMITED</b>			
PROJECT	WOODBURY COAL PROJECT JORC 2012 RESOURCE ESTIMATE TASMANIA, AUSTRALIA		
TITLE	<b>A SEAM RESOURCE CLASSIFICATION</b>		

	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

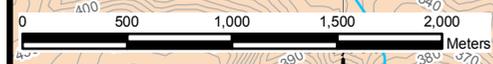
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**NOTES**

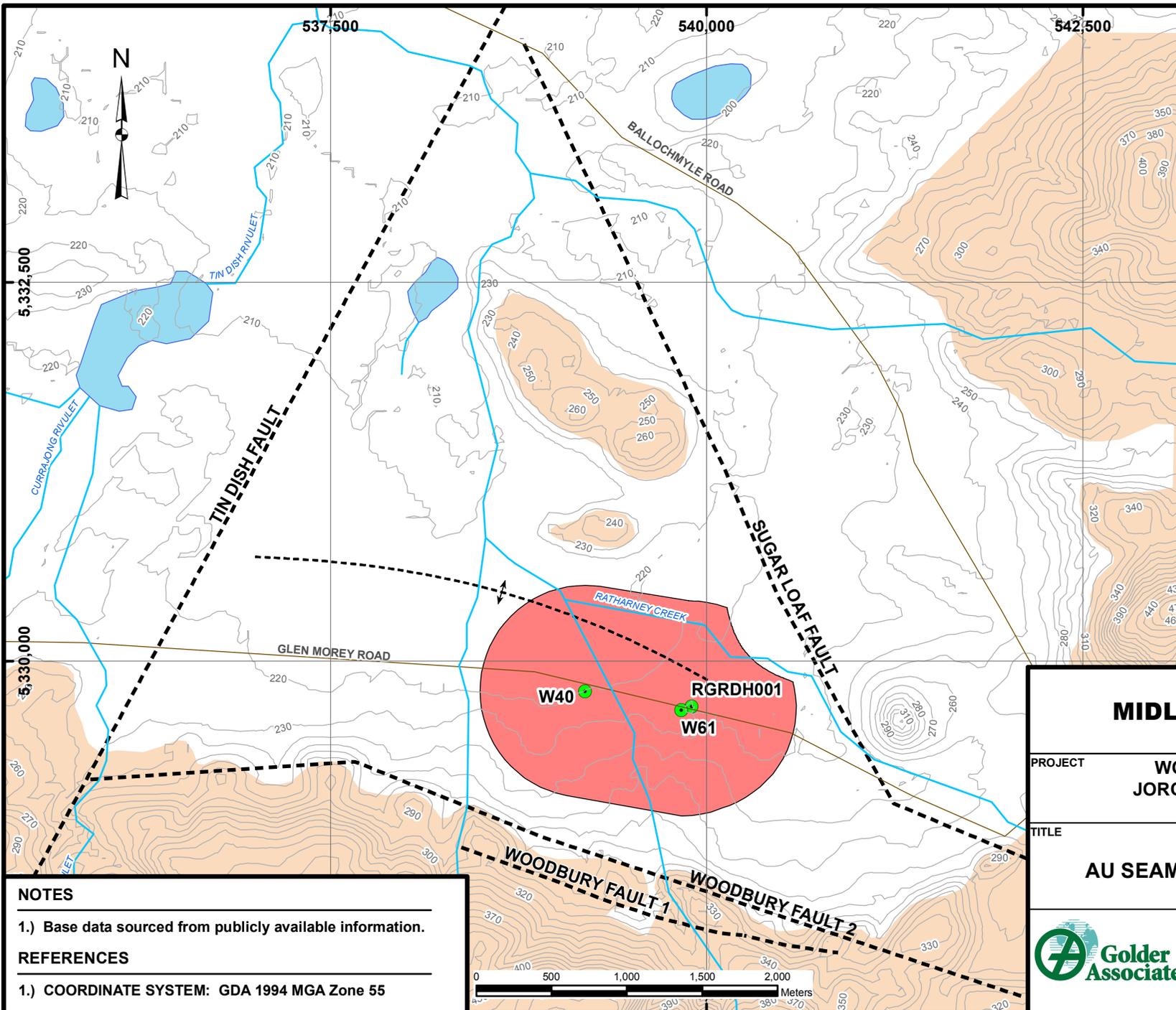
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**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



		PROJECT No.	137621114	DATE	NOVEMBER 2013
		DESIGN	A4	-	SCALE AS SHOWN
		GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
		CHECK	SK	11/4/2013	
		REVIEW	RRY	11/4/2013	



**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Points of Observation

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

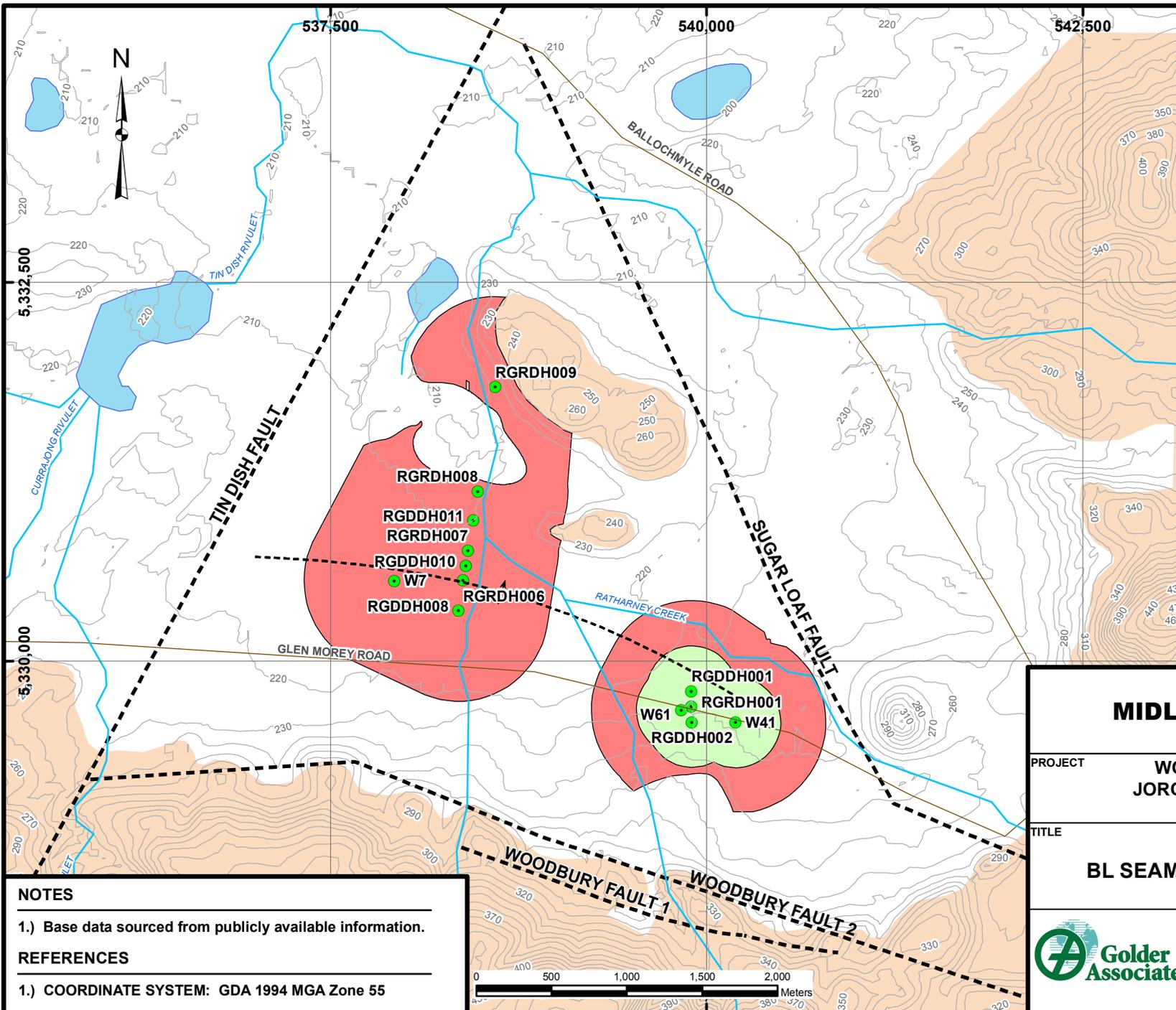
**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

TITLE **AU SEAM RESOURCE CLASSIFICATION**

PROJECT No.		137621114	DATE	NOVEMBER 2013
DESIGN	A4	-	SCALE AS SHOWN	
GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>	
CHECK	SK	11/4/2013		
REVIEW	RRY	11/4/2013		





**LEGEND**

- Indicated Resources
- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- Existing Topography
- Contour Interval = 10m
- Points of Observation

**NOTES**

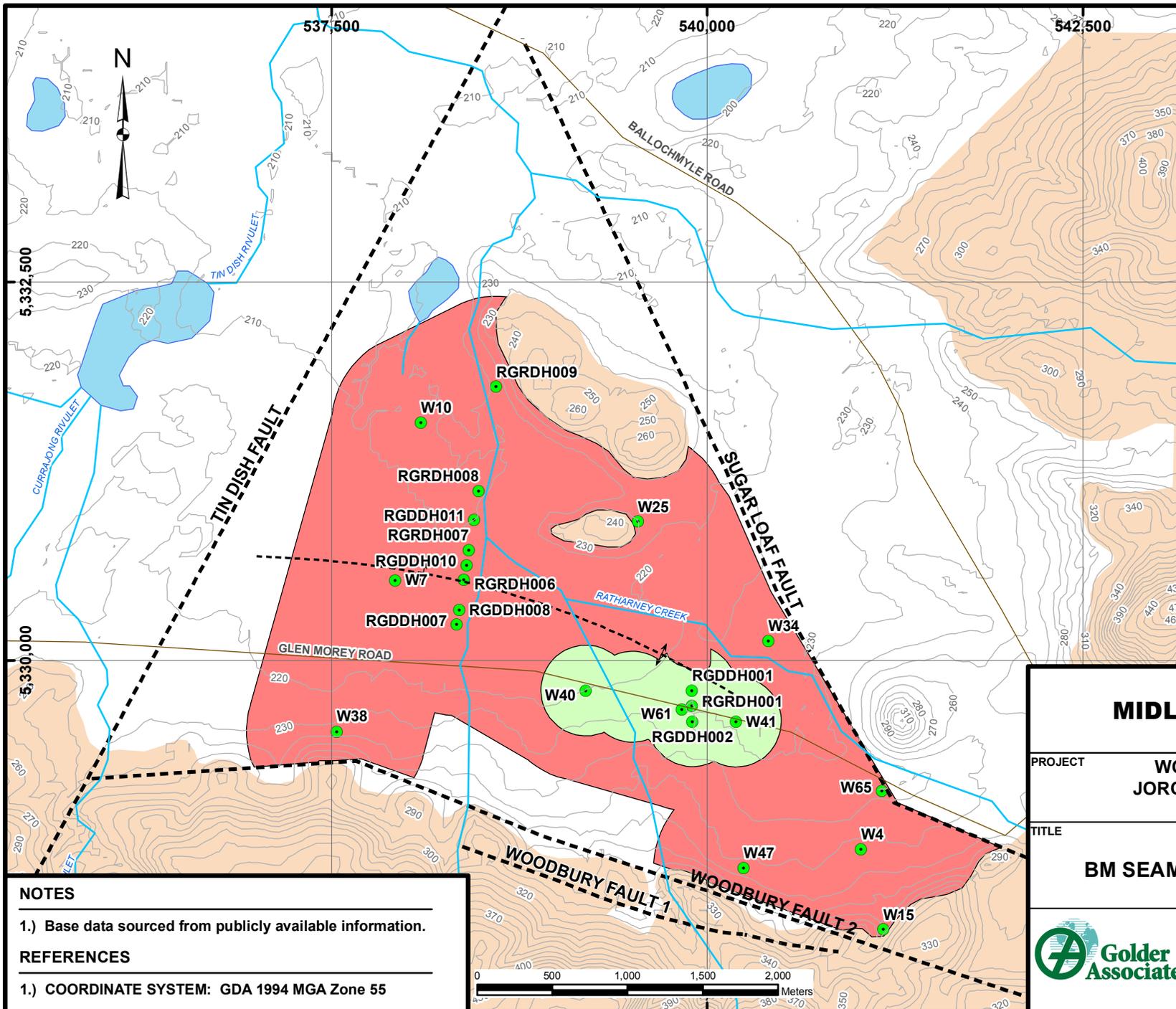
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**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55

<b>MIDLAND ENERGY LIMITED</b>			
PROJECT	WOODBURY COAL PROJECT JORC 2012 RESOURCE ESTIMATE TASMANIA, AUSTRALIA		
TITLE	<b>BL SEAM RESOURCE CLASSIFICATION</b>		

	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
	CHECK	SK	11/4/2013	
	REVIEW	RRY	11/4/2013	



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**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

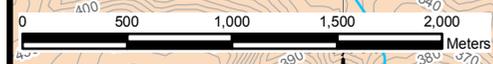
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**NOTES**

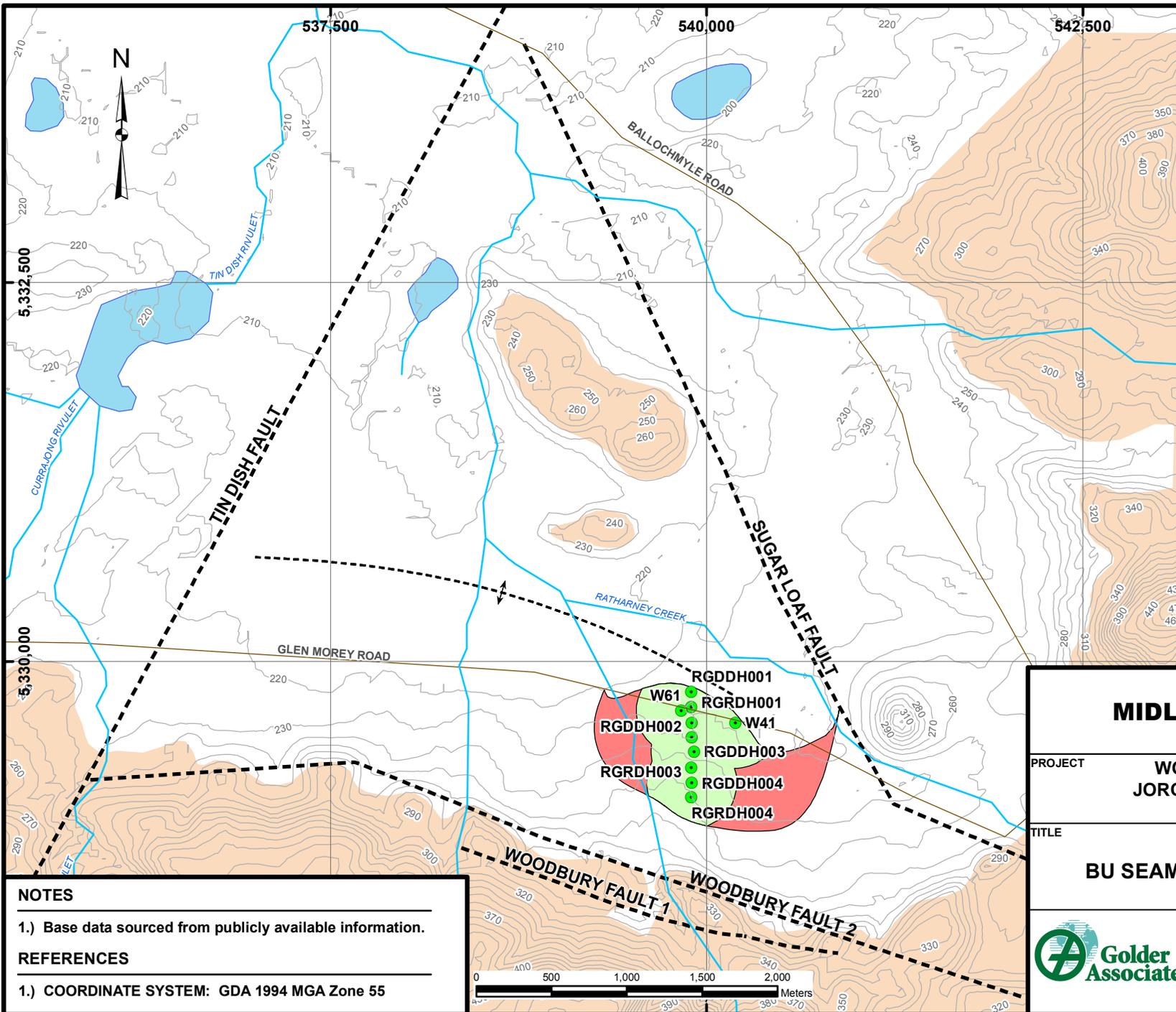
1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/19/2013	<b>APPENDIX D</b>
	CHECK	SK	11/19/2013	
	REVIEW	RRY	11/19/2013	



**LEGEND**

- Indicated Resources
- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- Existing Topography  
Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

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PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

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TITLE **BU SEAM RESOURCE CLASSIFICATION**

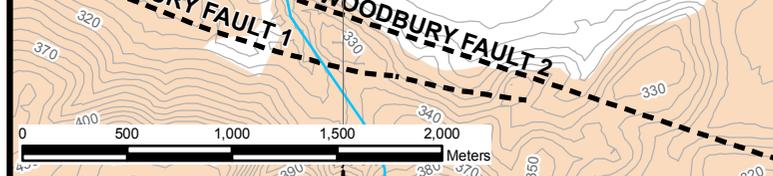
**NOTES**

1.) Base data sourced from publicly available information.

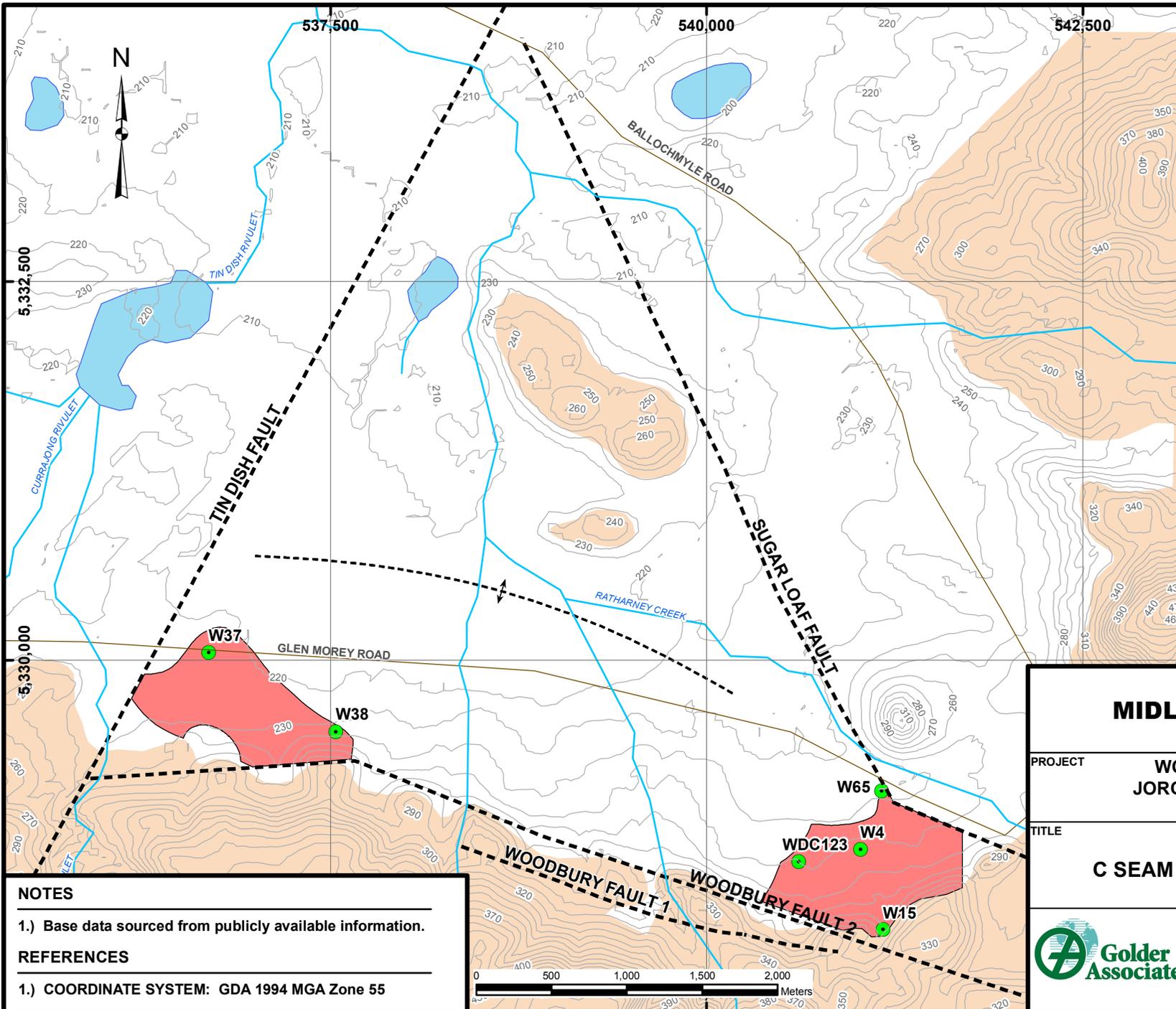
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**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



	PROJECT No.	137621114	DATE	NOVEMBER 2013
	DESIGN	A4	-	SCALE AS SHOWN
	GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- ↕ Anticline
- Existing Topography  
Contour Interval = 10m

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

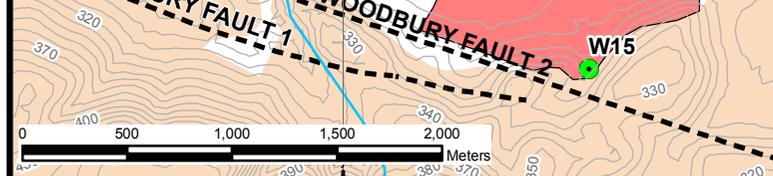
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**NOTES**

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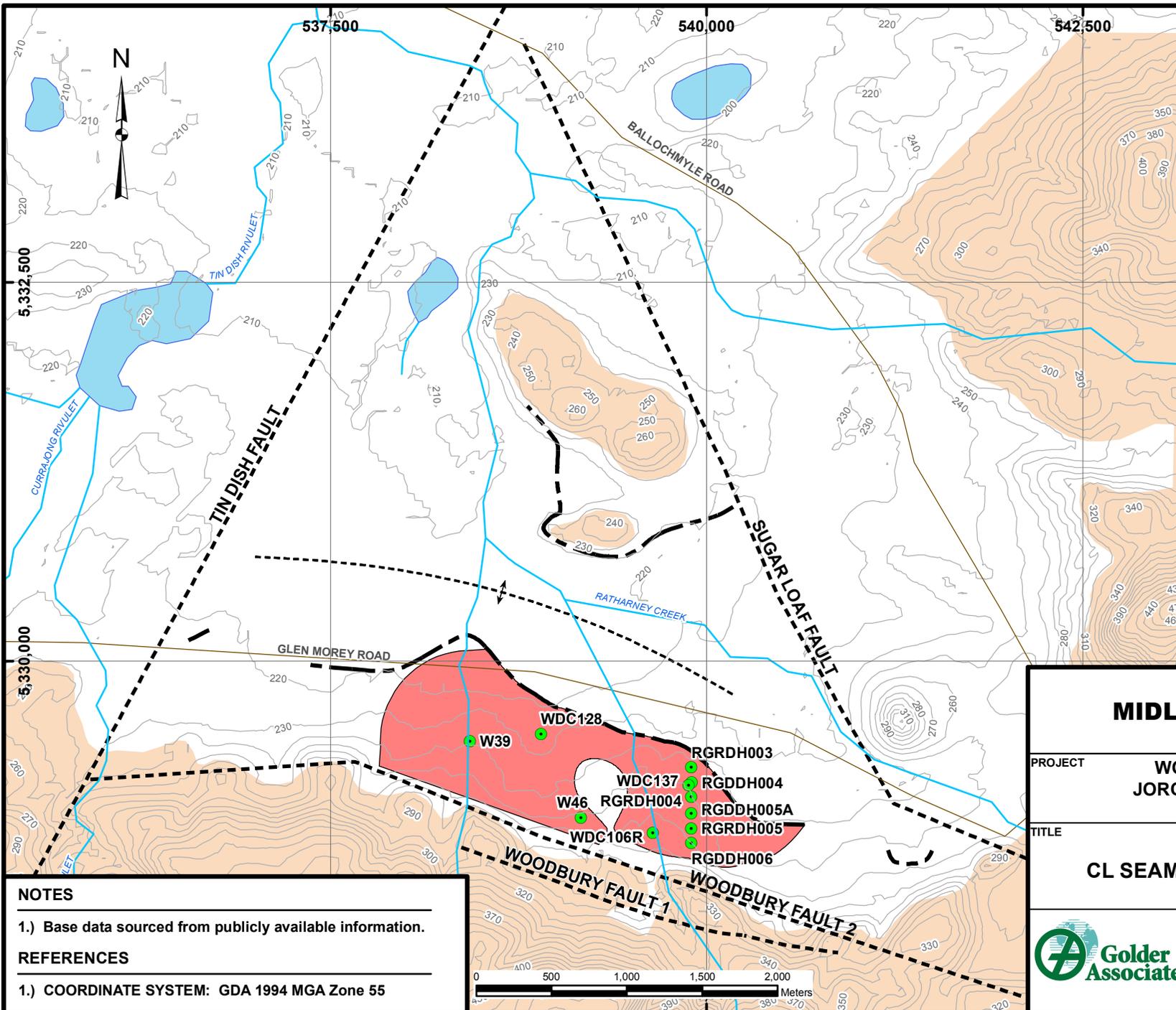
**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



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DESIGN A4	-	SCALE AS SHOWN
GIS WJS/JF	11/4/2013	<b>APPENDIX D</b>
CHECK SK	11/4/2013	
REVIEW RRY	11/4/2013	





**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- CL Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

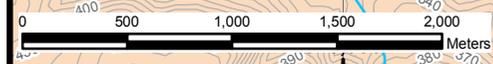
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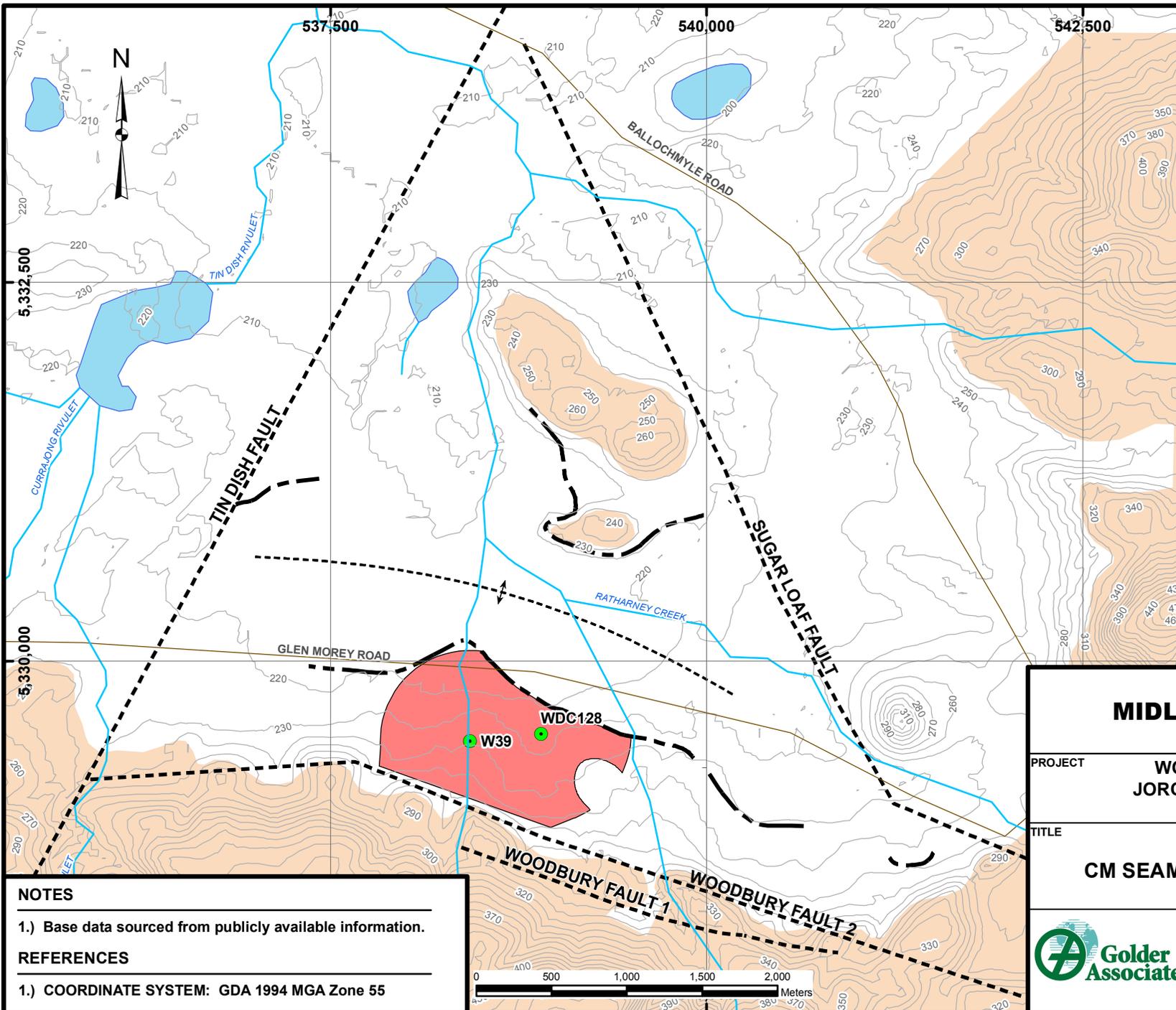
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**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



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	GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- CM Seam Subcrop
- Existing Topography  
Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

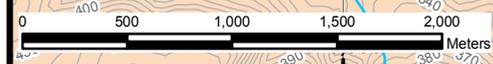
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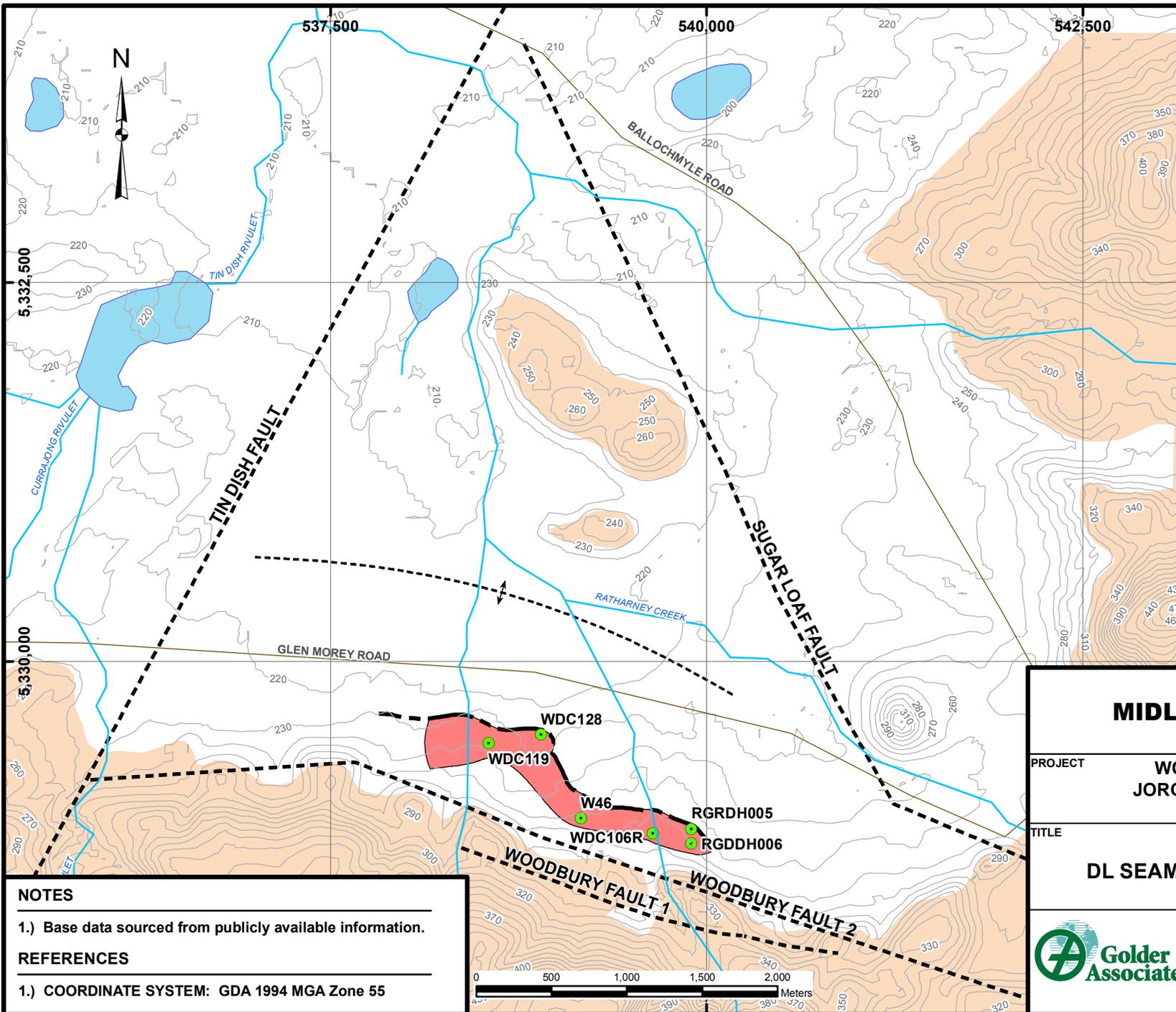
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**REFERENCES**

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	GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
	CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013		



**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- DL Seam Subcrop
- Existing Topography
- Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

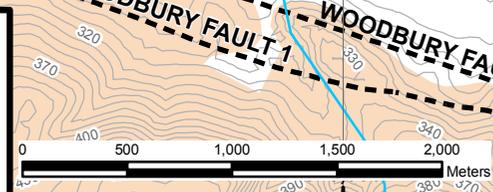
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1.) Base data sourced from publicly available information.

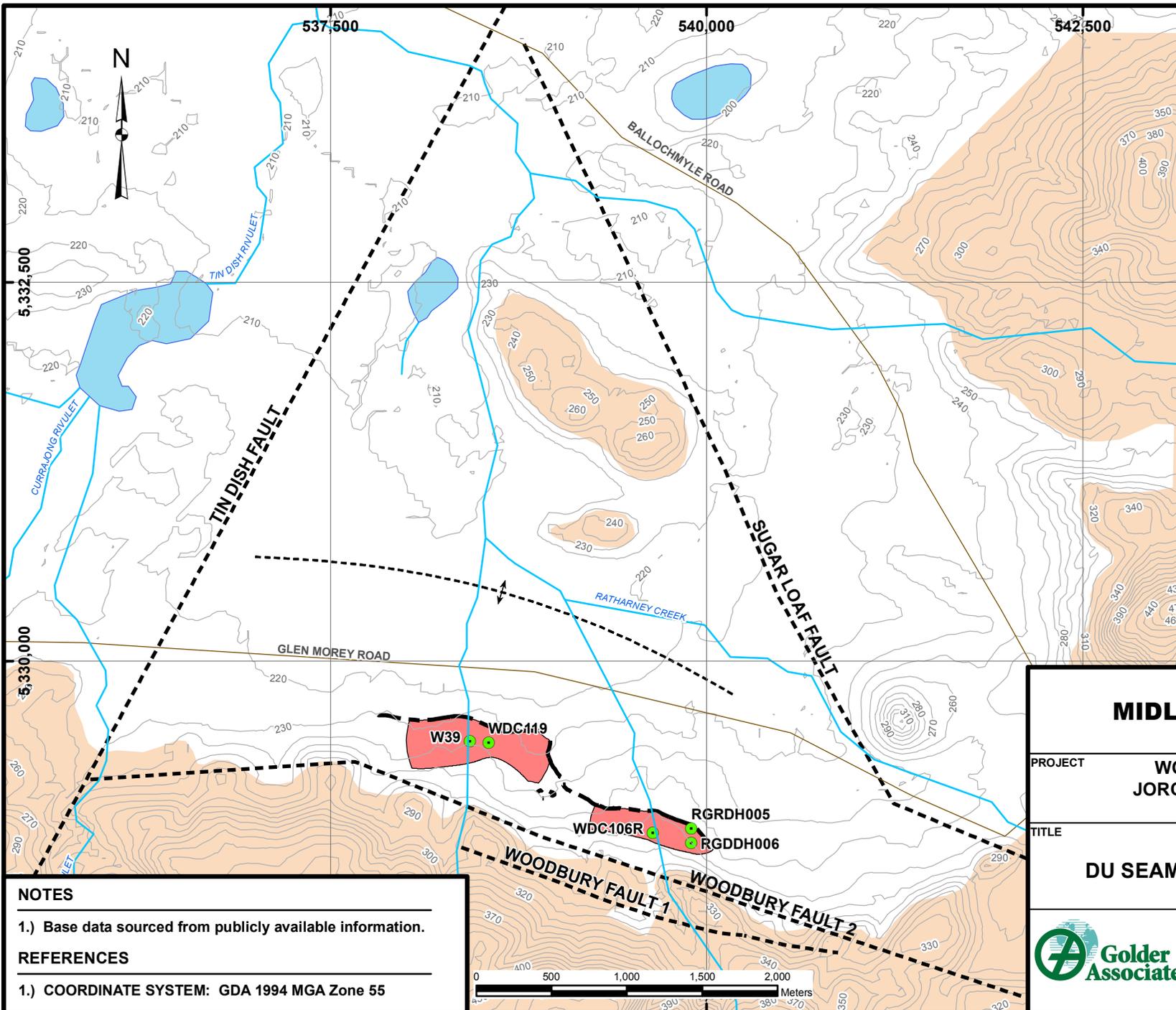
**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



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GIS	WJS/JF	11/4/2013	<b>APPENDIX D</b>
CHECK	SK	11/4/2013	
REVIEW	RRY	11/4/2013	





**LEGEND**

- Inferred Resources
- Dolerite
- Road
- Faults
- Anticline
- DU Seam Subcrop
- Existing Topography  
Contour Interval = 10m
- Points of Observation

**MIDLAND ENERGY LIMITED**

PROJECT **WOODBURY COAL PROJECT  
JORC 2012 RESOURCE ESTIMATE  
TASMANIA, AUSTRALIA**

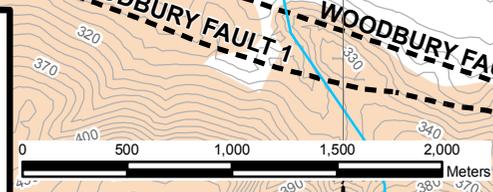
TITLE **DU SEAM RESOURCE CLASSIFICATION**

**NOTES**

1.) Base data sourced from publicly available information.

**REFERENCES**

1.) COORDINATE SYSTEM: GDA 1994 MGA Zone 55



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# **APPENDIX E**

## **Planned Exploration Program**

21 November 2013

Project No. 137621114

Mr Luke Marshall  
Midland Energy Ltd  
63 Boland Street  
Launceston TAS 7250

Via E-mail: luke@marres.com.au

## **EXPLORATION PLAN - WOODBURY EL 65/2007**

Dear Luke:

As part of a project to complete a Coal Resource estimate and subsequent JORC 2012 Resources statement in accordance with The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition (JORC Code, 2012), Midland Energy Ltd (Midland) has requested Golder Associates Pty Ltd (Golder) to complete the following scope of works in regards to the Woodbury Exploration License (EL 65/2007):

- Use the geological model created by Golder for the November 2013 Woodbury JORC Resources statement to assess the current drill coverage and spacing
- Plan a drilling program to identify the location, depth and coal quality analysis requirements to expand and increase the resource classification areas not currently included in the JORC Resources statement
- Prepare proposed borehole location maps and tables
- Document details and recommendations.

### **Activities**

Golder's project team reviewed the geological data from the Woodbury Minescape™ model for each coal seam within the Woodbury Resource Area (WRA); see Figure 1. The WRA is defined by three bounding faults, currently believed to limit the extent of the coal resources.

Golder recommends drilling 23 cored boreholes, totalling approximately 2,371 m, with the intention of increasing the area currently classified as an Inferred Resource. An optional 3 open boreholes are also suggested to further confirm the location/continuity of the coal seams. Details regarding the proposed boreholes can be seen below.

### **Proposed Drilling Program**

#### *Cored Boreholes*

Due to the complexity and current geological uncertainty of the WRA, Golder recommends an initial cored drilling program with an average borehole spacing of approximately 500 m with the aim of increasing confidence in the resource. This spacing was justified by the following factors.



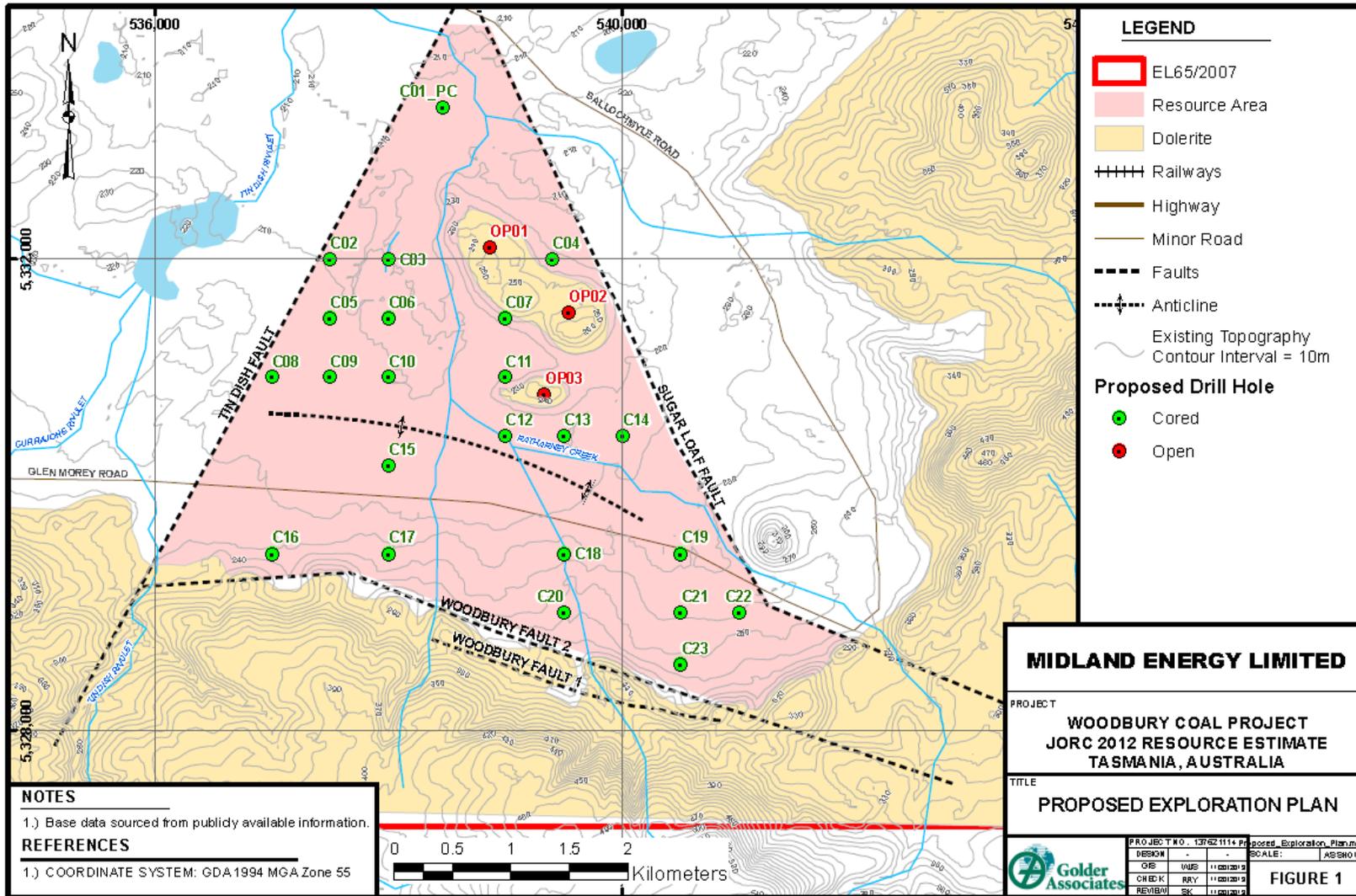


Figure 1: Proposed exploration plan

- The area is geologically complex with faulting, intrusions and seam splitting
- Borehole intercepts have not been obtained for all coal seams
- Insufficient quality data from seams and some areas of the resource
- Low level of geological confidence in some areas
- Lack of confidence of location of some coal subcrop lines.

Golder recommends drilling the 23 proposed boreholes to reduce the level of uncertainty within the WRA.

It should be noted that proposed cored borehole C01\_PC is not predicted to reach the first seam (DT Seam) until a depth of 139.7 m and that the drilling of this borehole would be expensive if drilled as a cored borehole. Golder recommends that depending on future drilling contract conditions that are negotiated, it may be more cost effective for Midland Energy to perform the following.

- Drill a narrow rotary pilot borehole to confirm the depth to the top of the first seam. Move the rig approximately 5 m and drill a second pre-collar open borehole down to about 10 m above the first seam, and commence coring from this point down to the predicted total depth of the borehole.

### ***Open Holes Optional***

In addition to the recommended 23 cored HQ boreholes, Golder suggests that an additional 3 open boreholes (Figure 1 - Location of the optional 3 open boreholes), totalling approximately 380 m, be drilled within the WRA. These additional 3 boreholes were planned to further assist with the geological model where data is lacking. Planned locations and total borehole depths are shown in Appendix 2.

Golder concludes that these open boreholes (OP01, OP02 and OP03) will assist in the confirmation of the thickness of the dolerite body and also confirmation of whether these are intrusions or an overlying sill. It was also thought that additional coal resource may be present below these dolerite bodies. The geological model at the time (and at present) excluded the two dolerite zones from the resources estimate. Drilling the 3 boreholes would depend on the ability of the drill rig to safely traverse the two dolerite structures.

The open boreholes are recommended to verify historic borehole data and to assist with the accuracy of the geological model.

Yours Sincerely

**GOLDER ASSOCIATES PTY LTD**



Aaron Radonich  
Senior Geologist

AR-SK/SR/ar



Stephen Kidcaff  
Senior Geologist

# APPENDIX 1

**Table 1: Survey locations – Proposed cored boreholes**

<b>Borehole ID</b>	<b>Easting</b>	<b>Northing</b>	<b>RL</b>	<b>TD (m)</b>
**C01_PC	538460.63	5333293.23	209.46	262
C02	537500.00	5332000	211.3	157
C03	538000.00	5332000	209.99	147
C04	539400.00	5332000	224.19	119
C05	537500.00	5331500	212.01	105
C06	538000.00	5331500	210.74	87
C07	539000.00	5331500	228.89	92
C08	537000.00	5331000	218.35	87
C09	537500.00	5331000	215.54	73
C10	538000.00	5331000	214.39	64
C11	539000.00	5331000	218.82	84
C12	539000.00	5330500	215.11	75
C13	539500.00	5330500	218.81	73
C14	540000.00	5330500	222.42	45
C15	538000.00	5330250	218.32	66
C16	537000.00	5329500	232.73	91
C17	538000.00	5329500	233.36	124
C18	539500.00	5329500	235.32	104
C19	540500.00	5329500	230.09	53
C20	539500.00	5329000	257.03	151
C21	540500.00	5329000	239.03	95
C22	541000.00	5329000	240.31	102
C23	540500.00	5328560.87	254.73	116

\*Coordinates GDA MGA 1994 UTM 55

\*\* Twin this borehole recommended

# APPENDIX 2

**Table 2: Survey locations – Proposed open boreholes**

Borehole ID	Easting	Northing	RL	TD (m)
OP01	538869.28	5332100.05	243.85	130
OP02	539540.21	5331551.10	250.57	133
OP03	539332.83	5330855.78	240.70	118

\*Coordinates GDA MGA 1994 UTM 55



# APPENDIX F

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## LIMITATIONS

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