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# GUILDFORD

COAL

26 July 2012

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Australian Stock Exchange  
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Sydney NSW 2000

## **JORC Statement for Maiden Indicated Resource on EPC 1477**

Please kindly see attached JORC Statement from independent geologist, for maiden indicated resource on Hughenden EPC1477 for the information of the market.

For and on behalf of Guildford Coal Limited

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# JORC Statement

## Hughenden Project

### EPC 1477

Prepared For: **Guildford Coal Limited**

Prepared By: **Moultrie Database & Modelling**

Mark Biggs  
Benjamin Smith  
Rafwal Descartes

Principal Geologist  
Project Geologist  
Resource Geologist

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July, 2012

# Declaration

## QUALIFICATIONS AND EXPERIENCE

This Report has been prepared by Mark Biggs for and on behalf of Guildford Coal Limited. Mark Biggs has over 31 years of experience in base metal, industrial mineral, coal exploration and mine evaluation throughout Australia. He has worked extensively within the Bowen and Surat Basins and was resident at several Central Queensland coal mines for 22 years. He has held a number of roles in these mine's Technical Services, including Senior Geologist, Chief Geologist, Coal Quality and Scheduling Superintendent and Acting Technical Services Manager. He is a Competent Person for coal as defined by the JORC Code (2004) and has extensive experience in open cut and underground geophysical techniques, coal quality, geotechnical and structural modelling, and scheduling.

Mark is the Principal Geologist for the Moultrie Group and works for the Database and Modelling division (MDM), which has been operating since 2007. His principal qualifications are a B. App. Sci. from the Queensland University of Technology and a M. App. Sci. from the same institution. Mark is a Member of The Australasian Institute of Mining & Metallurgy and Member and the Geological Society of Australia.

## INDEPENDENCE

Neither Mark Biggs nor MDM have a direct or indirect financial interest in, or association with Guildford Coal Limited, the properties and tenements reviewed in this report, apart from standard contractual arrangements for the preparation of this report and other previous independent consulting work. In preparing this report, MDM has been paid a fee for time expended based on its standard daily rates. The present and past arrangements for services rendered to Guildford Coal Limited do not in any way compromise the independence of MDM with respect to this review.

Drafts of this Model Report have been provided to Guildford Coal Limited, but only for the purposes of verifying factual information and the reasonableness of assumptions contained herein.

## LIMITATION

The views expressed in this Model Report are solely those of MDM and Mark Biggs, unless specifically identified within the report as those of other parties. To the extent permitted by law, Mark Biggs and MDM disclaims all liability for loss or damage (whether foreseeable or not and whether indirect or not) suffered by any person acting on the report or arising as a consequence of the information in the JORC Statement on estimated coal resources within EPC 1477 - Report No: MDM12-0099.V2, whether such loss or damages arises in connection with any negligence, default or lack of care on behalf of other parties associated with the preparation of the report.

## CONSENT

MDM hereby consents to the inclusion of this Information Memorandum in Guildford Coal Ltd company reports in both electronic and hard copy format, in the form and context in which it appears. As at the date of Information Memorandum set out above MDM has not withdrawn consent.

MDM was only commissioned to prepare the Information Memorandum and has only authorised issue of this Report on Guildford Coal Limited' exploration tenements specified in the Report. It has not been involved in the preparation of, or authorised issue of, any other part of the report in which this Information Memorandum is included.

## DISCLAIMER

This Report is to be read as a whole, and sections or parts thereof should therefore not be read or relied upon out of context. This disclaimer must accompany every copy of the Report, which is an integral document and must be read in its entirety.

# Northern Galilee Coal Projects

## Resource Overview July 2012

### Background

Guildford Coal's (ASX:GUF) Hughenden, Pentland and White Mountain Projects are located in the northern end of the coal - bearing Galilee Basin in Queensland, Australia. The Projects cover approximately 16,500 square kilometres of exploration permits for coal, all of which have been granted.

As at the 30<sup>th</sup> June 2012, the **Hughenden Project** has a **1.619Bt** JORC Inferred Resource of thermal coal in the Permian Betts Creek Beds in northern Galilee Basin at depths suitable for underground mining (depths 350 -600m), mainly across EPC 1477. There is a further Exploration Target<sup>#</sup> of **285Mt to 2.83Bt** across this project in twelve other tenures.

The **White Mountain Project** has a **262Mt** JORC Inferred Resource of thermal coal in Permian Betts Creek Beds in northern Galilee Basin at depths suitable for open cut mining (depths 45 -250m). There is a further Exploration Target<sup>#</sup> of **40Mt to 815Mt** across this tenure and several adjoining EPC's (Palaris Consultants).

The **Pentland Project** has an independent consulting geologist's (MDM) estimated Exploration Target<sup>#</sup> of **295Mt to 2.89Bt** of coal with thermal potential from north-eastern Galilee and Eromanga Basins at varying depths (40 – 500m).

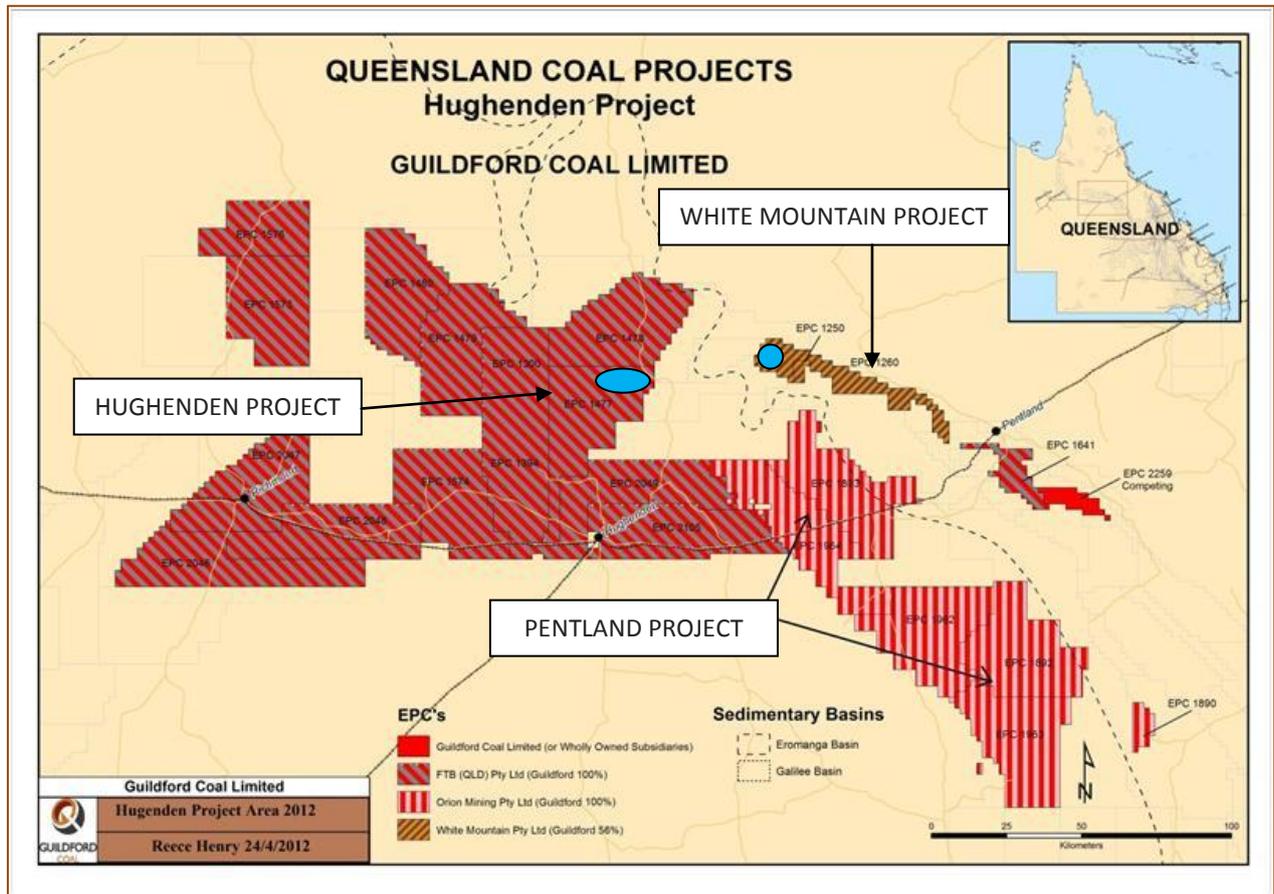
These Projects have the scale and potential to support multiple open cut and underground mining operations producing substantial export thermal coal tonnages which are located in close proximity to infrastructure, with the Mt Isa to Townsville rail line running across the project area. There is currently a combined **1.881Bt** JORC Inferred Resource and a further Exploration Target<sup>#</sup> declared of **0.62 Bt to 6.535 Bt** estimated by independent geologists across the combined Northern Galilee Projects.

This document provides background to the recent maiden announcement of the calculation of an Indicated Resource at the Hughenden Project and the ongoing exploration effort, which will lead to a revision of the Inferred Resource and Exploration Target estimates for EPC's 1477 and 1478 in the near future. A program of planned deep, partially-cored boreholes is continuing and the results emanating from this program are continuing to reshape Guildford's knowledge and understanding of the sub-surface geology of the Hughenden Project.

# Allowances have been made for unexpected geological loss due to seam discontinuity and unexpected structure. It should be noted that the potential quantity and grade quoted in above are conceptual in nature, that there has been insufficient exploration to define a Coal Resource and that it is uncertain if further exploration will result in the determination of a Coal Resource.

Figure 1 (below) generally outlines the location of the Inferred Resource masks in the Hughenden and White Mountain Projects.

Figure 1 Guildford Coal North Queensland Projects Locality Map



Source: Guildford Coal Limited 2012

Guildford wholly owns the subsidiary FTB (Qld) Pty Ltd which holds the following tenements EPCs 1394, 1477, 1478, 1479, 1480, 1573, 1574, 1576, 2046, 2047, 2048, 2049 and 2105 contained in the northern end of the Galilee Basin, Queensland Australia and which form the Hughenden Project.

# HUGHENDEN CURRENT INVESTIGATIONS

In February 2012, independent geologists Moultrie Database and Modelling (MDM) had previously estimated a JORC Inferred Resource of **1.619Bt of thermal coal** on EPC1477 and EPC1478 at depths suitable for underground mining (250 - 650m.) Importantly this resource domain represented less than 2% of the Hughenden Project total tenement area.

MDM had also previously completed a comprehensive compilation and assessment of recent and historical geological and exploration data in September 2011 and developed an Exploration Target<sup>#</sup> of **0.285 Bt to 2.83 Bt** for the Hughenden Project (across the thirteen (13) tenures). It should be noted that the bulk of the tonnage occurs within EPC 1477, being 1,424.4 Mt of the Permian Betts Creek Beds.

The Inferred Resource will be re-estimated shortly after the completion of a basement modeling exercise and review of the correlation of the Jurassic-aged coal seams. This Inferred Resource may be affected by several factors, as listed below:

- The northern extent of the deposit has been truncated prematurely due to the fact that the Permian sequence onlaps igneous and metamorphic basement rocks in a northerly direction. The Cretaceous –Jurassic Eromanga Basin formations continue over the onlap but coal seam development has thinned to the north as well;
- Detailed laboratory results from ply-by-ply sampling has reclassified some inferior coal horizons as stone and hence excludes them from resource calculations;
- Slightly tighter definitions of seam roof and floor classifications have resulted in thinner seam thicknesses;
- Further studies of coal seams in the overlying Jurassic formations (Ronlow Beds and Blantyre Sandstone) in the south-western part of the EPC 1477 suggest that these tonnages should be downgraded to Exploration Targets from Inferred, due to the high ash and lenticular nature of the reported coal seams.

This re-evaluation could ultimately lead to an as yet un-quantified reduction in the size of the Inferred Resource, possibly offset by additional Points of Observation increasing the domain size (i.e. through additional drilling that is ongoing).

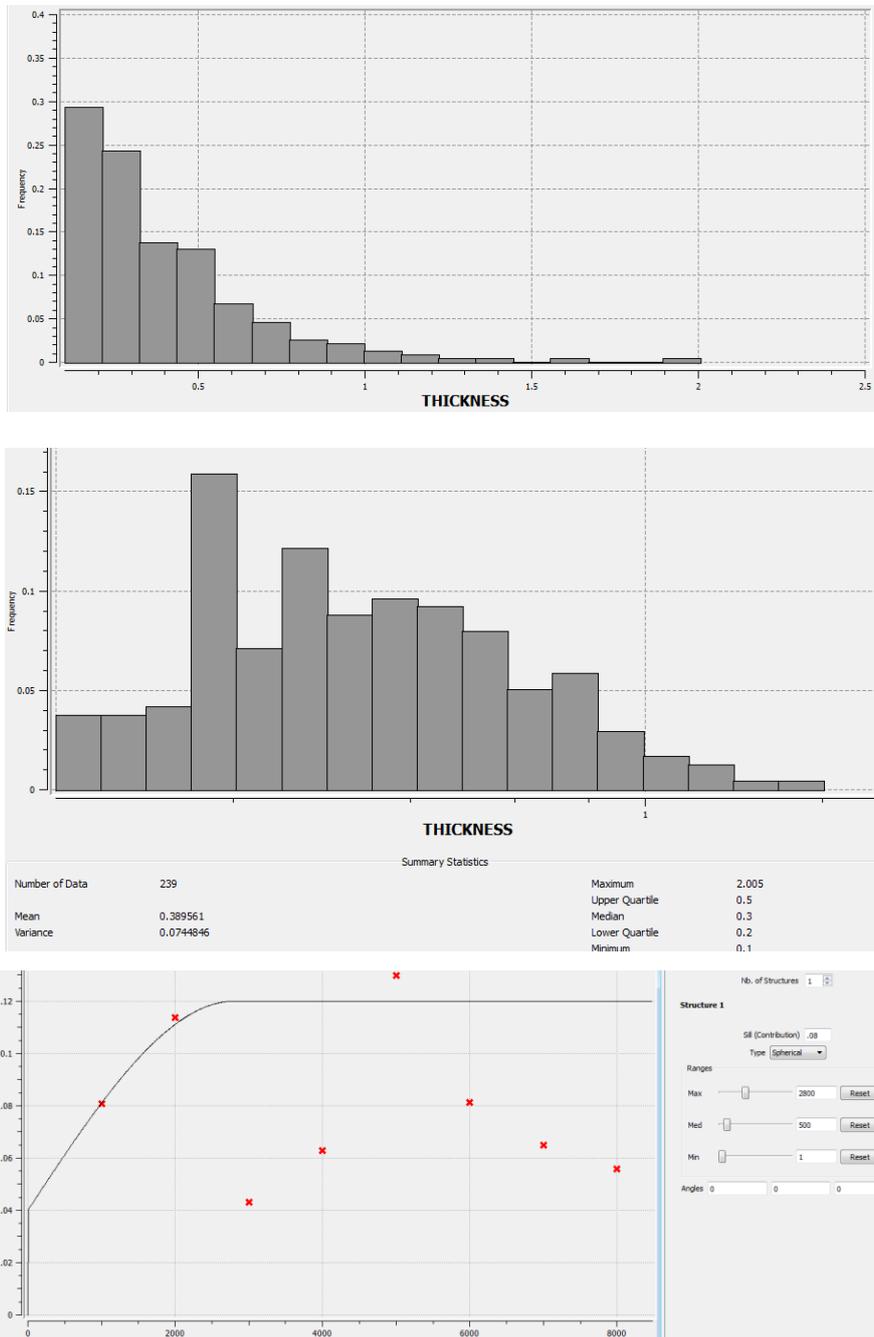
As exploration is ongoing and some coal quality analyses are yet to be received from the laboratory, updates to the Inferred Resources and Exploration Target estimates are still in progress.

## Geostatistical Study

As support for the calculation of Indicated Resources, a detailed statistical and geostatistical analysis of both the coal seam thicknesses and raw coal quality results was initiated, that investigated both the downhole and spatial continuity of the data distributions. This study was conducted by experienced MDM personnel, led by Dr Suresh Tripathi.

A total number of 239 samples were analysed from six (6) partially-cored boreholes. The distribution of coal seam appears to be positive skewed distribution with 2 high (fault thickened?) values observable. However, log transformation shows more symmetric distribution as shown in **Figure 2**.

**Figure 2** Hughenden Project, Indicated Resource area, All Seam Thicknesses



Notes:

- 1.) Figure 2a shows Histogram of all pick coal seams, raw data
- 2.) Figure 2b shows Histogram of log-transformed thickness, as the distribution appears log-normal
- 3.) Figure 2c shows an omni-directional semi-variogram of the log-transformed thickness data. A simple spherical model has been fitted.

Source: MDM 2012

## Experimental Variogram for Coal Seam Thickness

The experimental variogram of coal seam thickness was calculated to detect any anisotropy variation. From **Figure 2c**, it appears that any isotropy variation is within range of influence (approximately 2,400m). All cored boreholes in north-east region of EPC 1477 appear to be spatially correlated.

## Experimental Variogram for Coal Qualities

Similarly, a series of experimental variograms for raw coal quality parameters Ash, VM and CV were also estimated in the downhole direction for each 3 partially-cored boreholes. Again experimental semi-variograms were used to investigate the distributions, with simple linear or spherical models being able to be fitted. In this direction, the range of influence is approximately 1m.

## Conclusions

Based on further investigation it was shown that an elliptical search with 600m radius can be used to calculate Indicated Resources without significant loss to the confidence level of the estimate.

Thus, the larger volume of ply-by-ply coal quality sampling for the main Betts Creek Beds seams provided the confidence in estimating their continuity and consistency, both on an intra and inter-deposit basis, and was used to support a borehole spacing that was extended beyond the normal spacing distance as recommended under the Australian Coal Guidelines, 2003. The basis of this extension was a detailed geostatistical analysis of both the coal seams and the coal quality results as exploration developed. Consequently it was decided that the study supported a slight increase in the distance between Points of Observation for Indicated Resources from a 1 km diameter to 1.2 km. This distance is consistent with figures being reported by other Galilee Basin explorers, most notably Hancock Coal. No change has been recommended for Inferred Resource distances.

## Indicated Resource Calculation

For the previous resource model boreholes (H005C, H008, H009, H012B, H013B, H015 and H017) were used to estimate an Inferred Resource tonnage. After further exploration conducted by Guildford Coal Ltd, a further five (5) partially-cored boreholes (H025, H026A, H030, H031 and H032) have been completed and added to the sample data for an update to the resource estimate (refer to **Figure 3**). **Table 1** below summarises the latest calculations for JORC Indicated Resources. Exploration Targets for the remainder of EPC 1477 are yet to be re-estimated. Since the February 2012 report, another four (4) cored holes, with detailed ply-by-ply coal quality sampling has been completed, bringing the total to twelve (12) partially cored boreholes sampling the Betts Creek Beds across the lease, and enabling the calculation of a maiden Indicated Resource on EPC1477. The Minescape model was revised, and new tonnages estimated. The total Indicated Resource is 123.63 Mt and is tabulated below.

**Table 1 - EPC 1477 Indicated Resource Tonnage Summary**

Formation	Age	Seam Group	Indicated Resource (Mt) <sup>1</sup>
Glendower Formation	Tertiary	GS1-3	-
Ronlow Beds	L. Cretaceous - Jurassic	RS1-4	-
Blantyre Sandstone	Mid-Jurassic	BS1-4	-
Betts Creek Beds	Upper Permian	BC1	20.54
		BC2	21.06
		BC3	9.84
		BC3L	10.91
		BC4	44.76
		BC5	14.45
		F	1.40
		G	0.67
	<b>TOTAL</b>		<b>123.63</b>

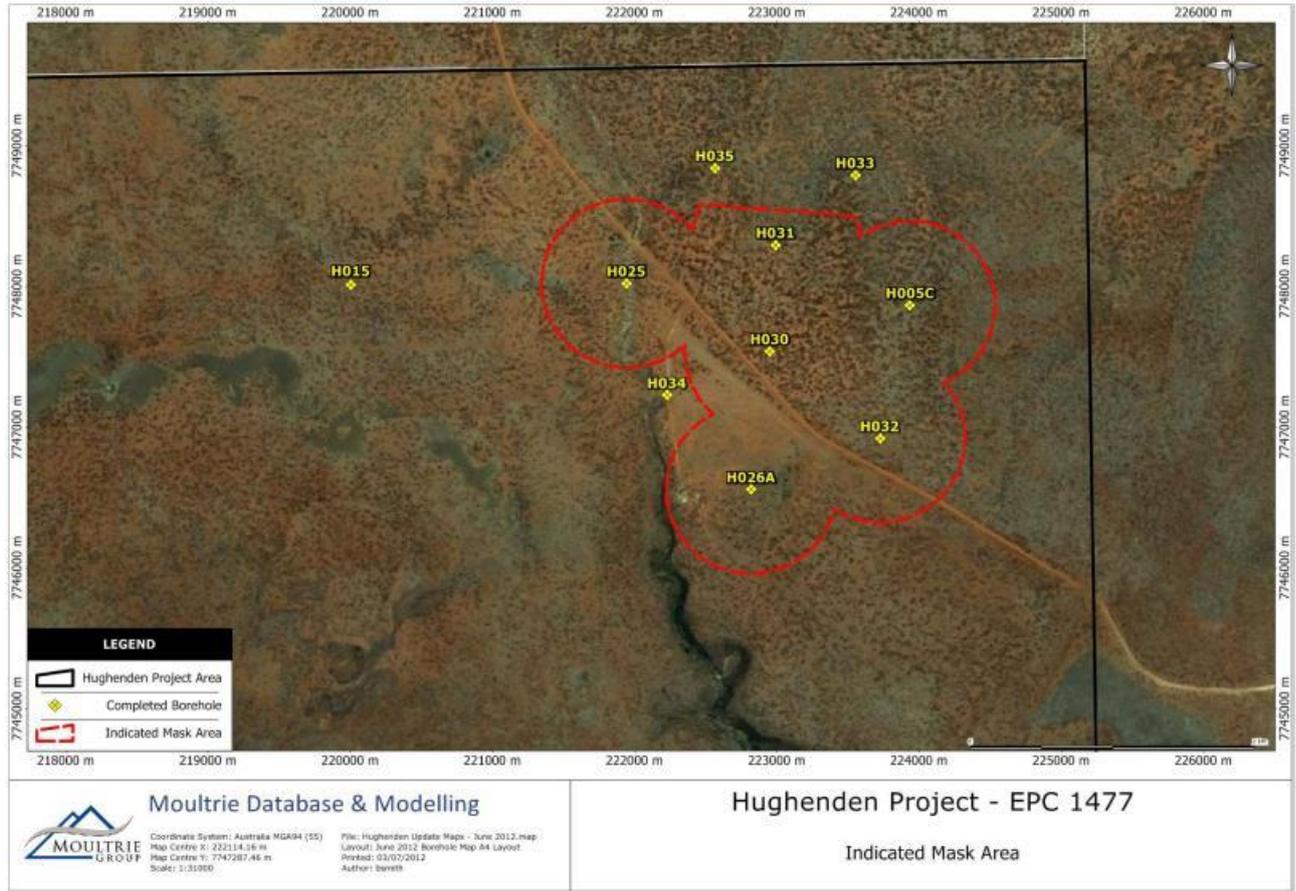
Source: MDM 2012

<sup>1</sup> Constraints on the Indicated Resources are as follows:

- 1.) Coal seams not intruded or not outside the tenure boundaries;
- 2.) Coal thicknesses <0.3m excluded;
- 3.) The depth range of calculation was from the base of weathering to 650m below natural topography;
- 4.) Coal seams >50% adb from coal quality or estimated from downhole density logs (in g/cc) were excluded from the calculations;
- 5.) A discount factor varying from 5-20% has been subtracted from the initial calculation for unexpected geological losses. This accounts for unexpected conditions such as seam thinning, splitting, or seams missing in barren zones around faults.
- 6.) The mine planning package used was Minescape and seam structure and thickness contours were generated using standard modelling algorithms and methodologies. Indicated Resource masks were generated from base circles drawn 1,200m between Points of Observation;
- 7.) Points of observation were defined as those boreholes that had known surveyed positions, detailed lithological logs coverage of the target coal seams with a suite of downhole geophysical logs that must include density in units of Kg/m<sup>3</sup>, had >90% sample recovery; and where the seams were HQ diamond cored and had coal sampled and analyses for a suite of raw and washed, simulated product analyses;

The associated coal quality model for the Indicated Resources is awaiting some final analyses to be returned and validated from the NATA-accredited coal laboratory, Bureau Veritas Mackay, and once finalised, the results will be released to the market. Analyses on hand indicate a low to moderate-ash thermal product.

Figure 3 EPC1477 Indicated Masks showing Points of Observation

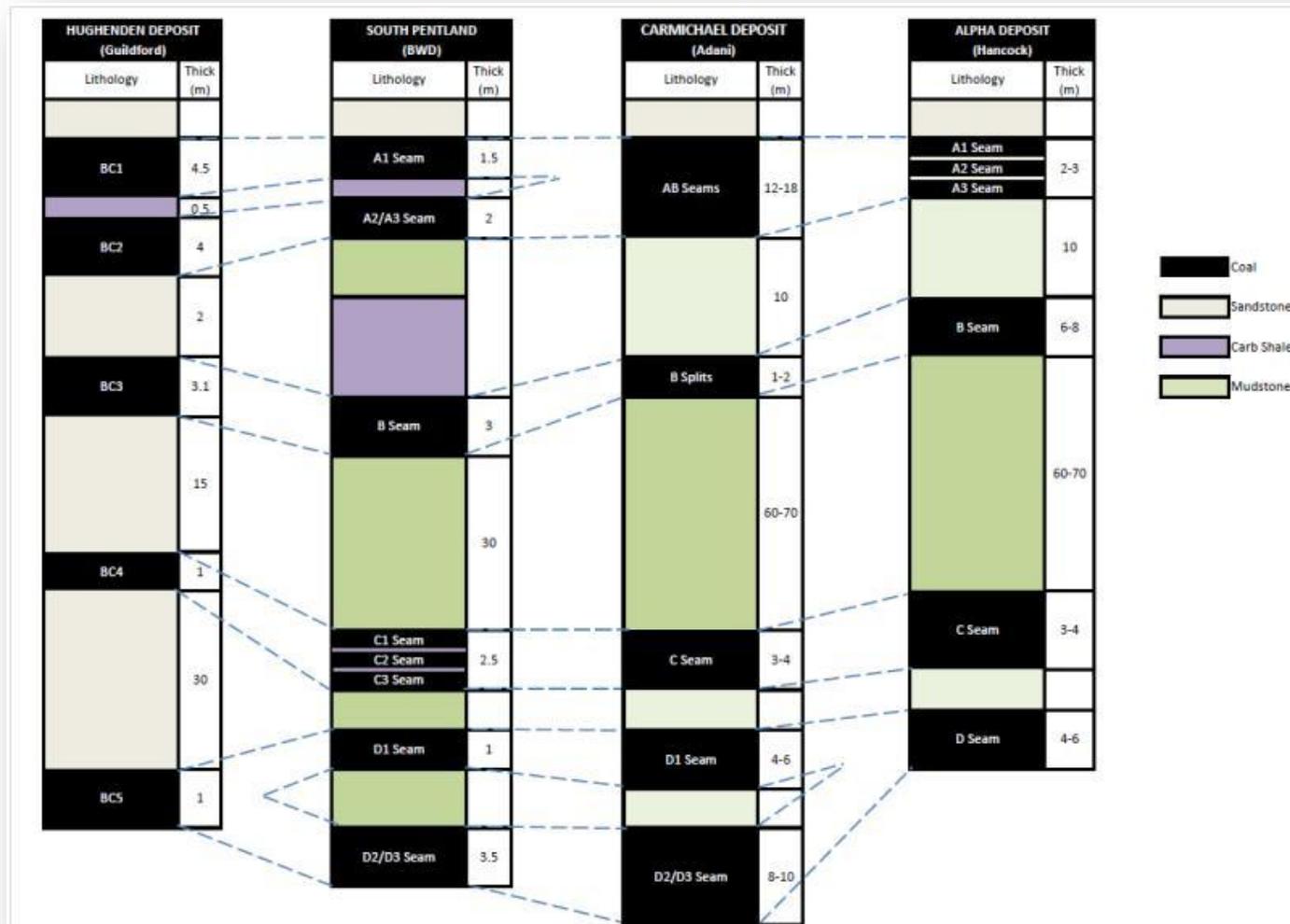


Source: MDM 2012

Further assessment of the coal quality is to be conducted with the analysis of working sections and washabilities ultimately providing the best guidance for target product quality for the Hughenden Project. Based on results to date, an export thermal coal with low-moderate ash (initial estimate 15% adb), moderate calorific value (initial estimate 5,800 kcal/kg adb) and low sulphur (initial estimate 0.5% adb) appears achievable.

The stratigraphy of the coal reported in this resource (refer to **Figure 4**) correlates well with regional stratigraphy that has been previously published for the Galilee Basin, with the Betts Creek Beds Coal Sequence proving similar to that defined at the Adani – Carmichael Deposit and the Hancock – Alpha Deposit.

Figure 4 Gross Correlation of the Colinlea Sandstone and Betts Creek Beds, Eastern margin of the Galilee Basin, Queensland



Source: modified after Blackwood Corporation 2011 (ASX: BWD Figure 2, page 3, ASX release 21-Nov-2011)

# Statement of JORC Compliance

## Resource Estimation:

The estimates of Exploration Targets, and Coal Resources presented in this Report are considered to be a true reflection of the Coal Resources as at 14<sup>th</sup> June 2012 and have been carried out in accordance with the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' prepared by the Joint Ore Reserves Committee (JORC), the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Minerals Council of Australia, December 2004.

The undersigned have sufficient experience relevant to the style and type of coal deposit under consideration and to the activity, which is being undertaken to qualify as a Competent Person (or Recognised Mining Professional) or Technical Specialists as defined in the 2004 Edition of the JORC Code. The undersigned consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

## Competent Persons Qualification

This Report has been prepared by Mark Biggs for and on behalf of Guildford Coal Limited. Mark Biggs has over 31 years of experience in base metal, industrial mineral, coal exploration and mine evaluation throughout Australia. He has worked extensively within the Bowen and Surat Basins and was resident at several Central Queensland coal mines for 22 years. He has held a number of roles in these mine's Technical Services, including Senior Geologist, Chief Geologist, Coal Quality and Scheduling Superintendent and Acting Technical Services Manager. He is a Competent Person for coal as defined by the JORC Code (2004) and has extensive experience in open cut and underground geophysical techniques, coal quality, geotechnical and structural modelling, and scheduling.

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Name	Job Title	Professional Affiliation	Experience (Years)
M Biggs	Principal Geologist Moultrie Database & Modelling	AusIMM 107188	30



Mark Biggs M.App.Sci. B.App.Sci, MAusIMM 107188

## Technical Specialist

The following Technical Specialist (who may or may not be Competent Persons) was involved in the preparation of the Coal Resource and have appropriate experience in their field of expertise with regards to the activity that they are undertaking and consent to the inclusion in the report of the matters based on the relevant technical information in the form and context in which it appears.

Name	Job Title	Professional Affiliation	Experience (Years)	Area of Responsibility	Signed
Suresh Tripathi	Project Manager Moultrie Database & Modelling	AUSIMM 202682	15	Geostatistical Review	