



PHONE: +61 2 6376 1500 FAX: +61 2 6376 1599

WEBSITE: www.moolarbencoal.com.au

ABN: 59 077 939 569

11 July 2014

NSW Department of Planning and Environment GPO Box 39 SYDNEY NSW 2001

Attention: Strategic Regional Policy

Dear Sir/Madam,

Moolarben Coal Mine Site Verification Certificate Application

The Moolarben Coal Mine open cut and underground coal mining operation is located approximately 40 kilometres (km) north of Mudgee in the Western Coalfields of New South Wales (NSW). Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Mine on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies). MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited.

MCM is seeking a Site Verification Certificate for lands located wholly within Exploration Licence 6288 (the Study Area). The Study Area is located immediately adjacent to MCM's existing Mining Leases 1606, 1628 and 1605 and is shown on Figure 1.

The majority of the Study Area consists of heavily vegetated slopes and the cleared land that is located within the Study Area has a low potential for commercial agricultural land use. This is reflected in the NSW Government regional mapping, which shows that the nearest Biophysical Strategic Agricultural Land ("BSAL") is located approximately 20 km east of the Study Area.

MCM engaged Dr David McKenzie (McKenzie Soil Management) (Certified Professional Soil Scientist – Stage 3) to determine whether the land within the Study Area constitutes BSAL. Dr McKenzie utilised a combination of desktop and field methods to assess the soil within the Study Area against the criteria outlined in the *Interim protocol for site verification and mapping of biophysical strategic agricultural land* (NSW Government, 2013). A description of the methodology adopted for the BSAL assessment is included in Attachment 1.

Dr McKenzie inspected 8 detailed soil sampling sites (Figure 2). The results of the soil sampling is included in Attachment 2 and summarised in the table below.

Site	BSAL Status	Reason
M1	NON-BSAL	pH measured in water < 5.0
M2	NON-BSAL	Depth to Physical Barrier < 750 mm
M3	NON-BSAL	Depth to Physical Barrier < 750 mm
M4	NON-BSAL	pH measured in water < 5.0
M5	NON-BSAL	Depth to Physical Barrier < 750 mm
M6	NON-BSAL	Depth to Physical Barrier < 750 mm
M7	NON-BSAL	Depth to Physical Barrier < 750 mm
M8	NON-BSAL	Depth to Waterlogged Layer < 750 mm

Consequently, MCM requests that a Site Verification Certificate is issued for the Study Area that concurs with Dr McKenzie's conclusion that the land is non-BSAL.

Please do not hesitate to contact the undersigned should you wish to discuss.

Yours sincerely,

Mark Jacobs

General Manager, Environment, Approvals & Community Relations

Attachments

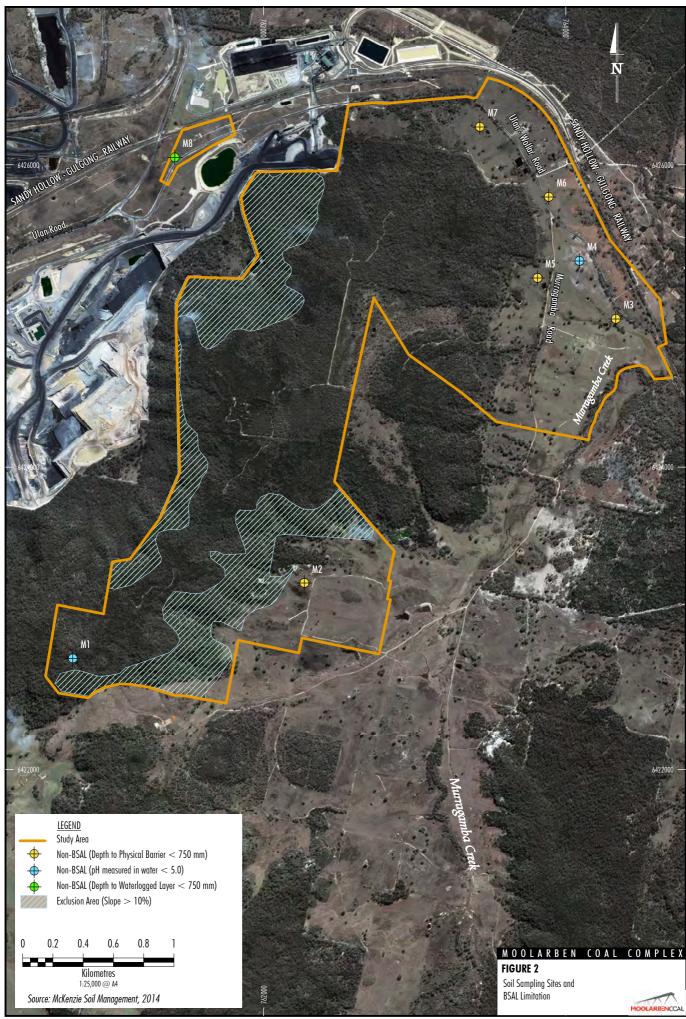
Attachment 1: Moolarben BSAL Assessment Methodology

Attachment 2: Moolarben BSAL Assessment (Dr David McKenzie, 2014)

Attachment 3: Landholder Notification

Attachment 4: Reconciliation of OEH Assessment Requirements





ATTACHMENT 1

MOOLARBEN BSAL ASSESSMENT METHODOLOGY





Moolarben Biophysical Strategic Agricultural Land Assessment Methodology

This document describes the methodology adopted for the Biophysical Strategic Agricultural Land (BSAL) Assessment for the Moolarben Coal Mine.

Assessment Requirements

The NSW Government guideline for the verification and mapping requirements to determine the presence of BSAL is included in the *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* (NSW Government, 2013) (Interim Protocol). A flow chart with the steps used to assess BSAL is provided in Figure 1.

The following description outlines how particular factors in the BSAL flow chart were interpreted for this study:

- "Physical barrier" (Step 8) defined as 'hard rock' or a layer with >90% coarse fragments.
- "Soil drainage better than poor" (Step 9) poor drainage for the purpose of this report is
 determined by visual assessment of waterlogging indicators, i.e. the presence of mottling and/or
 black manganiferous nodules or concretions (>20% if present on its own) within the depth interval
 0-750 mm.

The BSAL assessment for the Moolarben Coal Mine was undertaken in a staged manner as follows:

- Stage 1: Slope Analysis slope mapping was generated from LiDAR data in order to identify areas of greater than 10% slope, which cannot be BSAL (i.e. Exclusion Areas).
- Stage 2: Soil Survey a soil survey was carried out by Dr David McKenzie. Dr McKenzie has Certified Professional Soil Scientist Stage 3 accreditation (http://www.cpss.com.au/) from Soil Science Australia, a PhD in soil science and 'Chartered Scientist' accreditation with British Society of Soil Science.

A description of each stage of the assessment is provided below.

Stage 1: Slope Analysis

A combination of contours developed from LiDAR data and 1 second SRTM Derived Digital Elevation Models (Geoscience Australia, 2011) were used to develop slope mapping for the Study Area.

Global Mapper (version 15.1) was used to process the LiDAR data and map the slope classes (i.e. <5%, 5% to 10% and >10%). The slope mapping for the Study Area is presented in Attachment 2 of the Site Verification Certificate Application and the Exclusion Areas are shown on Figure 2.

Stage 2: Soil Survey

Dr McKenzie undertook a soil survey for the Study Area on 14 May 2014. The soil survey included general observations of the Study Area as well as the sampling of 8 selected locations via hand auger and spade.

No soil samples were sent for laboratory testwork as the soil at each sampling site failed at least one of the BSAL criteria in the field (e.g. depth to physical barrier).





The soil sampling density for the various Study Areas were developed based on the recommended sampling densities described in the Interim Protocol as follows:

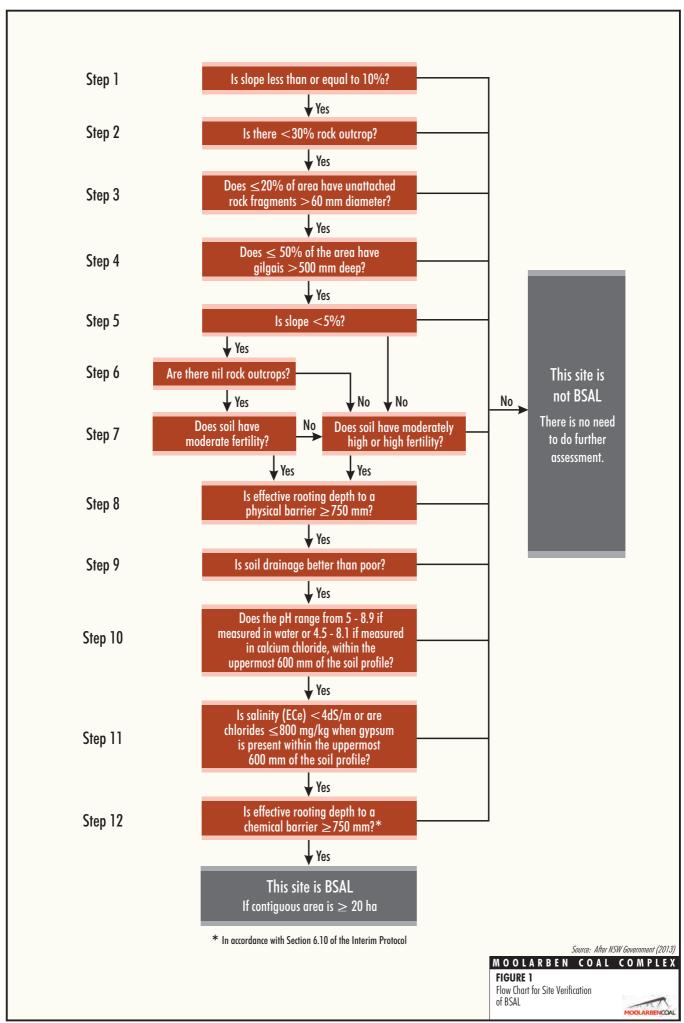
- 1 site per 25 400 hectare (ha) for low risk; and
- 1 site per 5 25 ha for high risk.

The Interim Protocol goes on to state that an activity located in an area where no agricultural land use exists, such as in a well forested area, should be considered low risk. Given the majority of the Study Area is considered well forested, and further developments to the Moolarben Coal Mine would generally be associated with underground mining, a survey intensity of approximately 1 site per 78 hectares was adopted for land outside of the Exclusion Areas (Figure 2). It is also noted that cleared land within the Study Area has a low potential for commercial agricultural land use, and there is a low risk of conflict with adjoining agricultural lands. Sampling was focussed on areas with higher existing agricultural land use potential (e.g. cleared areas).

The following characteristics were assessed for each soil layer identified at each sampling site:

- thickness of each layer (horizon);
- soil moisture status at the time of sampling;
- pH (using Raupach test kit);
- colour of moistened soil (using Munsell reference colours);
- amount and type of coarse fragments (gravel, rock, manganese oxide nodules); and
- presence/absence of free lime and gypsum.

Results of soil sampling at each site is presented in Attachment 2 of the Site Verification Certificate Application.





ATTACHMENT 2

MOOLARBEN BSAL ASSESSMENT

23 June 2014

Luke Bowden
Moolarben Coal Operations Pty Ltd
Locked Bag 2003
MUDGEE NSW 2850



P.O. Box 2171 ORANGE NSW 2800

ph: (02) 6361 1913 f: (02) 6361 3268 e: david.mckenzie@soilmgt.com.au

www.soilmgt.com.au ABN 37 076 676 616

MOOLARBEN BSAL ASSESSMENT, MAY 2014

Dear Luke

I visited Moolarben Coal Mine and its surrounds on 14 May 2014.

I inspected the 8 sites shown on Figure 1 where soil samples had been spade/augured to determine whether the land in the Study Area is Biophysical Strategic Agricultural Land (BSAL) in accordance with the NSW Government (2013) Interim Protocol for site verification and mapping of biophysical strategic agricultural land.

Within the Study Area, soil sampling sites were located in positions where BSAL was most likely to be found. For example, soil sampling took place on the flattest area along the vegetated ridgeline rather than on the steeply sloping sections.

Field observations relevant to BSAL status are shown in Table 1. Photographs of soil profiles and landscapes for each of the 8 sites are presented in Table 2 and the results of soil description are presented in Table 3.

According to NSW Government regional BSAL mapping, the nearest BSAL is located more than 20 km to the east of the Study Area.

In addition to the soil sampling program, the following information/mapping has been considered in this assessment (Figures 1 to 5):

- aerial photography;
- slope mapping;
- NSW Government soil type mapping;
- NSW Government inherent soil fertility mapping; and
- NSW Government Land and Soil Capability Classes.

There was no evidence of BSAL at any of the sampling locations or through general observations of the Study Area. Therefore, the land within the Study Area should be considered verified non-BSAL.



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www.soilmgt.com.au

ABN 37 076 676 616

Yours sincerely

Dr David McKenzie

Certified Professional Soil Scientist – Stage 3

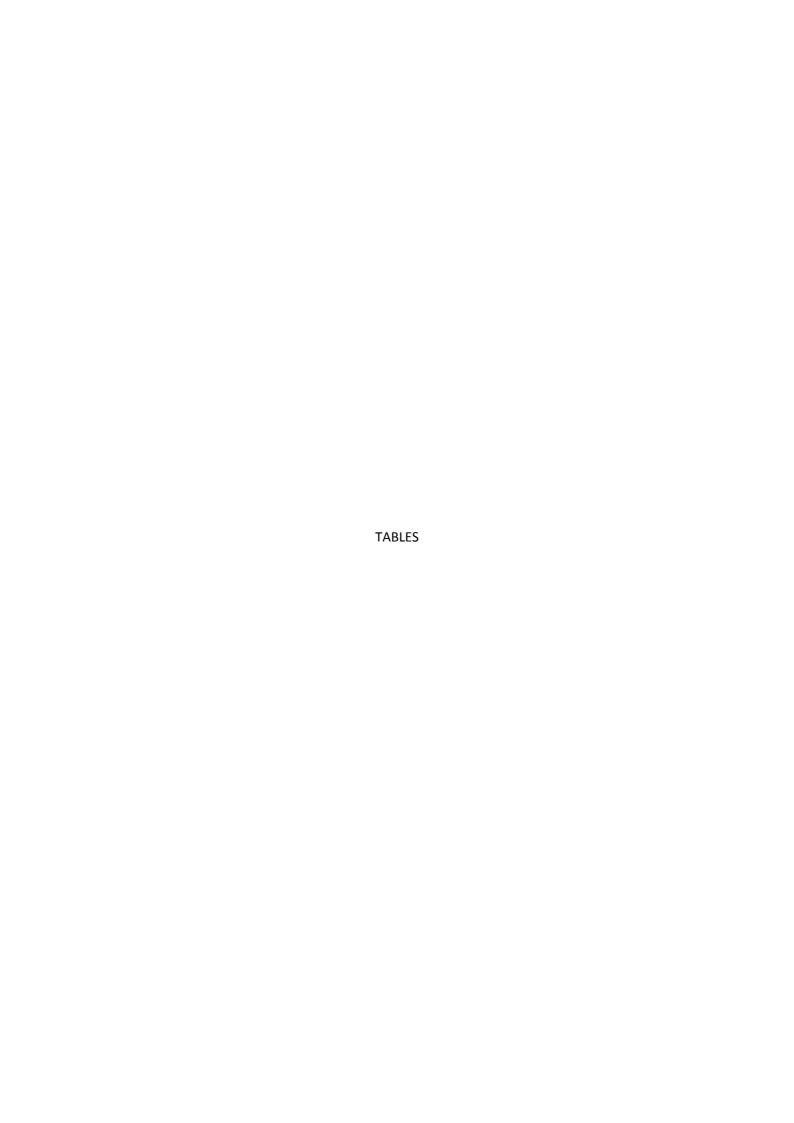


Table 1. Description of major soil limitations at each of the 8 sampling sites.

Spade/auger	Easting,	Northing,	Soil conditions		
sampling sites	m	m			
1	760720	C422725	Donath to good, 200 mags		
1	760738	6422735	Depth to rock = 800 mm		
			No mottling		
			pH (measured in water) = 4.5 to a depth of 150 mm		
			Non-BSAL (pH < 5.0)		
2	762270	6423233	Depth to rock = 200 mm		
			Non-BSAL (Depth to Physical Barrier < 750 mm)		
3	764330	6424982	Depth to rock = 580 mm		
			Depth to mottling = 300 mm		
			Non-BSAL (Depth to Physical Barrier < 750 mm)		
4	764089	6425366	Depth to mottling = 650 mm		
			pH (measured in water) = 4.5 from a depth of 150 mm to		
			650 mm.		
			Non-BSAL (pH < 5.0)		
5	763812	6425252	Depth to rock = 600 mm		
			Non-BSAL (Depth to Physical Barrier < 750 mm)		
6	763887	6425789	Depth to rock = 650 mm		
			Depth to mottling = 500 mm		
			Non-BSAL (Depth to Physical Barrier < 750 mm)		
7	763431	6426252	Depth to rock = 550 mm		
			Non-BSAL (Depth to Physical Barrier < 750 mm)		
8	761413	6426049	Depth to hard dry clay loam = 650 mm		
			Depth to mottling = 400 mm		
			Non-BSAL (Depth to Waterlogged Layer < 750 mm)		

Table 2. Photographs of the landscapes, soil profiles and surface conditions at the 8 sampling sites.

Site	Landscape	Soil profile	Surface condition
1			pH profile
2		20 Salara	Fe/A
3		50	
4			
5		50 20 a	

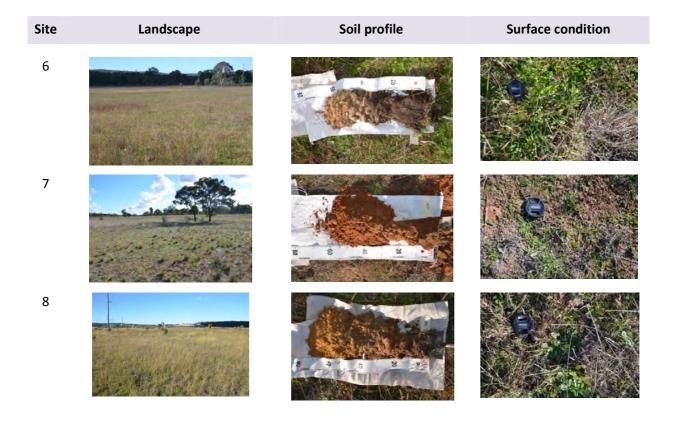
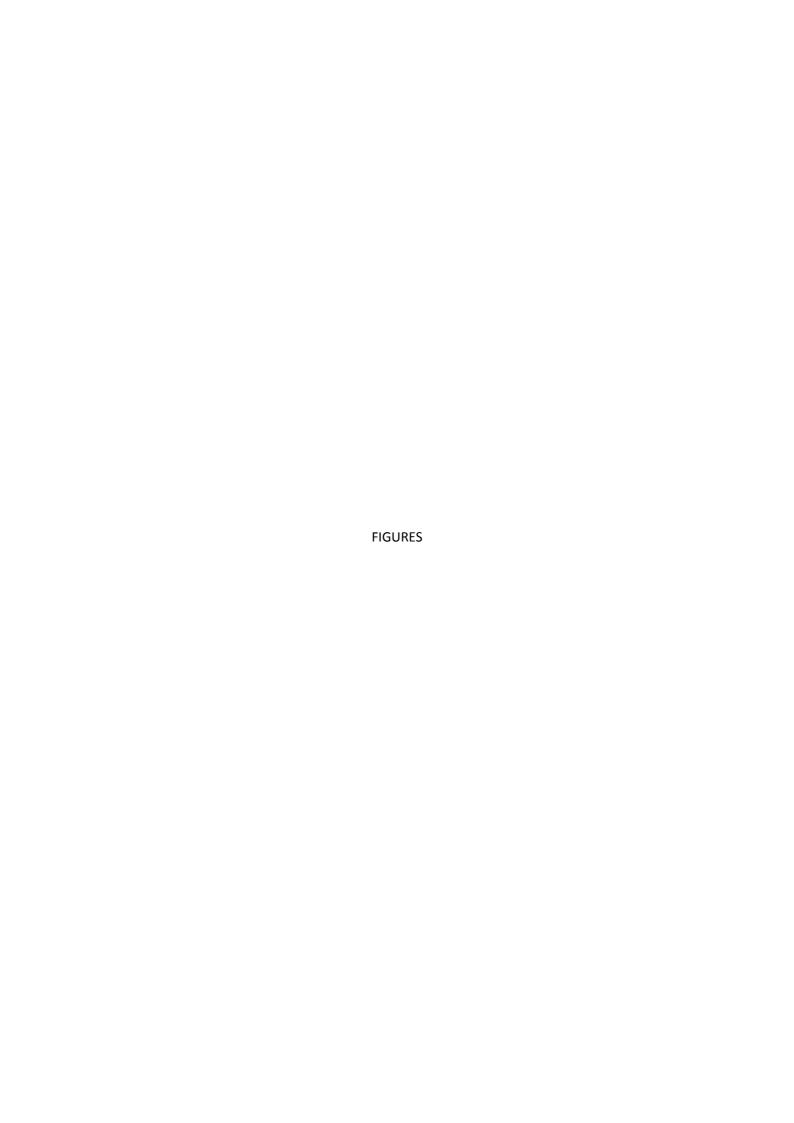
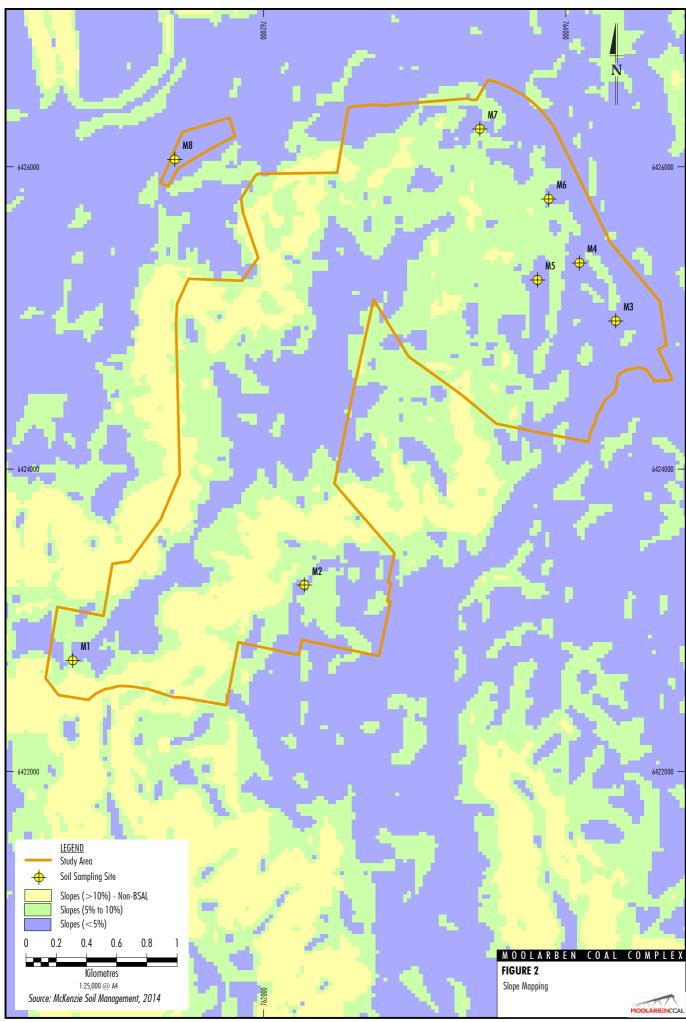


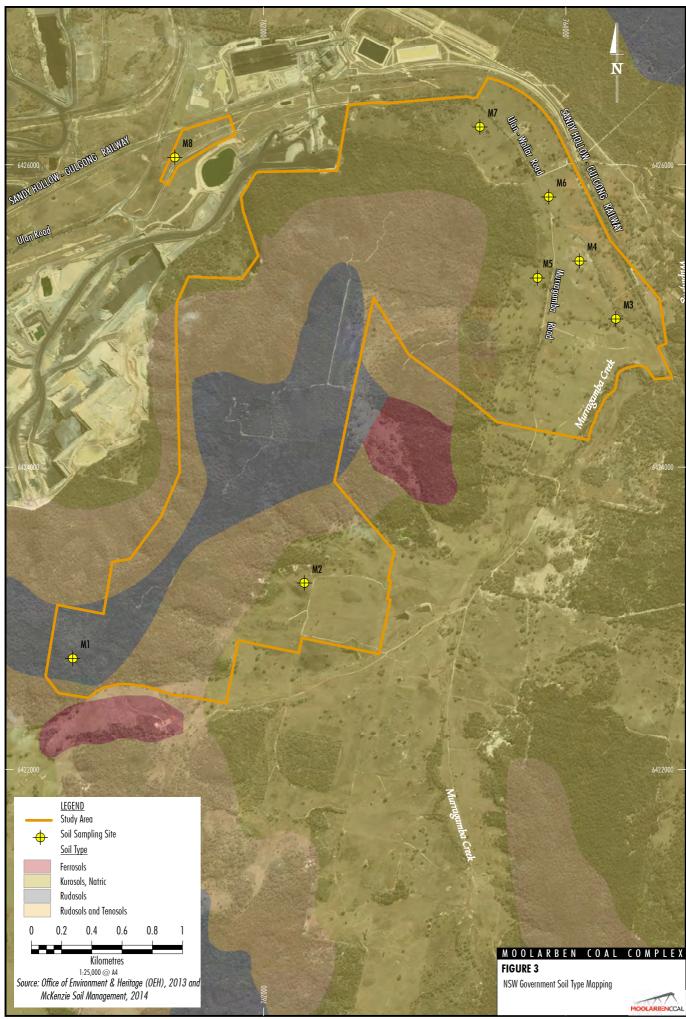
Table 3. Soil Descriptions

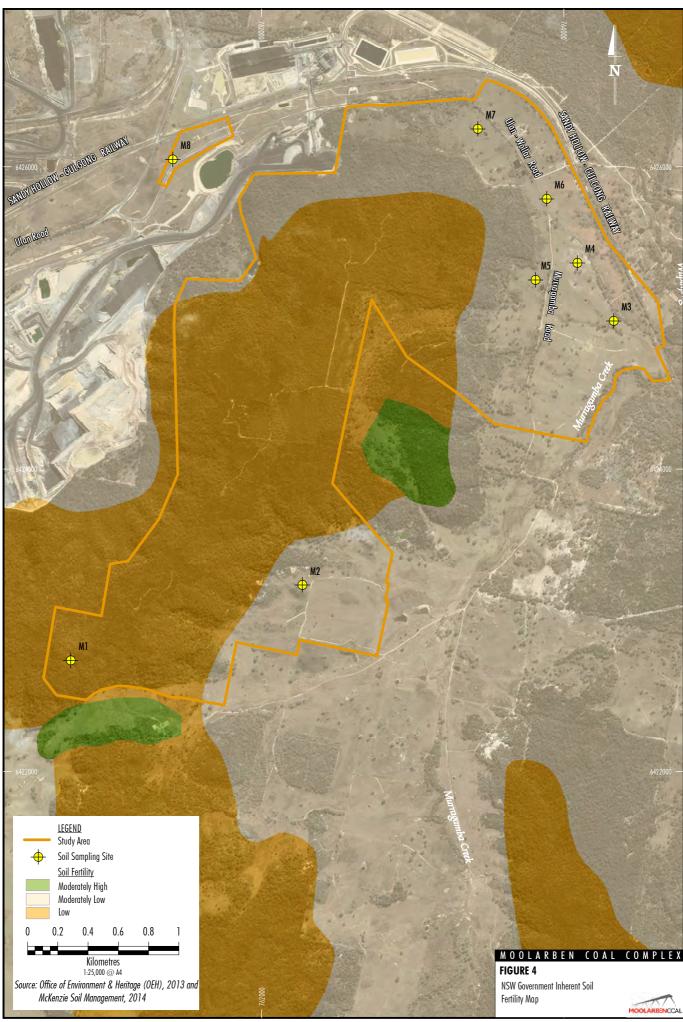
Site ID	Easting	Northing	Elevation (m AHD)	Depth (cm)	Horizon	Texture	Moist Soil Colour (Munsell)	Mottles	pH in Water	Coarse Fragments (%)	Mn nodules	Moisture
			562	0 to 15	A1	SL	10YR3/2	_	4.5	_	_	S/M
M1	M1 760738	6422735		15 to 45	A3	SL	10YR4/2	_	5.0	_	_	S/M
				45 to 80	B1	SCL	10YR5/3	_	5.0	_	_	S/M
M2	762270	6423233	471	0 to 10	A11	SL	7.5YR3/3	_	5.0	_	_	S/M
IVIZ	102210			10 to 20	A12	SL	7.5YR4/4	_	5.0	_	_	S/M
		6424982	426	0 to 15	A11	LS	10YR5/4	_	5.0	_	_	М
М3	764330			15 to 30	A12	LS	10YR6/6	_	5.0	10%, 8mm, GV	_	М
				30 to 58	B2	MC	10YR6/8	grey	5.5	_	_	М
		6425366	437	0 to 15	A11	SL	10YR4/2	_	5.0	_	_	М
M4	764089			15 to 65	A12	SL	10YR5/3	_	4.5	_	_	М
				65 to 100+	B2	SL	10YR5/2	grey	5.0	_	_	М
		6425252	444	0 to 5	A11	SCL	10YR3/3	_	4.5	_	_	М
M5	763812			5 to 15	A12	SCL	10YR3/3	_	4.5	_	_	М
IVIO	703012			15 to 25	B11	SL	10YR4/4	_	4.5	10%, 8mm, GV	_	М
				25 to 60	B12	LS	10YR5/4	_	5.0	50%, 15mm, GV	_	М
		6425789	443	0 to 15	A11	CL	10YR3/2	_	5.0	_	_	М
M6	763887			15 to 35	A12	SCL	10YR3/3	_	5.0	_	_	М
IVIO	100001	0420700	445	35 to 50	A2	SL	10YR6/3	_	5.5	5%, 15mm, GV	_	М
				50 to 65	B1	SCL	10YR6/6	grey	5.5	20%, 15mm, GV	_	M
		6426252	2 452	0 to 10	A11	LS	10YR4/6	_	4.5	_	_	М
M7	763431			10 to 20	A12	LS	7.5YR5/8	_	4.5	_	_	М
1417	700-01			20 to 35	B1	SL	7.5YR5/8	_	5.0	20%, 7mm, GV	_	М
				30 to 55	B2	LC	5YR5/8	_	5.5	_	_	M
		6426049	430	0 to 15	A11	SL	10YR4/4	_	4.5	_	_	М
M8	761413			15 to 30	A12	SL	10YR5/4	_	5.0	_	_	М
				30 to 65	A3	SCL	10YR6/8	strong grey	8.0	_	_	М

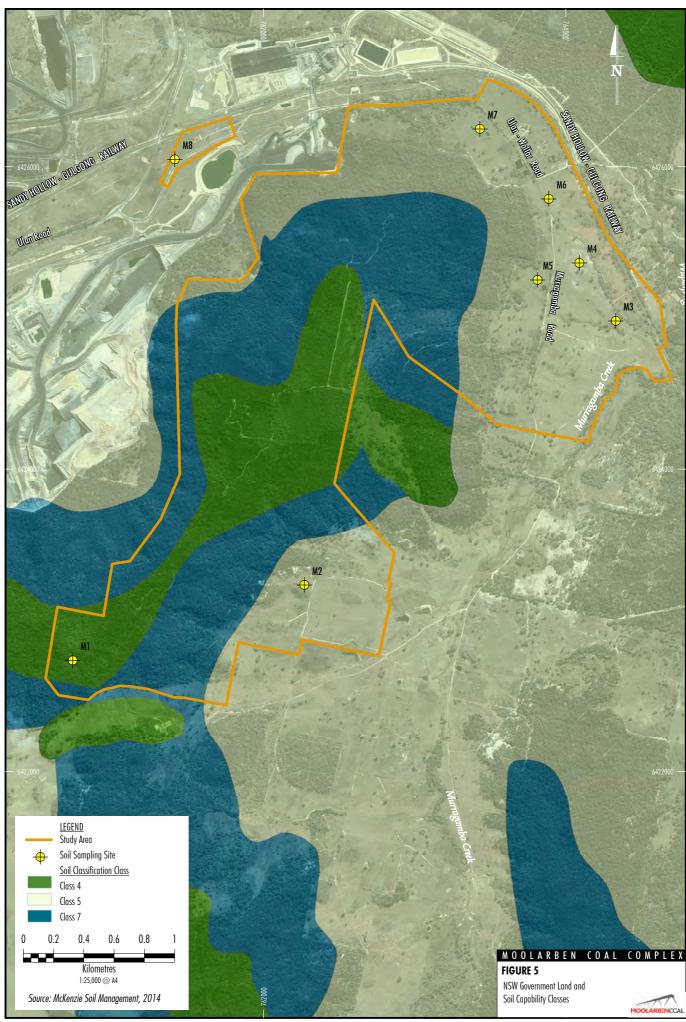












ATTACHMENT 3

LANDHOLDER NOTIFICATION





PHONE: +61 2 6376 1500 FAX: +61 2 6376 1599

WEBSITE: www.moolarbencoal.com.au

ABN: 59 077 939 569

3 July 2014

Ulan Coal Mines Limited Level 38, 1 Macquarie Place SYDNEY NSW 2000

Dear Sir/Madam,

RE: Notice of Application for a Site Verification Certificate

The Moolarben Coal Mine open cut and underground coal mining operation is located approximately 40 kilometres north of Mudgee in the Western Coalfields of New South Wales (NSW). Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Mine on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies). MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited.

- Part Lot 11 DP 1152406;
- Part Lot 13 DP 1152406;
- Lot 18 DP 1140073;
- Lot 7 DP878678;
- Part Lot 2 DP878678;
- Part Lot 3 DP878678;
- Lot 6 DP878678;
- Part Lot 253 DP 755442;
- Lot 4 DP 878678;
- Part Lot 5 DP 878678;
- Part Lot 80 DP 755454;
- Part Lot 262 DP 755442;
- Part Lot 12 DP 1152406
- Part Lot 32 DP 755454;
- Lot 57 DP 755454;
- part of the Sandy Hollow-Gulgong Railway line identified on the enclosed plan; and
- roads or parts thereof identified on the enclosed plan.

Application Details

Proponent:

Moolarben Coal Mines Pty Ltd

Level 26, 363 George Street

Sydney NSW 2000

Site Description:

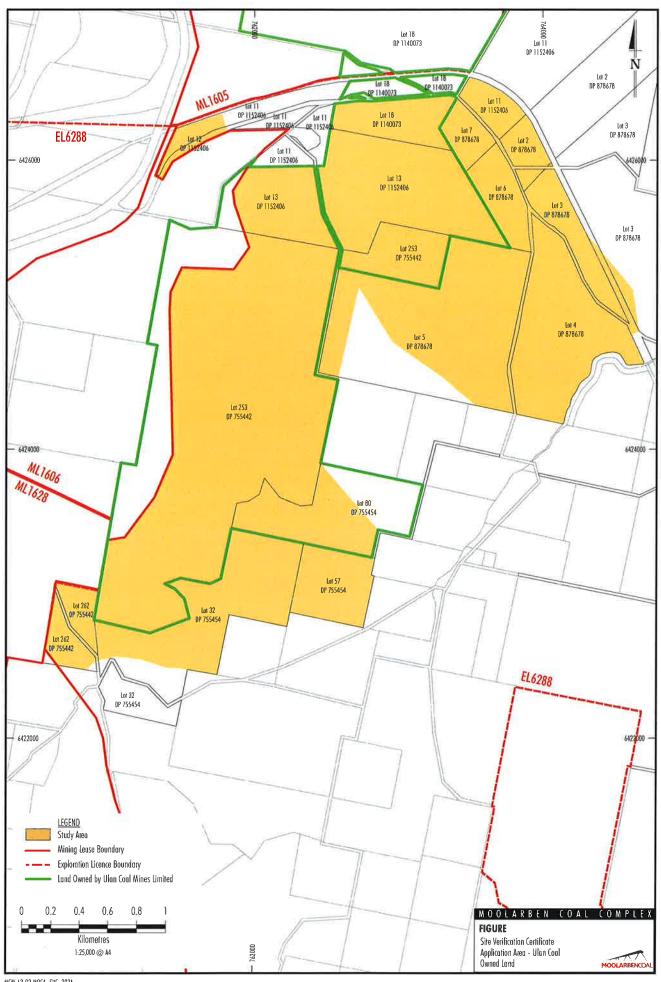
A cadastral plan of the Application area is enclosed with this letter. The Application

area is identified on that plan as the Study Area.

Yours sincerely

Mark Jacobs

General Manager, Environment, Approvals &







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Ulan Coal Mines Limited 4505 Ulan Road ULAN NSW 2850

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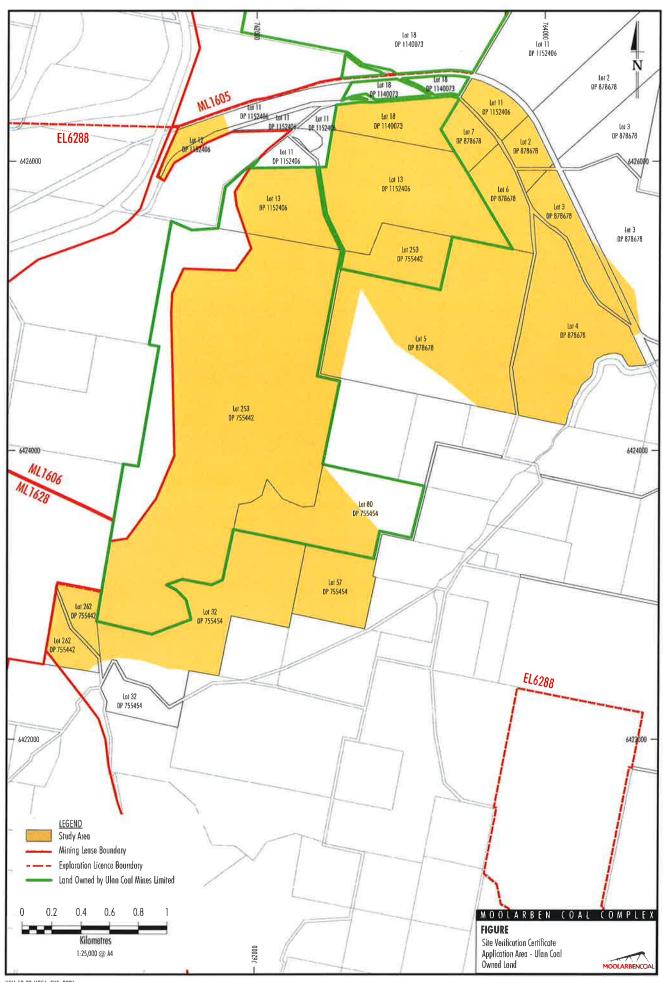
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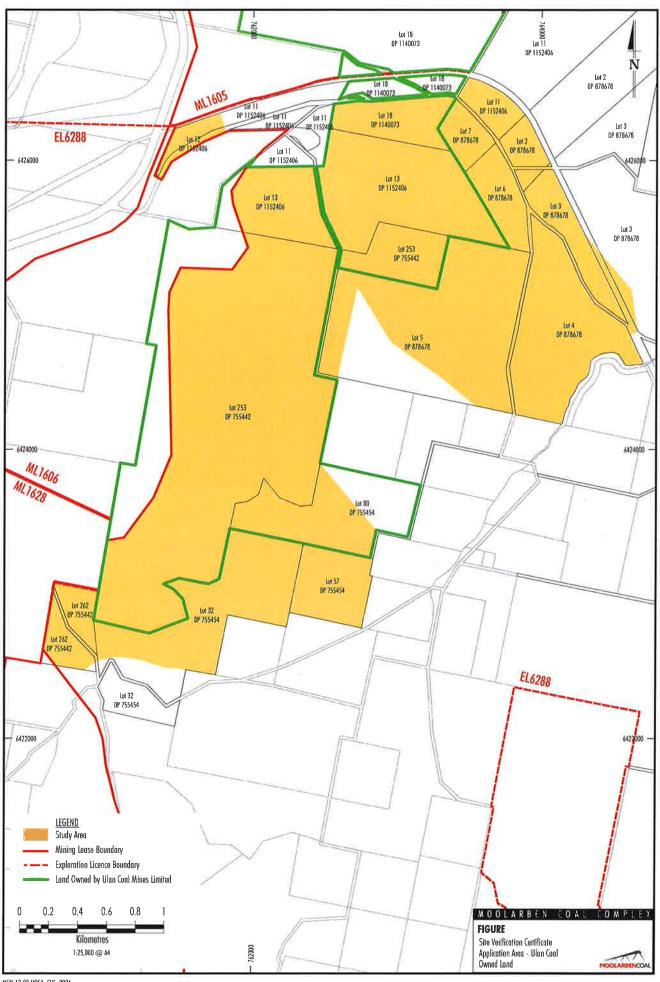
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3 July 2014

Kores Australia Moolarben Coal Pty Ltd '01' Suite 11 Level 11, 50 Berry Street NORTH SYDNEY NSW 2060

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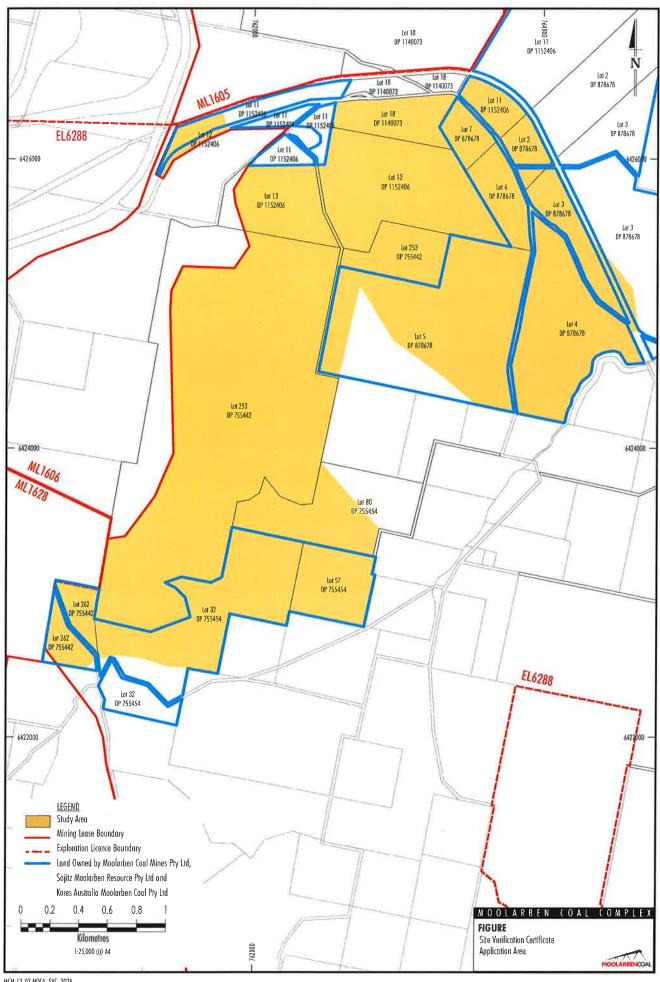
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Sojitz Moolarben Resources Pty Ltd Central Plaza One Level 34, 345 Queen Street BRISBANE QLD 4000

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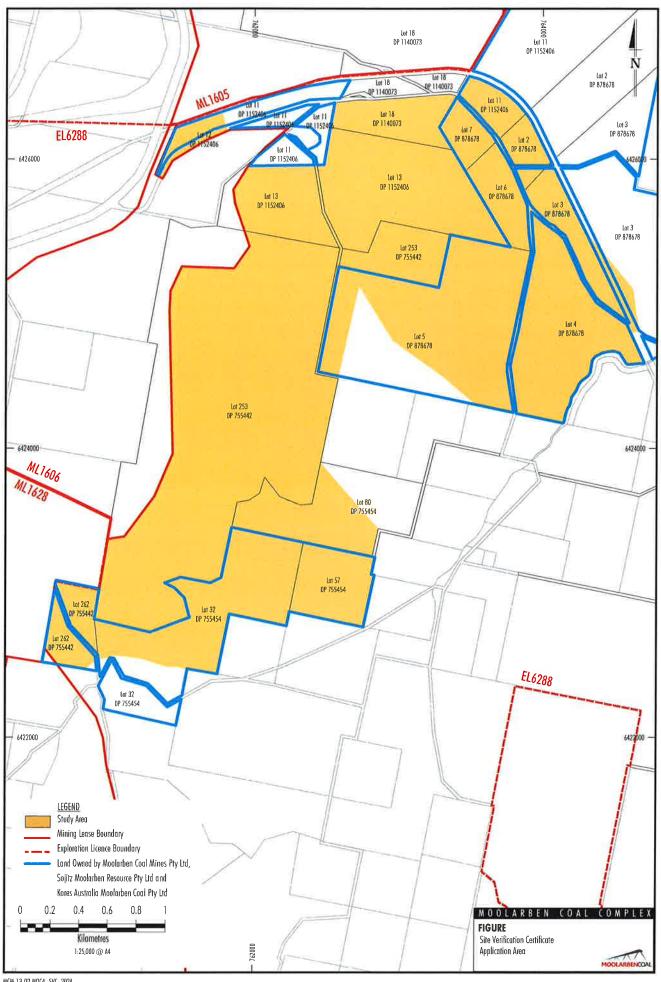
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Crown Lands Division of NSW Trade & Investment PO Box 2185
DANGAR NSW 2309

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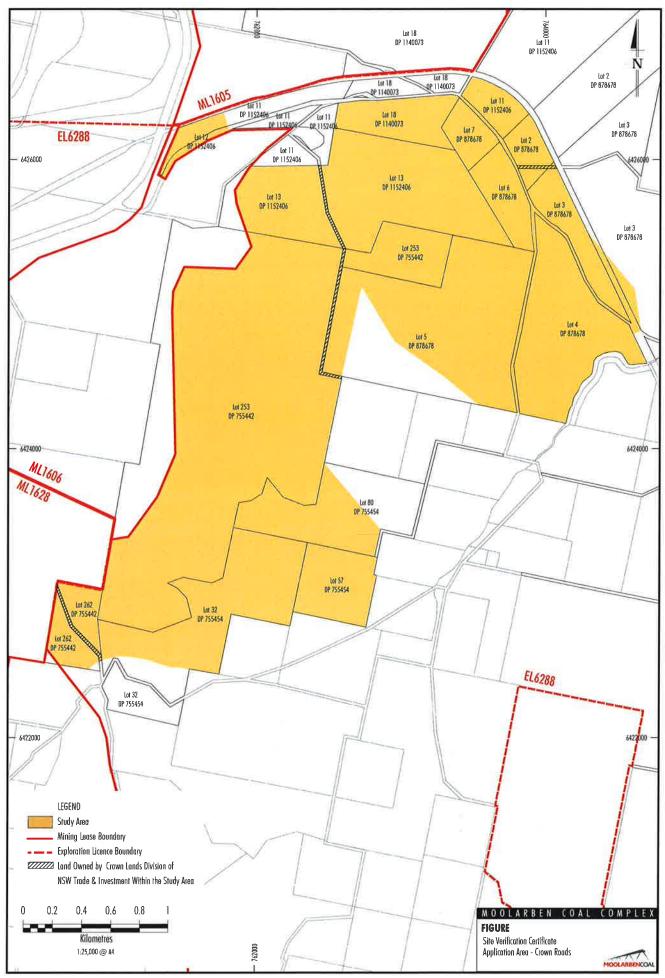
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Mid-Western Regional Council 86 Market Street MUDGEE NSW 2850

Dear Sir/Madam,

RE: Notice of Application for a Site Verification Certificate

The Moolarben Coal Mine open cut and underground coal mining operation is located approximately 40 kilometres north of Mudgee in the Western Coalfields of New South Wales (NSW). Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Mine on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies). MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited.

- Part Lot 11 DP 1152406;
- Part Lot 13 DP 1152406;
- Lot 18 DP 1140073;
- Lot 7 DP878678;
- Part Lot 2 DP878678;
- Part Lot 3 DP878678;
- Lot 6 DP878678;
- Part Lot 253 DP 755442;
- Lot 4 DP 878678;
- Part Lot 5 DP 878678;
- Part Lot 80 DP 755454;
- Part Lot 262 DP 755442;
- Part Lot 12 DP 1152406
- Part Lot 32 DP 755454;Lot 57 DP 755454;
- part of the Sandy Hollow-Gulgong Railway line identified on the enclosed plan; and
- roads or parts thereof identified on the enclosed plan.

Application Details

Proponent:

Moolarben Coal Mines Pty Ltd

Level 26, 363 George Street

Sydney NSW 2000

Site Description:

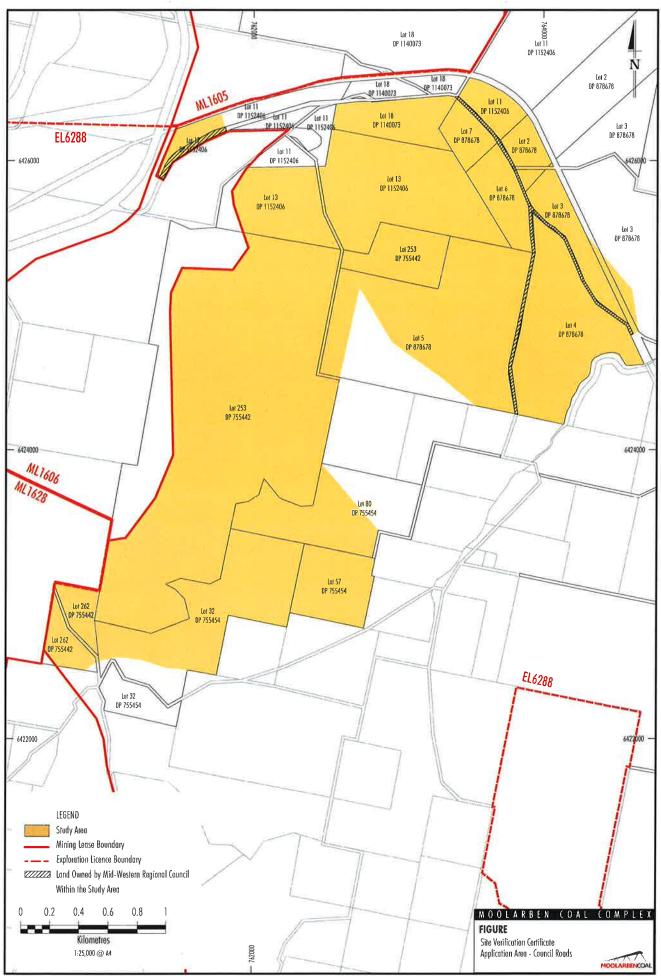
A cadastral plan of the Application area is enclosed with this letter. The Application

area is identified on that plan as the Study Area.

Yours sincerely

Mark Jacobs

General Manager, Environment, Approvals &







PHONE: +61 2 6376 1500 FAX: +61 2 6376 1599

WEBSITE: www.moolarbencoal.com.au

ABN: 59 077 939 569

3 July 2014

Transport for New South Wales 18 Lee Street CHIPPENDALE NSW 2008

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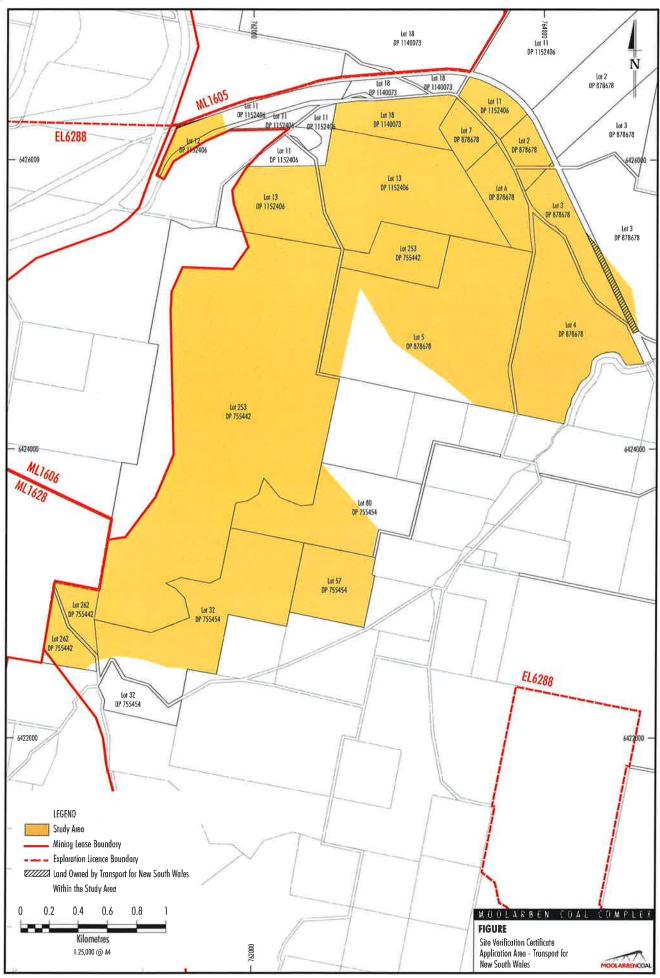
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ATTACHMENT 4

RECONCILIATION OF OEH ASSESSMENT REQUIREMENTS

Reconciliation of OEH Assessment Requirements

Summary of Assessed Items	Appropriate as per the Protocol	Justification		
PERSONNEL				
Evidence provided by the applicant that a qualified soil scientist oversaw the verification assessment and signed off on the quality and extent of the work	Yes	The Moolarben BSAL Assessment was undertaken by Dr David McKenzie, a Certified Professional Soil Scientist (CPSS, Stage 3).		
MAPS				
Geographically accurate base map (at 1:25,000) of assessment area supplied as per <i>Interim Protocol</i> . Spatial dataset (boundary of assessment area) supplied in GIS format as per <i>Interim Protocol</i> .	Yes	All base maps in application prepared at 1:25,000 scale. Spatial data included in online application (filename: GIS Data.zip).		
Soil map (at 1:25,000) of project area supplied including all observation (Detailed, Check and Exclusion) sites as per <i>Interim Protocol</i> . Spatial datasets (soil map, observation sites and data reliability/data source diagram) supplied in GIS format as per <i>Interim Protocol</i> .	N/A	No soil mapping prepared as soil sampling sites failed basic BSAL criteria prior to assessing soil fertility (e.g. depth to physical barrier, slope and pH).		
Map of assessment area showing BSAL (at 1:25,000) and exclusion zones marked according to their BSAL limitation. Spatial dataset (boundary of BSAL areas) supplied in GIS format as per <i>Interim Protocol</i> .	Yes	GIS data included in online application (filename: GIS Data.zip).		
Maps presented in correct datum with appropriate symbology, north points, unambiguous legends, meaningful colour ramps, scale bars, and sampling grid included as per the <i>Interim Protocol</i> .	Yes	All maps in application presented in correct datum with appropriate symbology, north points, unambiguous legends, meaningful colour ramps, scale bars, and sampling grid included as per the <i>Interim Protocol</i> .		
Metadata for spatial datasets have been provided as per the Interim Protocol.	Yes	Metadata for spatial datasets included in online application (filename: GIS Data.zip).		
LODGEMENT OF SITE AND LABORATORY DATA				
All site observations lodged on BSAL Soil Data Cards and all required field attributes completed correctly for each observation type as per the <i>Interim Protocol</i> (i.e. check , exclusion and detailed).	Yes	Hardcopies of Soil Data Cards posted to the following address.		
		Attention: Strategic Regional Policy Department of Planning & Environment GPO Box 39 SYDNEY NSW 2001		
All laboratory data supplied in the SALIS Lab Data Template, appropriate test procedures (e.g. National Test Code) identified and all relevant test results completed as per the <i>Interim Protocol</i> .	N/A	Laboratory analysis not required as soil sampling sites failed basic BSAL criteria (e.g. depth to physical barrier, slope and pH).		
MODEL OF SOILS DISTRIBUTION				
Where the proponent does not have access to the land, a model of soils distribution is provided detailing the methodology used to enable an assessment of the land in question to be made.	N/A	Soil model not required as soil sampling intensity sufficient for full Study Area.		

Summary of Assessed Items	Appropriate as per the Protocol	Justification	
SITE ASSESSMENT			
The project area or part thereof contains a contiguous area of at least 20 hectares which meets all BSAL conditions – possible/verified BSAL adjoining the assessment area may need to be considered.	No	No soil sampling site meets the criteria for BSAL.	
Sampling density is as specified in the <i>Interim Protocol</i> .	Yes	Refer to Attachment 1 of the Site Verification Certificate Application for justification of the sampling density.	
Observation sites (check, detailed and exclusion sites) are relatively evenly distributed across the survey area.	Yes	Sampling sites focussed on areas most likely to be BSAL.	
Each soil type identified has at least three detailed sites .	Yes	Not every soil type identified had three detailed sites conducted as sampling sites were focused on areas most likely to be BSAL and all soil sampling sites failed basic BSAL criteria (e.g. depth to physical barrier, slope and pH).	
All relevant data has been collected and provided for detailed sites as per the <i>Interim Protocol</i> .	Yes	All data required to assess BSAL status has been collected and provided.	
Detailed sites are representative of the soil type being assessed.	Yes	All detailed sites are representative of the soil type being assessed.	
Description of detailed sites is accompanied by a photograph of the site and of the soil profile being described.	Yes	Refer to Attachment 2 of Site Verification Certificate Application.	
Appropriate information (as specified in the <i>Interim Protocol</i>) collected for all exclusion sites .	N/A	No exclusion sites as sampling sites focussed on areas most likely to be BSAL and all soil sampling sites failed basic BSAL criteria prior to assessing soil fertility (e.g. depth to physical barrier, slope and pH).	
At least two exclusion sites per polygon in excluded areas (except for areas with no access, e.g., only remote modelling of attributes).	N/A	No exclusion sites as sampling sites focussed on areas most likely to be BSAL and all soil sampling sites failed basic BSAL criteria prior to assessing soil fertility (e.g. depth to physical barrier, slope and pH).	
Adequate numbers of check sites used to (i) allocate a site to a soil type and soil map unit and, (ii) confirm existing mapping.	N/A	No soil mapping prepared as soil sampling sites failed basic BSAL criteria prior to assessing soil fertility (e.g. depth to physical barrier, slope and pH).	
CROSS REFERENCE ASSESSMENT WITH OEH SOILS DATA			
Soil mapping and attributes appear consistent with OEH soil and landscape data and expected/anticipated soil types in the project area or locality.	Yes	The data obtained appears consistent with publically available data (refer Figures 3, 4 and 5 of Attachment 2 of the Site Verification Certificate Application).	