

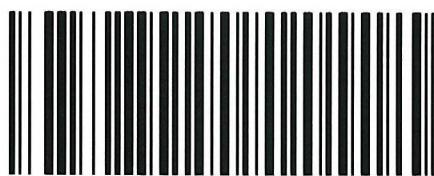


Centennial Coal

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10 April 2015



Mr S. Withington
Department of Planning & Environment
GPO Box 39
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Dear Mr Withington

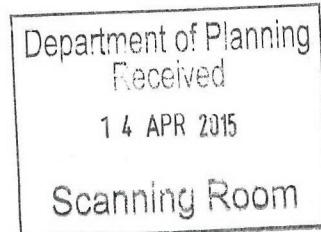
Re: Neubeck Coal Project – Site Verification Application

Centennial Coal has addressed the matters raised by the NSW Office of Environment and Heritage in relation to the Neubeck Coal Project Site Verification Application. Enclosed with this letter is a response from SLR Consulting Pty Limited as to how the issues raised have been addressed, the revised Biophysical Strategic Agricultural Land (BSAL) Verification Assessment report and hard copies of the amended BSAL Soil Data Cards. All relevant files have been provided to you electronically.

If you have any further questions in relation to this matter, please contact me on my mobile 0407 207 530.

Yours sincerely

James Wearne
Group Approvals Manager



Enclosed

- Response from SLR Consulting Pty Limited.
- Revised Biophysical Strategic Agricultural Land (BSAL) Verification Assessment report (SLR 2015).
- BSAL Soil Data Cards for the Neubeck Coal Project.

31st March, 2015

Hello Stuart/Humphrey,

SLR has addressed OEH's comments on the Neubeck Coal Project SVC, please see replies and additional comments below in **blue**.

1. On the soil map (Figure 3) we note that the proponent has separated areas of 'watercourse and waterlogged areas' as a separate mapped area. However, there are no soil observations within this area to describe the soils. If the soils in this area are not the same as adjoining polygons then it needs to be treated as a separate soil map unit, i.e., at least 3 detailed observations are required. Either way, check sites should be described in this area to confirm the decision.

Amended to be mapped as a Dermosol (concurrent with Checked Site data as there was no access on the southern side of Neubeck Creek).

2. Some of the areas excluded in the spatial data appear to have been mapped on the soil map (FIDs 117 to 125).

Spatial data corrected and areas revised, **Figure 2** has been amended to solid fill rather than hatched fill to avoid confusion.

3. There appears to be no indication of what the slope codes in SLR63010980_SurfaceSlope_100mBuffer_Clip.shp mean.

Slope code is the terminology used in the descriptors, which directly correlates to slope percentage (i.e. slope code 1 equates to slope 0-1%, slope code 2 equates to slope 1-2% etc.). Explanation of slope code has been added into **Appendix C**.

4. Several of the Dermosols with waterlogging problems should probably be classified as Hydrosols, which may change the distribution of soil types.

As per **The Australian Soil Classification: Revised Edition** (Isbell, 2002) when assessing the classification of a Hydrosol, "the duration and frequency of saturation at a precise section of a profile are not specifically defined". Also, "the extent of soil wetness can seldom be assessed by a single inspection of a particular site".

Using the author and reviewers soil science experience, it is our opinion that whilst there is significant mottling within the profile of the Dermosols to indicate poor drainage, there was insufficient evidence to indicate that the greater part of the soil profile was saturated for at least 2-3 months in most years.

5. Several of the Kurosols (sites 006, 17 and 18) are probably Kandosols (insufficient texture contrast), which may also change the distribution of soil types.

Kurosol sites were re-examined and keyed out again and came out as Dermosols, soil mapping and areas corrected

6. An area of Kandosols has been mapped in the far west of the project area without any sites to describe it. We would recommend at least 1 check site in this area to confirm the soil type(s) there.

At the time of the soil field survey the far western area (approximately 10 ha) was deemed inaccessible due to the presence of woodland forest and very limited access due to the haul road, fencing and locked gates. Therefore this section of the Project Application Area has been correlated by soil landscape units (King, 1993) and vegetation type with other mapped areas.

7. The detailed soil profiles were collected using a combination of cores (7) and by auger (3); however the Interim Protocol requires all detailed observations to be soil pits.

The 7 core sites were completed in 2014 in accordance with the Interim Protocol. The 3 auger sites were completed in 2012, prior to the release of the Interim Protocol, however, methodology for the 2012 sampling involved shovel excavation to a depth well into the B horizon (at least 50 cm) and then subsequent hand auguring down to 100 cm, enabling description of a minimum 50 cm in situ (in effect a small pit). The soil profile was then "re-constructed" in the profile display box.

As these 3 sites were sampled out prior to the release of the Interim Protocol photos of the small pits were not taken as the focus of the survey was on the whole soil profile. Soil profile information for the upper horizons mostly assessed using the small in situ pits.

Please see accompanying photos from recently conducted surveys showing the mini pits.





Soil Data Cards have been amended to include Nature of Exposure as both "pit" and "auger"

8. The profiles described seem to consist of 3 separate sets, with overlapping numbers – for example, two detailed observations and one check site were identified as profile 2 on their Soil Data Cards. The proponent should supply the profiles in a single set of sequentially numbered cards so that each site is uniquely identified, can be definitively located on the map and easily linked to its corresponding laboratory soil test data. The report and GIS layers will also need updating accordingly.

See site survey number and Soil Data Card identifier correlation table below and also added into **Appendix A**. Each Soil Data Card has been amended to having one unique identifying number.

Field Survey Date	Site Survey Number	Unique Soil Data Card Identifier
October 2012	Core 006	1
	Core 007	2
	Core 002	3
August 2014	Core 1	4
	Core 2	5
	Core 3	6
	Core 4	7
	Core 5	8
	Core 7	9
	Core 8	10
August 2014	Check 1	11
	Check 2	12
	Check 3	13
	Check 4	14
	Check 5	15
	Check 6	16
	Check 7	17
	Check 8	18
	Check 9	19
	Check 10	20
	Check 11	21
	Check 12	22
	Check 13	23
	Check 14	24
	Check 15	25
	Check 16	26
	Check 17	27
	Check 18	28
	Check 19	29

9. The laboratory data suggests that the samples for some of the profiles were tested in 2012 by a different person and organisation to the one supplying the SVC application; however all of the cards have the same 'Described by' number. Can the proponent confirm who described the profiles from the 2012 batch?

During August 2013, GSS Environmental merged with SLR Consulting; however the same CPSS 2 oversaw both the field surveys and subsequent site verification (Clayton Richards, 1794).

10. Although ECe results have been supplied in the laboratory spreadsheet, the source EC results should also be supplied.

Source EC results were supplied in Appendix B (test C1A/4) on the Scone Research Centre Report sheets. They have also been entered into the Excel spreadsheet.

11. There are several profiles missing key data (profile 2 is missing colours; profile 6 has no layer data; profile 007 has no mottles described but mottles appear to be visible in the photo). This makes it difficult to confirm the soil classification.

Rectified for the three profiles

King regards,



Murray Fraser
Senior Agronomist



global environmental solutions

Neubeck Coal Project

BSAL Verification Assessment

Centennial Angus Place Pty Limited

Report Number 630.10980

January 2015

Version: Final

**Neubeck Coal Project
BSAL Verification Assessment
Centennial Angus Place Pty Limited**

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This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Centennial Angus Place Pty Limited. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR Consulting.

SLR Consulting disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
630.10980	Draft	22 January 2015	Murray Fraser	Clayton Richards	Clayton Richards
630.10980	Final	30 January 2015	Murray Fraser	Clayton Richards	Clayton Richards

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Appendix C	Slope Analysis Methodology
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Appendix E	OEH Comments and SLR Replies

1 INTRODUCTION

1.1 Project Background

Centennial Angus Place Pty Limited engaged SLR Consulting Australia Pty Ltd to undertake a Biophysical Strategic Agricultural Land (BSAL) Verification Assessment for the proposed Neubeck Coal Project (the Project). This BSAL verification assessment is required to be submitted to OEH for a BSAL verification certificate. This report is intended to accompany the online BSAL verification certificate application. Murray Fraser undertook the BSAL Verification Assessment supervised by Clayton Richards (CPSS2). Both Murray Fraser and Clayton Richards are responsible for the soil survey and interpretation of the field and laboratory results.

The Project Application Area is located approximately 18 kilometres north-west of the City of Lithgow and 7 kilometres north of Wallerawang and comprises an area of 201 hectares (ha), including a proposed disturbance footprint of approximately 175 ha

1.2 The Gateway Process and BSAL Background

The Strategic Regional Land Use Plans for the Upper Hunter and New England North West (SRLUP) was released by the NSW Government in September 2012; the BSAL mapping for the remainder of the State was released in January 2014. The SRLUPs represent the Government's proposed framework to support growth, protect the environment and respond to competing land uses, whilst preserving key regional values over the next 20 years. An integral component of the plan is the introduction of the new decision making framework, known as the Gateway Process. This process involves the early assessment of potential impacts of mining and coal seam gas development on agricultural land and water resources.

As part of the Gateway Process, areas of particularly high agricultural values have been identified and mapped in consultation with key industry representatives and industry experts for the whole of NSW. These areas are referred to as Strategic Agricultural Land. Two categories of Strategic Agricultural Land have been identified: BSAL and critical industry clusters (CIC). BSAL is land with a rare combination of natural resources highly suitable for agriculture. These lands intrinsically have the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality.

The criteria used to measure BSAL under the original SRLUP were based on three parameters:

1. Soil Fertility – based on the Draft Inherent General Fertility of NSW (OEH),
2. Land and Soil Capability – based on Land and Soil Capability Mapping of NSW, and
3. Access to reliable water supply.

In April 2013, an Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land (Interim Protocol) was released by the NSW Government. This Interim Protocol outlines the process for seeking verification of whether or not land mapped as BSAL meets the BSAL criteria. This report is based on the criteria outlined in the Interim Protocol. The State Environment Planning Policy (mining, Petroleum Production and Extractive Industries) Amendment 2013 requires certain types of developments to verify whether the proposed site is on BSAL. The purpose of the protocol is to assist proponents and landholders to understand what is required to identify the existence of BSAL and outlines the technical requirements for the on-site identification and mapping of BSAL.

2 BSAL VERIFICATION

2.1 Defining BSAL

The Interim Protocol defines BSAL in three different ways:

1. General Commentary: BSAL is land with a rare combination of natural resources highly suitable for agriculture. These lands intrinsically have the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality. BSAL is able to be used sustainably for intensive agricultural purposes such as cultivation. Such land is inherently fertile and generally lacks significant biophysical constraints. (Interim Protocol: Section 3 Paragraph 1 on page 2).
2. On a regional scale, the maps of BSAL meet the three criteria outlined in the SRLUP (Interim Protocol: Section 3 Insert):
 - a. Access to reliable water supply;
 - b. Inherent General Fertility; and
 - c. Land and Soil Capability (LSC) as mapped for NSW by OEH.
3. On a property scale, the verification criteria include specific measurements of the following parameters: slope; rock outcrop; surface rock fragments; gilgai; soil fertility (based on soil type); effective rooting depth to a physical barrier; soil drainage; soil pH; salinity; and effective rooting depth to a chemical barrier. (Interim Protocol: Section 6 on page 5).

This report assesses BSAL according to the requirements of the third definition.

2.2 Methodology

The site verification and methodology reported in the following sections has been undertaken based on the Interim Protocol for Site Verification and Mapping of BSAL.

Step 1: Identify the project area which will be assessed for BSAL

The assessment area should include the entire project area and include at least a 100 m buffer to take into account minor changes in design, surrounding disturbance and minor expansion. If BSAL is part of a larger contiguous mass of BSAL then the boundary of this area must also be identified.

The area of potential surface disturbance due to mining and associated disturbance for the Project is 175 hectares (ha), within the total Project Application Area of 201 ha. In addition to this disturbance area, a 100 metre (m) buffer surrounding the Project Application Area is included within the assessment area, to account for minor changes in design in accordance with the BSAL protocol. The total BSAL Assessment Area is therefore 276 ha as shown in **Figure 1**.

**LEGEND**

Project Application Area



100m Project Application Area Buffer

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Centennial Angus Place Pty Ltd

Neubeck On-Site BSAL Verification

N

0 100 200 300 400
m

Project Application Area**FIGURE 1**

Step 2: Confirm access to a reliable water supply

BSAL lands must have access to a “reliable water supply”.

Representative rainfall data for the area has been obtained from the Bureau of Meteorology (BOM) weather station at Birdwood Street, Lithgow (Station 063224, BOM, 2014). Data shows that the area experiences an average rainfall of 852 millimetres (mm) per year. This rainfall is above the criteria threshold of 350 mm per year, and therefore the site has access to a reliable water supply.

Step 3: Choose the appropriate approach to map the soils information

Access to the project area will define the level of investigation that the proponent can undertake. If the proponent has access to the land then the BSAL verification requirements for on-site soils assessment as described in sections 6 and 9 of the Interim Protocol should be met. If the proponent does not have access then the proponent should develop a model of soils distribution guided by sections 6 and 9 based on landscape characteristics using the information listed in Section 5 of the Interim Protocol.

It is important to note that for either approach, if any criteria indicate that the site is not BSAL, then no further assessment is necessary. The flow chart in Figure 2 is designed to assess the simplest criteria first, to avoid more costly assessments if the site can be easily discounted as BSAL.

The Proponent has access to the entire Project Application Area for site verification of BSAL. Approximately 110 ha of the Project Application Area has been cleared of native vegetation in the past, and now supports a mix of native grasses and introduced weed species. No agricultural activities have been conducted within the Project Application Area in the last 30 years.

Step 4: Risk assessment

The proponent should undertake a risk assessment as this will influence the density of soil sampling required as explained in Section 9.6.1. The proposed activity on parts or all of the project area may be of low risk to agriculture and so may only require a sampling density of 1:100 000. Alternatively other areas may be at higher risk of impact and so should have a sampling density of 1:25 000.

To identify the potential for the Project to impact on agricultural resources and the appropriate level of soil survey required, an evaluation of risk to agricultural resources and enterprises was undertaken. This risk assessment is taken from the Guideline for Agricultural Impact Statements at the Exploration Stage (DTIRIS, 2012) and is based on the probability of occurrence and the consequence of the impact, as described in the Land Use Conflict Risk Assessment Guide (DPI, 2011). Depending on the risk, inspection densities can range from 1 site per 25 – 400 ha for low risk to 1 site per 5 – 25 ha for high risk (Gallant et. al., 2008).

Table 1 Agricultural Impacts Risk Ranking Matrix

Consequence \ Probability	A Almost Certain	B Likely	C Possible	D Unlikely	E Rare
1. Severe and/or permanent damage. Irreversible impacts	A1 high	B1 high	C1 high	D1 high	E1 medium
2. Significant and /or long term damage. Long term mgt implications. Impacts difficult or impractical to reverse.	A2 high	B2 high	C2 high	D2 medium	E2 medium
3. Moderate damage and/or medium-term impact to agricultural resources or industries. Some ongoing mgt implications which may be expensive to implement. Minor damage or impacts over the long term.	A3 high	B3 high	C3 medium	D3 medium	E3 medium
4. Minor damage and/or short-term impact to agricultural resources or industries. Can be managed as part of routine operations	A4 medium	B4 medium	C4 low	D4 low	E4 low
5. Very minor damage and minor impact to agricultural resources or industries. Can be effectively managed as part of normal operations	A5 low	B5 low	C5 low	D5 low	E5 low

- = low risk
- = medium risk
- = high risk

Table 2 Agricultural Impact Risk Ranking – Probability Descriptors

Level	Descriptor	Description
A	Almost Certain	Common or repeating occurrence
B	Likely	Known to occur or it has happened
C	Possible	Could occur or I've heard of it happening
D	Unlikely	Could occur in some circumstances but not likely to occur
E	Rare	Practically impossible or I've never heard of it happening

Table 3 Agricultural Impact Risk Ranking – Consequence Descriptors

Level: 1		Severe Consequences	Example of Implications
Description		Severe and/or permanent damage to agricultural resources, or industries Irreversible Severe impact on the community	Long term (eg 20 years) damage to soil or water resources Long term impacts (eg 20 years) on a cluster of agricultural industries or important agricultural lands
Level: 2		Major Consequences	Example of Implications
Description		Significant and/or long-term impact to agricultural resources, or industries Long-term management implications Serious detrimental impact on the community	Water and / or soil impacted, possibly in the long term (eg 20 years) Long term (eg 20 years) displacement / serious impacts on agricultural industries
Level: 3		Moderate Consequences	Example of Implications
Description		Moderate and/or medium-term impact to agricultural resources, or industries Some ongoing management implications Minor damage or impacts but over the long term.	Water and/ or soil known to be affected, probably in the short – medium term (eg 1-5 years) Management could include significant change of management needed to agricultural enterprises to continue.
Level: 4		Minor Consequences	Example of Implications
Description		Minor damage and/or short-term impact to agricultural resources, or industries Can be effectively managed as part of normal operations	Theoretically could affect the agricultural resource or industry in short term, but no impacts demonstrated Minor erosion, compaction or water quality impacts that can be mitigated. For example, dust and noise impacts in a 12 month period on extensive grazing enterprises.
Level: 5		Negligible Consequences	Example of Implications
Description		Very minor damage or impact to agricultural resources, or industries Can be effectively managed as part of normal operations	No measurable or identifiable impact on the agricultural resource or industry

The Project consists of an open cut coal mine with a proposed total surface disturbance of approximately 175 ha, within a Project Application Area of 201 ha. Site inspection revealed there were no agricultural enterprises or activities identified in the vicinity or within the Project Application Area. As such the Project was determined to have a risk ranking of:

Consequence: Level 4 – Minor damage and/or short-term impact to agricultural resources or industries which can be effectively managed as part of normal operations

Probability: D – Unlikely. Could occur in some circumstances but unlikely to occur.

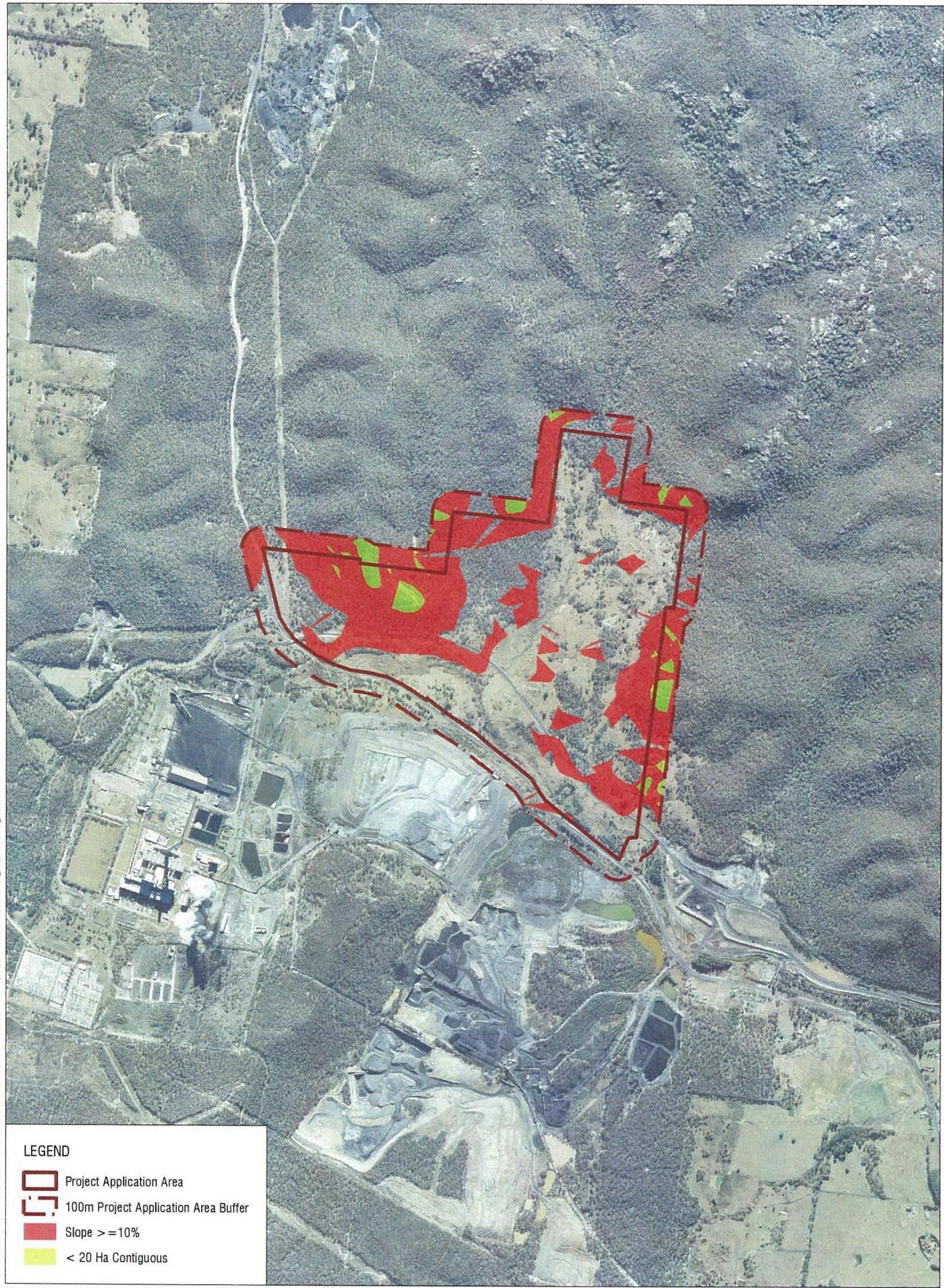
The risk matrix result is **D4 (Table 1)** which is considered low risk to agricultural activities. For low risk activities the required inspection density is 1 site observation every 25 – 400 ha. For the purpose of this survey the Project Application Area and 100 m buffer area (276 ha) is included in this inspection density.

Step 4: Soils and landscape verification criteria

Ten site verification criteria have been identified, with the easy to measure criteria assessed first. They are: slope; rock outcrop; surface rock fragments; gilgai; soil fertility (based on soil type); effective rooting depth to a physical barrier; soil drainage; soil pH; salinity; and effective rooting depth to a chemical barrier. For soil to be classified as BSAL at each representative site it must meet all the criteria outlined in the flow chart shown in **Table 4**. If any criteria are not met, the site is not BSAL and there is no need to continue the assessment. The specific requirement for each parameter to be assessed is outlined in the Interim Protocol.

Using LIDAR, areas of greater than or equal to 10% slope were excluded from the BSAL site verification assessment area, as were areas of less than 10% slope which had a contiguous area of less than 20 ha. The slope exclusion areas are shown in **Figure 2**:

The BSAL verification fieldwork was undertaken in August 2014 and mapped 29 observations. This information was further supplemented by 3 detailed observations from a previous a SLR soil survey conducted in October 2012.



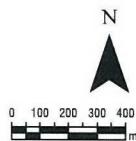
LEGEND

- █ Project Application Area
- █ 100m Project Application Area Buffer
- █ Slope $\geq 10\%$
- █ < 20 Ha Contiguous



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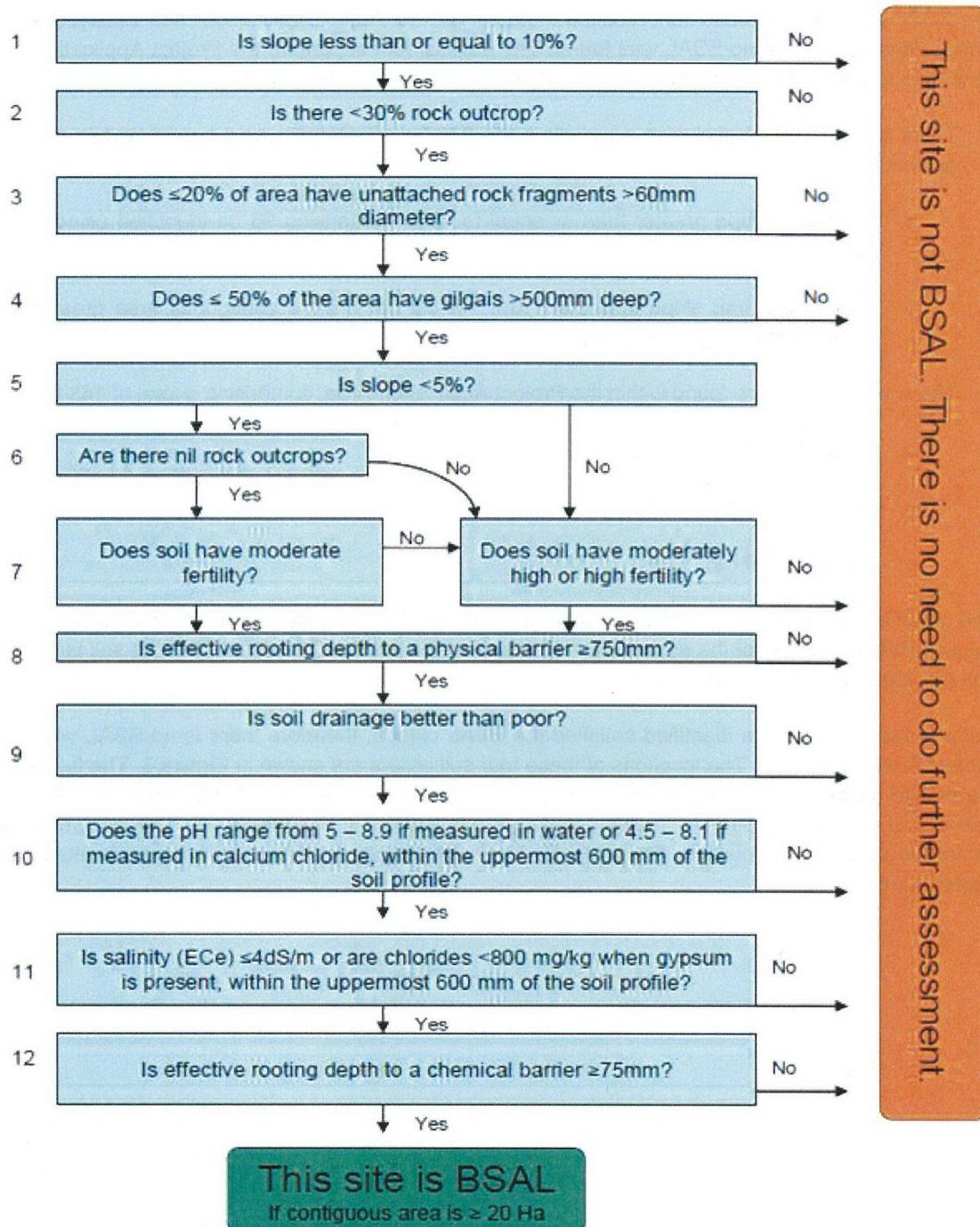
Centennial Angus Place Pty Ltd

Neubeck On-Site BSAL Verification

Slope Exclusion Areas

FIGURE 2

Table 4 Flow Chart for Site Assessment of BSAL



2.3 Results

The BSAL verification assessment resulted in no part of the Project Application Area satisfying all the BSAL criteria, therefore no BSAL was found. The assessment separated the Project Application Area according to exclusion areas and soil types into the following discrete areas:

1. There was 113 ha of exclusion area within the 276 ha assessment area based on two separate criteria:
 - a. Land with slope greater than or equal to 10%, comprising 96 ha identified using LIDAR Data,
 - b. Land which had slope less than 10% but did not have a contiguous area greater than 20 ha, comprising 17 ha in total.
2. Three soil orders were found within the Project Application Area, comprising a total of 163 ha:
 - a. Chromosol (31 ha)
 - b. Dermosol (76 ha)
 - c. Kandosol (56 ha)

The 56 ha of Kandosol includes a 10 ha area in the far west of the Project Application Area which was inaccessible at the time of the assessment and was correlated as a Kandosol from the soil landscape unit previously mapped by King (1993).

None of these soil orders identified satisfied the BSAL criteria, therefore there is no BSAL within the Project Application Area. The locations of these four soil orders are shown in **Figure 3**. The findings of the on-site assessment are summarised below in **Table 5** and **Table 6**, the detailed BSAL Soil Data Cards and associated support documentation are attached in **Appendix A**. The accompanying laboratory data can be found in **Appendix B**. The methodology for the slope analysis is attached in **Appendix C**.

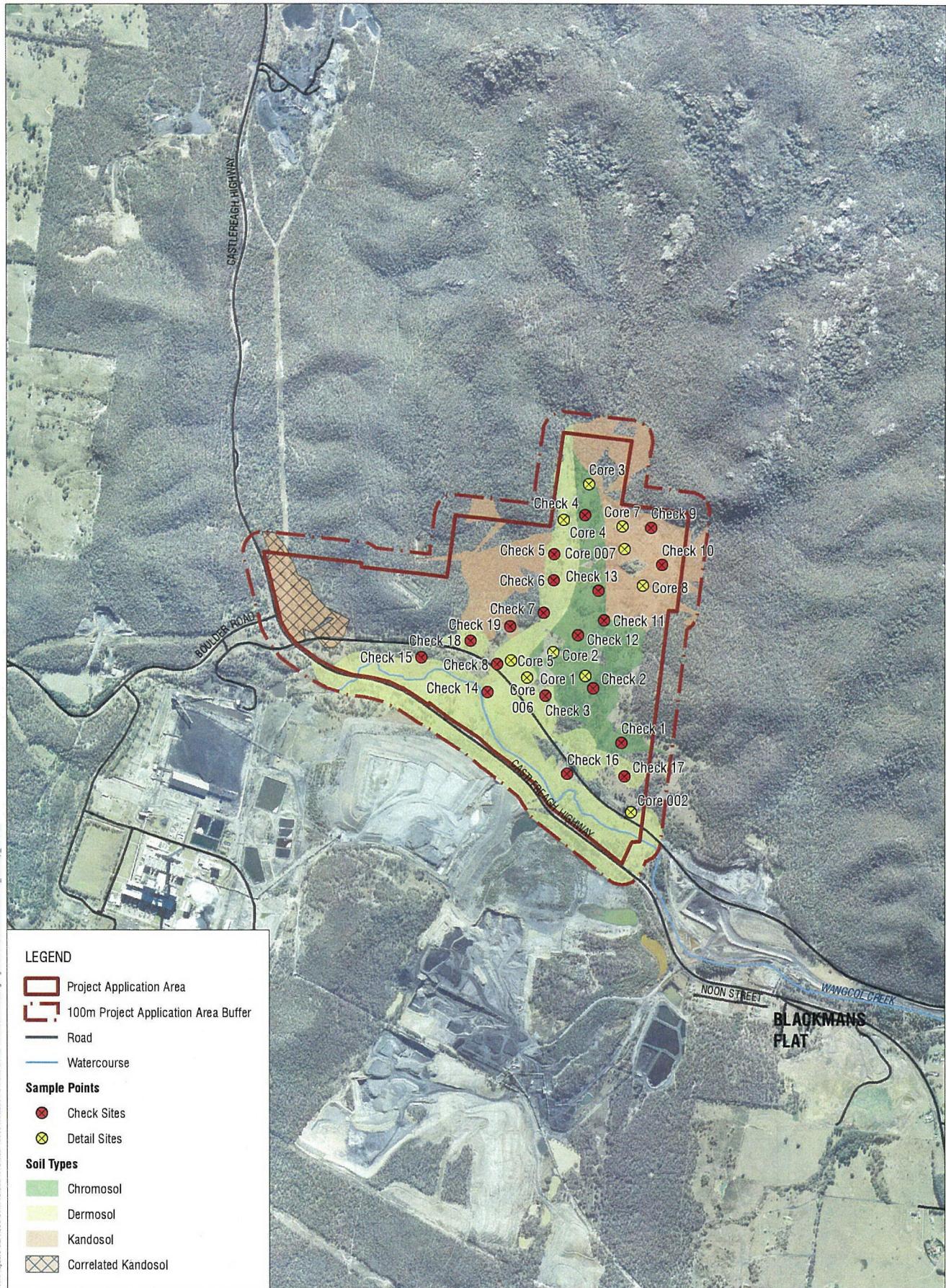


Table 5 Detailed Site BSAL Verification Summary

Site Number	Inspection Site Type	Australian Soil Classification (to ASC Great Group)	1. Is slope < 10%?	2. Is there < 30% Rock Outcrop?	3. < 20% unattached Rock Fragments > 60mm?	4. Does < 50% have Gilgas >500mm deep?	5. Is Slope <5%?	6. Are there nil rock outcrops?	7a. Does Soil Have Moderate fertility?	7b. Does soil have Moderately High or High fertility?	8. Is ERD to a physical barrier >750mm?	9. Is drainage better than poor?	10. Is pH between 5.0 and 8.9?	11. Is salinity (ECe) < 4 dS/m	12. Is ERD to a chemical barrier >750mm?	Is the Site BSAL?
Core 1	Detailed	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	Yes					No
Core 2	Detailed	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Core 3	Detailed	Mesotrophic Grey Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Core 4	Detailed	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Core 5	Detailed	Mesotrophic Red Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Core 006	Detailed	Mesotrophic Brown Dermosol	Yes	Yes	Yes	Yes	Yes		Yes	No	No	No				No
Core 7	Detailed	Mesotrophic Red Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No
Core 8	Detailed	Eutrophic Brown Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No
Core 007	Detailed	Eutrophic Yellow Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No
Core 002	Detailed	Eutrophic Brown Dermosol	Yes	Yes	No											No

Table 6 Checked Site BSAL Verification Summary

Site Number	Inspection Site Type	Australian Soil Classification (to ASC Great Group)	1. Is slope < 10%?	2. Is there < 30% Rock Outcrop?	3. < 20% unattached Rock Fragments > 60mm?	4. Does < 50% have Gilgais >500mm deep?	5. Is Slope <5%?	6. Are there nil rock outcrops?	7a. Does Soil Have Moderate fertility?	7b. Does soil have Moderately High or High fertility?	8. Is ERD to a physical barrier >750mm?	9. Is drainage better than poor?	10. Is pH between 5.0 and 8.9?	11. Is salinity (ECE) < 4 dS/m	12. Is ERD to a chemical barrier >750mm?	Is the Site BSAL?
Check 1	Checked	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 2	Checked	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 3	Checked	Mesotrophic Brown Dermosol	Yes	Yes	No											No
Check 4	Checked	Mesotrophic Grey Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 5	Checked	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 6	Checked	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 7	Checked	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 8	Checked	Mesotrophic Red Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 9	Checked	Mesotrophic Red Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No
Check 10	Checked	Eutrophic Yellow Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No
Check 11	Checked	Mesotrophic Yellow Chromosol	Yes	Yes	No											No
Check 12	Checked	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 13	Checked	Mesotrophic Yellow Chromosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 14	Checked	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 15	Checked	Eutrophic Black Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 16	Checked	Eutrophic Brown Dermosol	Yes	Yes	Yes	Yes	Yes		N/A	Yes	No	No				No
Check 17	Checked	Mesotrophic Brown Dermosol	Yes	Yes	No											No
Check 18	Checked	Mesotrophic Brown Dermosol	Yes	Yes	Yes	Yes	Yes		Yes	No	No	No				No
Check 19	Checked	Eutrophic Brown Kandosol	Yes	Yes	Yes	Yes	Yes		No	No						No

On-Site BSAL Verification

Portions of the Project Application Area were previously mapped by SLR during October 2012 as part of a preliminary soil survey, these detailed sites have the prefix "00" in their site number, and represent 3 of the detailed sites within this BSAL Verification (Sites 002, 006 and 007).

Soil Types

There were 9 different great soil groups found at the 10 detailed sample sites within the Project Application Area:

- Mesotrophic Yellow Chromosol
- Mesotrophic Grey Chromosol
- Eutrophic Black Dermosol
- Eutrophic Brown Dermosol
- Mesotrophic Red Dermosol
- Mesotrophic Brown Dermosol
- Mesotrophic Red Kandosol
- Eutrophic Brown Kandosol
- Eutrophic Yellow Kandosol

Following are physical descriptions and laboratory analysis for each of the detailed sites within the BSAL Verification Assessment Area.

Detailed Site 1 – Yellow Chromosol

Table 7 Site 1 – Yellow Chromosol (Summary)

Site Description	
	
Plate 1 – Profile Core 1	Plate 2 – Landscape Looking North-West
ASC Name	Mesotrophic Yellow Chromosol
Representative Check Sites	1, 2, 11, 12, 13
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open Grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 8 Site 1 – Yellow Chromosol (Analysis)

Horizon	Depth (m)	Description		
A1	0.00 – 0.15	Brown silty loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with 10% coarse fragments <10 mm. Well drained with many coarse roots. Clear boundary.		
A2	0.15 – 0.25	Yellowish-brown loam with weak pedality and consistence. Strongly acidic, non-saline and non-sodic. Moderately acidic, non-saline and non-sodic. Moderately acidic, non-saline and non-sodic. Very low CEC with 10% coarse fragments <10 mm. Well drained with many coarse roots. Gradual boundary.		
B2	0.25 – 0.75	Light yellowish-brown heavy clay with strong pedality and consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with no coarse fragments. Poorly drained with 50% grey mottles and few very fine roots. Clear boundary.		
C	+0.75	Weathered bedrock (not laboratory tested)		
Horizon	ECe		Laboratory pH	
	dS/m	Rating	Value	Rating
A1	0.1	Non-Saline	5.7	Moderately Acidic
A2	0.1	Non-Saline	5.6	Moderately Acidic
B2	0.1	Non-Saline	5.8	Moderately Acidic
Horizon	CEC		ESP	
	cmol/kg	Rating	%	Rating
A1	5.9	Very Low	1.7	Non-Sodic
A2	5.2	Very Low	2.4	Non-Sodic
B2	18.0	Moderate	3.9	Non-Sodic

Detailed Site 2 – Yellow Chromosol

Table 9 Site 2 – Yellow Chromosol (Summary)

Site Description	
	
Plate 3 – Profile Core 2	Plate 4 – Landscape looking North
ASC Name	Mesotrophic Yellow Chromosol
Representative Check Sites	1, 2, 11, 12, 13
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 10 Site 2 – Yellow Chromosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.20	Dark greyish-brown silty clay loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with no coarse fragments. Well drained with fine roots common. Clear and boundary.			
A2	0.20 – 0.35	Brown silty clay loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Low CEC with no coarse fragments. Well drained with fine roots common. Clear boundary.			
B2	0.35 – 1.0	Brownish-yellow heavy clay with strong pedality and consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with 10% coarse fragments <20 mm. Poorly drained with 50% orange mottles and few very fine roots to 0.60 m.			
Horizon	ECe		Laboratory pH		
	dS/m	Rating	Value	Rating	
A1	0.3	Non-Saline	5.7	Moderately Acidic	
A2	0.1	Non-Saline	5.7	Moderately Acidic	
B2	0.1	Non-Saline	5.6	Moderately Acidic	
Horizon	CEC		ESP		
	cmol/kg	Rating	%	Rating	
A1	14.7	Moderate	2.0	Non-Sodic	
A2	10.6	Low	1.9	Non-Sodic	
B2	12.4	Moderate	1.6	Non-Sodic	

Detailed Site 3 –Grey Chromosol

Table 11 Site 3 – Grey Chromosol (Summary)

Site Description	
	
Plate 5 – Profile Core 3	Plate 6 – Landscape looking South-West
ASC Name	Mesotrophic Grey Chromosol
Representative Check Sites	4
Dominant Slope Association	Flat to Gently inclined (1 – 3%)
Land Use	Open grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 12 Site 3 – Grey Chromosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.20	Very dark brown silty clay loam with moderate pedality and firm consistence. Strongly acidic, non-saline and non-sodic. Moderate CEC with no coarse fragments. Well drained with medium roots common. Gradual boundary.			
A2	0.20 – 0.50	Dark greyish-brown silty heavy clay with moderate pedality and firm consistence. Strongly acidic, non-saline and non-sodic. Low CEC with no coarse fragments. Well drained with medium roots common. Gradual boundary.			
B	0.50 – 1.00	Greyish-brown silty clay with moderate pedality and firm consistence. Strongly acidic, non-saline and non-sodic. Low CEC with no coarse fragments. Poorly drained with 20% orange mottles and few very fine roots.			
Horizon	ECe			Laboratory pH	
	dS/m	Rating	Value	Rating	
A1	0.4	Non-Saline	5.1	Strongly Acidic	
A2	0.1	Non-Saline	5.5	Strongly Acidic	
B	0.1	Non-Saline	5.5	Strongly Acidic	
Horizon	CEC			ESP	
	cmol/kg	Rating	%	Rating	
A1	14.2	Moderate	1.4	Non-Sodic	
A2	10.8	Low	1.9	Non-Sodic	
B	9.1	Low	1.1	Non-Sodic	

Detailed Site 4 – Black Dermosol

Table 13 Site 4 – Black Dermosol (Summary)

Site Description	
	
Plate 5 – Profile Core 4	Plate 6 – Landscape looking North
ASC Name	Eutrophic Black Dermosol
Representative Check Sites	5, 6, 7, 14, 15
Dominant Slope Association	Flat to Gently inclined (1 – 3%)
Land Use	Open Grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 14 Site 4 – Black Dermosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.10	Black light medium clay with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with nil coarse fragments. Well drained with many coarse roots. Gradual boundary.			
B21	0.10 – 0.40	Very dark grey heavy clay with strong pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with nil coarse fragments. Poorly drained with 30% orange mottles and fine roots common. Gradual boundary.			
B22	0.40 – 1.00	Very dark greyish-brown silty clay with strong pedality and firm consistence. Slightly acidic, non-saline and non-sodic. Moderate CEC with nil coarse fragments. Poorly drained with 30% orange mottles and few very fine roots.			
Horizon	ECe		Laboratory pH		
	dS/m	Rating	Value	Rating	
A1	0.3	Non-Saline	5.7	Moderately Acidic	
B21	0.1	Non-Saline	5.9	Moderately Acidic	
B22	0.3	Non-Saline	6.1	Slightly Acidic	
Horizon	CEC		ESP		
	cmol/kg	Rating	%	Rating	
A1	22.7	Moderate	1.3	Non-Sodic	
B21	24.7	Moderate	2.0	Non-Sodic	
B22	16.5	Moderate	3.6	Non-Sodic	

Detailed Site 5 – Red Dermosol

Table 15 Site 5 – Red Dermosol (Summary)

Site Description	
	
Plate 7 – Profile Core 5	Plate 8 – Landscape looking South-West
ASC Name	Mesotrophic Red Dermosol
Representative Check Sites	8
Dominant Slope Association	Flat to Gently inclined (1 – 3%)
Land Use	Open grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 16 Site 5 – Red Dermosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.20	Dark greyish-brown silty loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with no coarse fragments. Well drained with fine roots common. Clear boundary.			
A2	0.20 – 0.35	Light reddish-brown silty loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with no coarse fragments. Moderately drained with fine roots common. Clear boundary.			
B2	0.35 – 1.0	Light reddish-brown clay loam with strong pedality and firm consistence. Moderately acidic, non-saline and marginally sodic. Very low CEC with <5% coarse fragments <5 mm. Poorly drained with 50% grey mottles and few very fine roots common.			
Horizon	ECe			Laboratory pH	
	dS/m	Rating	Value	Rating	
A1	0.2	Non-Saline	5.7	Moderately Acidic	
A2	0.1	Non-Saline	5.7	Moderately Acidic	
B2	0.2	Non-Saline	5.6	Moderately Acidic	
Horizon	CEC			ESP	
	cmol/kg	Rating	%	Rating	
A1	7.6	Low	0.7	Non-Sodic	
A2	4.5	Very Low	2.2	Non-Sodic	
B2	3.2	Very Low	9.4	Marginally Sodic	

Detailed Site 006 – Brown Dermosol

Table 17 Site 006 – Brown Dermosol (Summary)

Site Description	
	
Plate 9 – Profile Core 006	Plate 10 – Landscape looking North-East
ASC Name	Mesotrophic Brown Dermosol
Representative Check Sites	3, 17, 18
Dominant Slope Association	Flat to Gently inclined (1 – 3%)
Land Use	Open grassland
Soil Fertility	Moderate
Drainage	Poor
BSAL	No

Table 18 Site 006 – Brown Dermosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.20	Dark brown silty loam with weak pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with no coarse fragments. Well drained with course roots common. Gradual boundary.			
A2	0.20 – 0.40	Brown silty clay loam with weak pedality and weak consistence. Strongly acidic, non-saline and non-sodic. Low CEC with no coarse fragments. Well drained with coarse roots common. Gradual boundary.			
B1	0.40 – 0.60	Yellowish-brown silty clay loam with weak pedality and weak consistence. Strongly acidic, non-saline and non-sodic. Low CEC with no coarse fragments. Moderately drained with few coarse roots. Clear boundary.			
B2	0.60 – 0.90	Yellowish-brown silty clay loam with moderate pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Low CEC with <10% coarse fragments <20 mm. Poorly drained with 25% grey mottles and few very fine roots			
Horizon	ECe			Laboratory pH	
	dS/m	Rating	Value	Rating	
A1	0.3	Non-Saline	5.7	Moderately Acidic	
A2	<0.1	Non-Saline	5.4	Strongly Acidic	
B1	0.1	Non-Saline	5.4	Strongly Acidic	
B2	0.3	Non-Saline	5.2	Strongly Acidic	
Horizon	CEC			ESP	
	cmol/kg	Rating	%	Rating	
A1	12.2	Moderate	2.5	Non-Sodic	
A2	6.7	Low	3.0	Non-Sodic	
B1	6.1	Low	4.9	Non-Sodic	
B2	6.6	Low	4.5	Non-Sodic	

Detailed Site 7 – Red Kandosol

Table 19 Site 7 – Red Kandosol (Summary)

Site Description	
	
Plate 11 – Profile Core 7	Plate 12 – Landscape looking North
ASC Name	Mesotrophic Red Kandosol
Representative Check Sites	9
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open grassland
Soil Fertility	Moderately Low
Drainage	Poor
BSAL	No

Table 20 Site 7 – Red Kandosol (Analysis)

Horizon	Depth (m)	Description			
A	0.00 – 0.10	Very dark greyish-brown loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Low CEC with <5% coarse fragments <10 mm. Well drained with course roots common. Gradual boundary.			
B1	0.10 – 0.40	Brown loam with weak pedality and consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with <10% coarse fragments <10 mm. Moderately drained with fine roots common. Gradual boundary.			
B2	0.40 – 0.80	Light reddish-brown clay loam with weak pedality and consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with 10% coarse fragments <20 mm. Poorly drained with 40 % orange mottles and few fine roots. Clear boundary.			
BC	+0.80	Weathered bedrock (not laboratory tested)			
Horizon	ECe			Laboratory pH	
	dS/m	Rating	Value	Rating	
A	0.2	Non-Saline	6.0	Moderately Acidic	
B1	0.1	Non-Saline	5.9	Moderately Acidic	
B2	0.1	Non-Saline	5.7	Moderately Acidic	
Horizon	CEC			ESP	
	cmol/kg	Rating	%	Rating	
A	9.2	Low	3.3	Non-Sodic	
B1	5.6	Very Low	1.8	Non-Sodic	
B2	5.7	Very Low	0.9	Non-Sodic	

Detailed Site 8 – Brown Kandosol

Table 21 Site 8 – Brown Kandosol (Summary)

Site Description	
	
Plate 13 – Profile Core 8	Plate 14 – Landscape looking West
ASC Name	Eutrophic Brown Kandosol
Representative Check Sites	19
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open grassland
Soil Fertility	Moderate
Drainage	Poor
BSAL	No

Table 22 Site 8 – Brown Kandosol (Analysis)

Horizon	Depth (m)	Description			
A	0.00 – 0.30	Black loam with moderate pedality and firm consistence. Moderately acidic, non-saline and non-sodic. Moderate CEC with 20% coarse fragments <10 mm. Well drained with course roots common. Gradual boundary.			
B1	0.30 – 0.50	Dark brown loam with weak pedality and consistence. Moderately acidic, non-saline and non-sodic. Low CEC with 25% coarse fragments <20 mm. Moderately drained with fine roots common. Gradual boundary.			
B2	0.40 – 0.80	Yellowish-brown loam with weak pedality and consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with 20% coarse fragments <20 mm. Poorly drained with 50 % orange mottles and few fine roots. Clear boundary.			
BC	+0.80	Weathered bedrock (not laboratory tested)			
Horizon	ECe		Laboratory pH		
	dS/m	Rating	Value	Rating	
A	0.1	Non-Saline	6.0	Moderately Acidic	
B1	0.1	Non-Saline	6.0	Moderately Acidic	
B2	0.4	Non-Saline	6.0	Moderately Acidic	
Horizon	CEC		ESP		
	cmol/kg	Rating	%	Rating	
A	14.7	Moderate	0.3	Non-Sodic	
B1	7.6	Low	1.3	Non-Sodic	
B2	5.7	Very Low	1.8	Non-Sodic	

Detailed Site 007 – Yellow Kandosol

Table 23 Site 007 – Yellow Kandosol (Summary)

Site Description	
	
Plate 15 – Profile Core 007	Plate 16 – Landscape looking South-East
ASC Name	Eutrophic Yellow Kandosol
Representative Check Sites	10
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open grassland
Soil Fertility	Moderate
Drainage	Poor
BSAL	No

Table 24 Site 007 – Yellow Kandosol (Analysis)

Horizon	Depth (m)	Description			
A1	0.00 – 0.25	Very dark greyish-brown loamy sand with moderate pedality and weak consistence. Moderately acidic, non-saline and marginally sodic. Very low CEC with <5% coarse fragments <10 mm. Well drained with course roots common. Clear boundary.			
A2	0.25 – 0.60	Light olive brown loamy sand with weak pedality and consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with <15% coarse fragments <20 mm. Moderately drained with fine roots common. Clear boundary.			
B2	0.60 – 0.80	Brownish-yellow loam with moderate pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with 10% coarse fragments <20 mm. Poorly drained with 40 % orange mottles and few fine roots. Diffuse boundary.			
BC	+0.80	Weathered bedrock (not laboratory tested)			
Horizon	ECe			Laboratory pH	
	dS/m	Rating	Value	Rating	
A1	0.2	Non-Saline	5.6	Moderately Acidic	
A2	0.1	Non-Saline	6.0	Moderately Acidic	
B2	<0.1	Non-Saline	5.9	Moderately Acidic	
Horizon	CEC			ESP	
	cmol/kg	Rating	%	Rating	
A1	2.7	Very Low	7.4	Marginally Sodic	
A2	1.8	Very Low	5.6	Non-Sodic	
B2	3.6	Very Low	2.8	Non-Sodic	

Detailed Site 002 – Brown Dermosol

Table 25 Site 002 – Brown Dermosol (Summary)

Site Description	
	
Plate 17 – Profile Core 002	Plate 18 – Landscape looking South-West
ASC Name	Eutrophic Brown Dermosol
Representative Check Sites	16
Dominant Slope Association	Gently to moderately inclined (3 – 5%)
Land Use	Open grassland
Soil Fertility	Moderately High
Drainage	Poor
BSAL	No

Table 26 Site 002 – Brown Dermosol (Analysis)

Horizon	Depth (m)	Description		
A1	0.00 – 0.25	Dark brown silty loam with moderate pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Low CEC with <5% coarse fragments <10 mm. Well drained with course roots common. Clear boundary.		
B1	0.25 – 0.60	Dark yellowish-brown silty loam with moderate pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with <10% coarse fragments <20 mm. Moderately drained with fine roots common. Gradual boundary.		
B2	0.60 – 0.90	Dark yellowish-brown clay loam with moderate pedality and weak consistence. Moderately acidic, non-saline and non-sodic. Very low CEC with <5% coarse fragments <20 mm. Poorly drained with 40 % orange mottles and few fine roots.		
Horizon	ECe		Laboratory pH	
	dS/m	Rating	Value	Rating
A1	0.3	Non-Saline	5.7	Moderately Acidic
B1	<0.1	Non-Saline	5.9	Moderately Acidic
B2	<0.1	Non-Saline	5.7	Moderately Acidic
Horizon	CEC		ESP	
	cmol/kg	Rating	%	Rating
A1	8.7	Low	1.1	Marginally Sodic
B1	5.0	Very Low	2.0	Non-Sodic
B2	5.0	Very Low	2.0	Non-Sodic

3 CONCLUSION

The Neubeck Project BSAL Verification Assessment was undertaken in August 2014 by SLR's Murray Fraser and supervised by Clayton Richards (CPSS 2). The assessment area was defined as the proposed Project Application Area totalling approximately 201 ha, as well as the required 100 m buffer (75 ha). The Project Application Area was assessed in accordance with the Interim Protocol and it was found that no BSAL existed within the 276 ha comprising the BSAL Verification Assessment Area.

4 REFERENCES

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Appendix A



**Neubeck Coal Project
BSAL Verification Assessment
Supporting Documentation & BSAL Soil Data Cards**

Table 1 Site Survey Number and Soil Data Card Identifier Correlation Table

Field Survey Date	Site Survey Number	Unique Soil Data Card Identifier
October 2012	Core 006	1
	Core 007	2
	Core 002	3
August 2014	Core 1	4
	Core 2	5
	Core 3	6
	Core 4	7
	Core 5	8
	Core 7	9
	Core 8	10
	Check 1	11
August 2014	Check 2	12
	Check 3	13
	Check 4	14
	Check 5	15
	Check 6	16
	Check 7	17
	Check 8	18
	Check 9	19
	Check 10	20
	Check 11	21
	Check 12	22
	Check 13	23
	Check 14	24
	Check 15	25
	Check 16	26
	Check 17	27
	Check 18	28
	Check 19	29

Soil Core 1: Yellow Chromosol



Core 1 – Landscape looking North-West

Core 1 – Soil surface



Core 1 – Soil Profile Yellow Chromosol

Soil Core 2: Yellow Chromosol



Core 2 – Landscape looking North



Core 2 – Soil surface



Core 2 – Soil Profile Yellow Chromosol

Soil Core 3: Grey Chromosol



Core 3 – Landscape looking West



Core 3 – Soil surface



Core 3 – Soil Profile Grey Chromosol

Soil Core 4: Black Dermosol

Detailed Sites



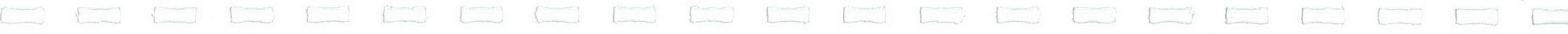
Core 4 – Soil Profile Black Dermosol



Core 4 – Landscape looking North-East



Core 4 – Mottling at 60 cm



Soil Core 5: Red Dermosol



Core 5 – Landscape looking North-East



Core 5 – Landscape looking South-West



Core 5 – Soil Profile Red Dermosol

Soil Core 006: Brown Dermosol



Core 006 – Landscape looking South-West



Core 006 – Landscape looking North-West



Core 006 – Soil Profile Brown Dermosol

Soil Core 7: Red Kandosol



Core 7 – Landscape looking North



Core 7 – Landscape looking East towards Quarry Area 1



Core 7 – Soil Profile Red Kandosol

Soil Core 8: Brown Kandosol



Core 8 – Landscape looking North-East



Core 8 – Landscape looking West



Core 8 – Soil Profile Brown Kandosol

Soil Core 007: Yellow Kandosol



Core 007 – Landscape looking South-East



Core 007 – Landscape looking South-West



Core 007 – Soil Profile Yellow Kandosol

Soil Core 002: Brown Dermosol



Core 002 – Landscape looking South



Core 002 – Surface rock



Core 002 – Soil Profile Brown Dermosol



Check Site 1 – Landscape looking West



Check Site 1 – Yellow Chromosol



Check Site 2 – Landscape looking West



Check Site 2 –Yellow Chromosol



Check Site 3 – Landscape looking South



Check Site 3 – Surface rock on Brown Dermosol



Check Site 4 – Landscape looking East



Check Site 4 – Grey Chromosol



Check Site 5 – Landscape looking North-East



Check Site 5 –Black Dermosol



Check Site 6 – Landscape looking North



Check Site 6 –Black Dermosol



Check Site 7 – Landscape looking East



Check Site 7 –Black Dermosol



Check Site 8 – Landscape looking North-East



Check Site 8 –Red Dermosol



Check Site 9 – Looking South to Quarry Area 1



Check Site 9 –Red Kandosol



Check Site 10 – Landscape looking North-East



Check Site 10 –Yellow Kandosol



Check Site 11 – Quarry Area 2 looking West



Check Site 11 – Yellow Chromosol



Check Site 12 – Landscape looking North-East



Check Site 12 – Yellow Chromosol



Check Site 13 – Landscape looking North-East



Check Site 13 – Yellow Chromosol



Check Site 14 – Landscape looking North



Check Site 14 – Black Dermosol



Check Site 15 – Landscape looking South-West



Check Site 15 – Waterlogged Black Dermosol



Check Site 16 – Landscape looking North-West



Check Site 16 – Brown Dermosol



Check Site 17 – Landscape looking East



Check Site 17 – Brown Dermosol



Check Site 18 – Landscape looking South



Check Site 18 – Brown Dermosol



Check Site 19 – Landscape looking South



Check Site 19 – Brown Kandosol

SURVEY TITLE:

NEUBECK COAL PROJECT BLACKMAN'S FLAT

DETAIL 006

PROFILE MAP DETAILS						SURVEY DETAILS			
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date	Photo Taken (1)	No. of Layers		
						profile <input type="checkbox"/>			
						site <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						both profile & site <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						Nature of Exposure (2)			
						auger <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						pit <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						batter <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						gully <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						core sample <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						other <input type="checkbox"/>	<input checked="" type="checkbox"/>		
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD					
yes <input type="checkbox"/> no <input checked="" type="checkbox"/>		checked <input type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>							
SOIL TYPE	VEGETATION		LANDFORM ELEMENT (1)						
A.S.C.	Vegetation Community (1)		alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>		
O	unknown <input type="checkbox"/>		backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/playa <input type="checkbox"/>	stream channel <input type="checkbox"/>		
SO	rainforest <input type="checkbox"/>		bank <input type="checkbox"/>	cut face <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	streambed <input type="checkbox"/>		
GG	wet sclerophyll forest <input type="checkbox"/>		bar <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	hilcrest <input type="checkbox"/>	pit <input type="checkbox"/>	summit surface <input type="checkbox"/>		
SG	dry sclerophyll forest <input type="checkbox"/>		beach <input type="checkbox"/>	drainage depression <input type="checkbox"/>	lagoon <input type="checkbox"/>	prior stream <input type="checkbox"/>	swale <input type="checkbox"/>		
F	woodland grass u'storey <input type="checkbox"/>		beach ridge <input type="checkbox"/>	dam <input type="checkbox"/>	lakeside <input type="checkbox"/>	rock flat <input type="checkbox"/>	swamp <input type="checkbox"/>		
M	woodland shrub u'storey <input type="checkbox"/>		bench <input type="checkbox"/>	dune <input type="checkbox"/>	landslide <input type="checkbox"/>	rock platform <input type="checkbox"/>	talus <input type="checkbox"/>		
M	tall shrubland <input type="checkbox"/>		berm <input type="checkbox"/>	embankment <input type="checkbox"/>	levee <input type="checkbox"/>	scald <input type="checkbox"/>	tidal creek <input type="checkbox"/>		
N	low shrubland <input type="checkbox"/>		blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>	lunette <input type="checkbox"/>	scarp <input type="checkbox"/>	tidal flat <input type="checkbox"/>		
C	heath <input type="checkbox"/>		channel bench <input type="checkbox"/>	fan <input type="checkbox"/>	maar <input type="checkbox"/>	scree <input type="checkbox"/>	tor <input type="checkbox"/>		
G.S.G.	grassland/herbland <input type="checkbox"/>		cirque <input type="checkbox"/>	fill top <input type="checkbox"/>	mound <input type="checkbox"/>	scroll <input type="checkbox"/>	trench <input type="checkbox"/>		
	swamp complex <input type="checkbox"/>		cliff <input type="checkbox"/>	flood-out <input type="checkbox"/>			valley flat <input type="checkbox"/>		
	littoral complex <input type="checkbox"/>								
	no vegetation <input type="checkbox"/>								
LITHOLOGY									
FAMILY	Growth Forms (4)		Substrate (3)						
	tree <input type="checkbox"/>	shrub <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	flat <input type="checkbox"/>			
M	mallee shrub <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	gravel <input type="checkbox"/>	tuff <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	crest <input type="checkbox"/>			
M	heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	breccia <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	hilllock <input type="checkbox"/>				
N	chenopod shrub <input type="checkbox"/>	silt <input type="checkbox"/>	greywacke <input type="checkbox"/>	fine-basic <input type="checkbox"/>	ridge <input type="checkbox"/>				
C	hummock grass <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	serpentine <input type="checkbox"/>	upper slope <input type="checkbox"/>				
G.S.G.	tussock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	calcrete <input type="checkbox"/>	gabbro <input type="checkbox"/>	midslope <input type="checkbox"/>				
	sod grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	dolerite <input type="checkbox"/>	simple slope <input type="checkbox"/>				
	sedge <input type="checkbox"/>	colluvium <input type="checkbox"/>	chert <input type="checkbox"/>	syenite <input type="checkbox"/>	lower slope <input type="checkbox"/>				
	rush <input type="checkbox"/>	lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	granodiorite <input type="checkbox"/>	open depression <input type="checkbox"/>				
	forb <input type="checkbox"/>	aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	adamellite <input type="checkbox"/>	closed depression <input type="checkbox"/>				
	fern/cycad <input type="checkbox"/>	marine <input type="checkbox"/>	gneiss <input type="checkbox"/>	granite <input type="checkbox"/>					
	moss <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	aplite <input type="checkbox"/>					
	lichen <input type="checkbox"/>	fill <input type="checkbox"/>	slate <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>					
	liverwort <input type="checkbox"/>	mud <input type="checkbox"/>	hornfels <input type="checkbox"/>	basalt <input type="checkbox"/>					
	vine <input type="checkbox"/>	tilt <input type="checkbox"/>	quartzite <input type="checkbox"/>	andesite <input type="checkbox"/>					
	LAND USE (1)		sedimentary <input type="checkbox"/>	greenstone <input type="checkbox"/>	trachyte <input type="checkbox"/>				
	national/state parks <input type="checkbox"/>		shale <input type="checkbox"/>	amphibolite <input type="checkbox"/>	ryholite <input type="checkbox"/>				
	timber/scrub/unused <input type="checkbox"/>		siltstone/mudstone <input type="checkbox"/>	marble <input type="checkbox"/>	obsidian <input type="checkbox"/>				
	logged native forest <input type="checkbox"/>		sandstone-quartz <input type="checkbox"/>	igneous <input type="checkbox"/>	scoria <input type="checkbox"/>				
	hardwood plantation <input type="checkbox"/>		sandstone-lithic <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	ash <input type="checkbox"/>				
	softwood plantation <input type="checkbox"/>		conglomerate <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	agglomerate <input type="checkbox"/>				
	voln./native pasture <input type="checkbox"/>				other <input type="checkbox"/>				
	improved pasture <input type="checkbox"/>								
	cropping <input type="checkbox"/>								
	orchard/vineyard <input type="checkbox"/>								
	vegetables/flowers <input type="checkbox"/>								
	urban <input type="checkbox"/>								
	industrial <input type="checkbox"/>								
	quarry/mining <input type="checkbox"/>								
	other <input type="checkbox"/>								
	Identification Method (1)		HYDROLOGY						
	personal assessment <input type="checkbox"/>		Profile Drainage (1) Permeability (1)						
	geology map <input type="checkbox"/>		very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>	Depth (1) & Extent (1)				
	both assessment & map <input type="checkbox"/>		poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	< 500 mm depth <input type="checkbox"/>				
	Rock Outcrop % (1)		imperfectly drained <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>				
	nil <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>	highly permeable <input type="checkbox"/>	≤ 50% area <input type="checkbox"/>				
	>20-30% <input type="checkbox"/>		well-drained <input type="checkbox"/>		> 50% area <input type="checkbox"/>				
	<2% <input type="checkbox"/>		rapidly drained <input type="checkbox"/>						
	>30-50% <input type="checkbox"/>								
	2-10% <input type="checkbox"/>								
	>50% <input type="checkbox"/>								
	>10-20% <input type="checkbox"/>								
SITE FIELD NOTES									
Surface Condition									
SITE CONDITION		Current (2)		Expected					
Site Disturbance(s) (2)		Ground Cover %		Wet (2)	Dry (2)				
natural disturbance <input type="checkbox"/>		cracked <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
no effective disturbance <input type="checkbox"/>		self-mulched <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
limited clearing <input type="checkbox"/>		loose <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
extensive clearing <input type="checkbox"/>		soft <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
cleared, no cultivation <input type="checkbox"/>		firm <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
occasional cultivation <input type="checkbox"/>		hardset <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
rainfed cultivation <input type="checkbox"/>		surface crust <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
irrigated cultivation <input type="checkbox"/>		trampled <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
highly disturbed <input type="checkbox"/>		poached <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
		recently cultivated <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
		water repellent <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
		gravely <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
		other <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
Photo file name/s: DETAILED SITE 008									

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SURVEY TITLE: NEURECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

DETAIL 007

PROFILE MAP DETAILS						SURVEY DETAILS			
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date	Photo Taken (1)	No. of Layers		
						profile <input type="checkbox"/>			
						site <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						both profile & site <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						Nature of Exposure (2)			
						auger <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						pit <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						batter <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						gully <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						core sample <input type="checkbox"/>	<input checked="" type="checkbox"/>		
						other <input type="checkbox"/>	<input checked="" type="checkbox"/>		
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD					
yes <input type="checkbox"/> no <input checked="" type="checkbox"/>		checked <input type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>							
SOIL TYPE	VEGETATION			LANDFORM ELEMENT (1)					
A.S.C.	Vegetation Community (1)			alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	
O	unknown <input type="checkbox"/>	backplain <input type="checkbox"/>	bank <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	gully <input type="checkbox"/>	pan/playa <input type="checkbox"/>	stream channel <input type="checkbox"/>	
SO	rainforest <input type="checkbox"/>	bar <input type="checkbox"/>	cut face <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	hillcrest <input type="checkbox"/>	pediment <input type="checkbox"/>	pit <input type="checkbox"/>	streambed <input type="checkbox"/>	
GG	wet sclerophyll forest <input type="checkbox"/>	beach <input type="checkbox"/>	dam <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillslope <input type="checkbox"/>	plain <input type="checkbox"/>	prior stream <input type="checkbox"/>	summit surface <input type="checkbox"/>	
SG	dry sclerophyll forest <input type="checkbox"/>	beach ridge <input type="checkbox"/>	dune <input type="checkbox"/>	lagoon <input type="checkbox"/>	lake <input type="checkbox"/>	rock flat <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	
F	woodland grass u'storey <input type="checkbox"/>	bench <input type="checkbox"/>	embankment <input type="checkbox"/>	landslide <input type="checkbox"/>	rock platform <input type="checkbox"/>	rock flat <input type="checkbox"/>	tidal creek <input type="checkbox"/>	talus <input type="checkbox"/>	
M	woodland shrub u'storey <input type="checkbox"/>	berm <input type="checkbox"/>	blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>	levee <input type="checkbox"/>	scald <input type="checkbox"/>	tidal flat <input type="checkbox"/>	talus <input type="checkbox"/>	
V	tali shrubland <input type="checkbox"/>	beach ridge <input type="checkbox"/>	channel bench <input type="checkbox"/>	fan <input type="checkbox"/>	lunette <input type="checkbox"/>	scarp <input type="checkbox"/>	tor <input type="checkbox"/>	valley flat <input type="checkbox"/>	
C	low shrubland <input type="checkbox"/>	cliff <input type="checkbox"/>	cirque <input type="checkbox"/>	fill top <input type="checkbox"/>	maar <input type="checkbox"/>	scree <input type="checkbox"/>	trench <input type="checkbox"/>		
G.S.G.	heath <input type="checkbox"/>	no vegetation <input type="checkbox"/>	flood-out <input type="checkbox"/>	mound <input type="checkbox"/>	scroll <input type="checkbox"/>				
LITHOLOGY						TOPOGRAPHY			
Growth Forms (4)						Substrate (3)	Slope Percent	Site Morphology (1)	
tree <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	flat <input type="checkbox"/>					
tree mallee <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	crest <input type="checkbox"/>					
shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	hillock <input type="checkbox"/>					
mallee shrub <input type="checkbox"/>	sand <input type="checkbox"/>	greywacke <input type="checkbox"/>	fine-basic <input type="checkbox"/>	ridge <input type="checkbox"/>					
heath shrub <input type="checkbox"/>	silt <input type="checkbox"/>	arkose <input type="checkbox"/>	serpentinite <input type="checkbox"/>	upper slope <input type="checkbox"/>					
chenopod shrub <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	gabbro <input type="checkbox"/>	midslope <input type="checkbox"/>					
hummock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	calcrete <input type="checkbox"/>	dolerite <input type="checkbox"/>	simple slope <input type="checkbox"/>					
tussock grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	diorite <input type="checkbox"/>	lower slope <input type="checkbox"/>					
sod grass <input type="checkbox"/>	colluvium <input type="checkbox"/>	chert <input type="checkbox"/>	syenite <input type="checkbox"/>	open depression <input type="checkbox"/>					
sedge <input type="checkbox"/>	lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	granodiorite <input type="checkbox"/>	closed depression <input type="checkbox"/>					
rush <input type="checkbox"/>	aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	adamellite <input type="checkbox"/>						
forb <input type="checkbox"/>	marine <input type="checkbox"/>	gneiss <input type="checkbox"/>	granite <input type="checkbox"/>						
fern/cycad <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	aplite <input type="checkbox"/>						
moss <input type="checkbox"/>	fill <input type="checkbox"/>	slate <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>						
lichen <input type="checkbox"/>	mud <input type="checkbox"/>	hornfels <input type="checkbox"/>	basalt <input type="checkbox"/>						
liverwort <input type="checkbox"/>	till <input type="checkbox"/>	quartzite <input type="checkbox"/>	andesite <input type="checkbox"/>						
vine <input type="checkbox"/>	sedimentary <input type="checkbox"/>	greenstone <input type="checkbox"/>	trachyte <input type="checkbox"/>						
	shale <input type="checkbox"/>	amphibolite <input type="checkbox"/>	ryholite <input type="checkbox"/>						
	siltstone/mudstone <input type="checkbox"/>	marble <input type="checkbox"/>	obsidian <input type="checkbox"/>						
	sandstone-quartz <input type="checkbox"/>	igneous <input type="checkbox"/>	scoria <input type="checkbox"/>						
	sandstone-lithic <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	ash <input type="checkbox"/>						
	conglomerate <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	agglomerate <input type="checkbox"/>						
			other <input type="checkbox"/>						
Identification Method (1)						HYDROLOGY			
personal assessment <input type="checkbox"/>						Profile Drainage (1)	Permeability (1)		
geology map <input type="checkbox"/>						very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>		
both assessment & map <input type="checkbox"/>						poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>		
Rock Outcrop % (1)						imperfectly drained <input type="checkbox"/>	moderately permeable <input type="checkbox"/>		
nil <input type="checkbox"/> >20-30% <input type="checkbox"/>						mod. well-drained <input type="checkbox"/>	highly permeable <input type="checkbox"/>		
<2% <input type="checkbox"/> >30-50% <input type="checkbox"/>						well-drained <input type="checkbox"/>			
2-10% <input type="checkbox"/> >50% <input type="checkbox"/>						rapidly drained <input type="checkbox"/>			
>10-20% <input type="checkbox"/>									
Surface Condition						SITE FIELD NOTES			
Current (2)						Expected			
Wet (2)						Dry (2)			
Ground Cover %									
cracked <input type="checkbox"/>						<input type="checkbox"/>			
self-mulched <input type="checkbox"/>						<input type="checkbox"/>			
loose <input type="checkbox"/>						<input type="checkbox"/>			
soft <input type="checkbox"/>						<input type="checkbox"/>			
firm <input type="checkbox"/>						<input type="checkbox"/>			
hardset <input type="checkbox"/>						<input type="checkbox"/>			
surface crust <input type="checkbox"/>						<input type="checkbox"/>			
trampled <input type="checkbox"/>						<input type="checkbox"/>			
poached <input type="checkbox"/>						<input type="checkbox"/>			
recently cultivated <input type="checkbox"/>						<input type="checkbox"/>			
water repellent <input type="checkbox"/>						<input type="checkbox"/>			
gravelly <input type="checkbox"/>						<input type="checkbox"/>			
other <input type="checkbox"/>						<input type="checkbox"/>			
Yellow RANOSOL									
Photo file name/s: DETAILED SITE 007									

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SURVEY TITLE: NEUBECK COAL PROJECT

SITE LOCATION: BLACKMAN'S FLAT.

DETAIL 002

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SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

DETAILS

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SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

DETAIL 2

PROFILE MAP DETAILS				SURVEY DETAILS				Nature of Exposure (2)	No. of Layers							
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date	Photo Taken (1)										
							profile									
						site										
						both profile & site										
						auger										
						pit										
						batter										
						gully										
						core sample										
						other										
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD												
yes <input checked="" type="checkbox"/> no <input type="checkbox"/>		checked <input type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>														
SOIL TYPE	VEGETATION				LANDFORM ELEMENT (1)				LITHOLOGY				TOPOGRAPHY			
A.S.C.	Vegetation Community (1)				alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>
O	Unknown <input type="checkbox"/> rainforest <input type="checkbox"/>				backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/playa <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
SO	wet sclerophyll forest <input type="checkbox"/> dry sclerophyll forest <input type="checkbox"/>				bank <input type="checkbox"/>	cut face <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	plain <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock platform <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	
AC	woodland grass u'storey <input type="checkbox"/> woodland shrub u'storey <input type="checkbox"/>				beach <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillcrest <input type="checkbox"/>	lagoon <input type="checkbox"/>	prior stream <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock platform <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	
GG	tall shrubland <input type="checkbox"/> low shrubland <input type="checkbox"/>				beach ridge <input type="checkbox"/>	embankment <input type="checkbox"/>	landslide <input type="checkbox"/>	lake <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock platform <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>	
SG	heath <input type="checkbox"/> grassland/herbland <input type="checkbox"/> swamp complex <input type="checkbox"/>				berm <input type="checkbox"/>	blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>	levee <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock platform <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>	
B	littoral complex <input type="checkbox"/> no vegetation <input type="checkbox"/>				berm <input type="checkbox"/>	blow-out <input type="checkbox"/>	fan <input type="checkbox"/>	lunette <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock platform <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>	
F	Growth Forms (4)				cliff <input type="checkbox"/>	fill top <input type="checkbox"/>	maar <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scald <input type="checkbox"/>	scarp <input type="checkbox"/>	scree <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>	
M	not identified <input type="checkbox"/> unconsolidated <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
N	limestone <input type="checkbox"/> tuff <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
O	gravel <input type="checkbox"/> sand <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
W	greywacke <input type="checkbox"/> fine-intermediate <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
C	fine-basic <input type="checkbox"/> serpentine <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
G.S.G.	fine-basic <input type="checkbox"/> serpentine <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
A	dolomite <input type="checkbox"/> gabbro <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
H	dolerite <input type="checkbox"/> diorite <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
I	syenite <input type="checkbox"/> granodiorite <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
J	adamellite <input type="checkbox"/> granite <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
K	aplite <input type="checkbox"/> quartz porphyry <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
L	slate <input type="checkbox"/> basalt <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
M	hornfels <input type="checkbox"/> andesite <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
N	quartzite <input type="checkbox"/> trachyte <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
O	greenstone <input type="checkbox"/> amphibolite <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
P	marble <input type="checkbox"/> obsidian <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
Q	igneous <input type="checkbox"/> ash <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
R	coarse-acidic <input type="checkbox"/> ash <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
S	coarse-intermediate <input type="checkbox"/> other <input type="checkbox"/>				cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
T	Identification Method (1)				HYDROLOGY				Slope Measurement Method (1)				Slope Morphology (1)			
U	personal assessment <input type="checkbox"/> geology map <input type="checkbox"/>				Profile Drainage (1)				Permeability (1)				Inclinometer <input type="checkbox"/>			
V	both assessment & map <input type="checkbox"/>				very poorly drained <input type="checkbox"/> poorly drained <input type="checkbox"/>				very slowly permeable <input type="checkbox"/> slowly permeable <input type="checkbox"/>				Abney level <input type="checkbox"/>			
W	Rock Outcrop % (1)				imperfectly drained <input type="checkbox"/> mod. well-drained <input type="checkbox"/>				moderately permeable <input type="checkbox"/> well-drained <input type="checkbox"/>				total station <input type="checkbox"/>			
X	nil <input type="checkbox"/> <2% <input type="checkbox"/>				>20-30% <input type="checkbox"/> >30-50% <input type="checkbox"/>				>50% <input type="checkbox"/> highly permeable <input type="checkbox"/>				RTK GPS <input type="checkbox"/>			
Y	2-10% <input type="checkbox"/> >10-20% <input type="checkbox"/>				>50% <input type="checkbox"/> rapidly drained <input type="checkbox"/>				>50% area <input type="checkbox"/> >50% area <input type="checkbox"/>				LIDAR <input type="checkbox"/>			
Z	Identification Method (1)				HYDROLOGY				Micromodel Type (1)				Aspect (1)			
A	Profile Drainage (1)				Permeability (1)				none <input type="checkbox"/> normal gilgal <input type="checkbox"/> crabhole gilgal <input type="checkbox"/> linear gilgal <input type="checkbox"/> lattice gilgal <input type="checkbox"/> melonhole gilgal <input type="checkbox"/> other <input type="checkbox"/>				waxing <input type="checkbox"/> waning <input type="checkbox"/> maximal <input type="checkbox"/> minimal <input type="checkbox"/>			
B	Permeability (1)				Depth (1) & Extent (1)				none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
C	Depth (1) & Extent (1)				SITE FIELD NOTES				none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
D	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				Yellow Chromosol				none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
E	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				Photo file name/s: DETAILED SITE 2				none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
F	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
G	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
H	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
I	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
J	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
K	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
L	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
M	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
N	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
O	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
P	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
Q	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
R	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
S	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
T	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
U	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
V	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
W	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
X	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
Y	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
Z	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
A	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
B	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
C	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
D	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
E	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
F	none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>								none <input type="checkbox"/> ≤ 500 mm depth <input type="checkbox"/> > 500 mm depth <input type="checkbox"/>				none <input type="checkbox"/> ≤ 50% area <input type="checkbox"/> > 50% area <input type="checkbox"/>			
G																

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

DETAIL 3

PROFILE MAP DETAILS				SURVEY DETAILS							
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date	Photo Taken (1)	No. of Layers				
								profile <input type="checkbox"/>	site <input type="checkbox"/>	<input type="checkbox"/>	
								both profile & site <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								Nature of Exposure (2)			
								auger <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								pit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								batter <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								gully <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								core sample <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
								other <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD							
yes <input type="checkbox"/> no <input checked="" type="checkbox"/>		checked <input type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>									
SOIL TYPE	VEGETATION		LANDFORM ELEMENT (1)								
A.S.C.	Vegetation Community (1)		alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>				
O	unknown <input type="checkbox"/>		backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/playa <input type="checkbox"/>	stream channel <input type="checkbox"/>				
H	rainforest <input type="checkbox"/>		bank <input type="checkbox"/>	cut face <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	streambed <input type="checkbox"/>				
SO	wet sclerophyll forest <input type="checkbox"/>		bar <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	hillcrest <input type="checkbox"/>	pit <input type="checkbox"/>	summit surface <input type="checkbox"/>				
D	dry sclerophyll forest <input type="checkbox"/>		beach <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillslope <input type="checkbox"/>	plain <input type="checkbox"/>	swale <input type="checkbox"/>				
GG	woodland grass u/strey <input type="checkbox"/>		beach ridge <input type="checkbox"/>	dam <input type="checkbox"/>	lagoon <input type="checkbox"/>	prior stream <input type="checkbox"/>	swamp <input type="checkbox"/>				
SG	woodland shrub u/strey <input type="checkbox"/>		bench <input type="checkbox"/>	dune <input type="checkbox"/>	lake <input type="checkbox"/>	rock flat <input type="checkbox"/>	talus <input type="checkbox"/>				
B	tall shrubland <input type="checkbox"/>		berm <input type="checkbox"/>	embankment <input type="checkbox"/>	landslide <input type="checkbox"/>	rock platform <input type="checkbox"/>	tidal creek <input type="checkbox"/>				
F	low shrubland <input type="checkbox"/>		blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>	levee <input type="checkbox"/>	scald <input type="checkbox"/>	tidal flat <input type="checkbox"/>				
A	heath <input type="checkbox"/>		channel bench <input type="checkbox"/>	fan <input type="checkbox"/>	lunette <input type="checkbox"/>	scarp <input type="checkbox"/>	tor <input type="checkbox"/>				
G	grassland/herbland <input type="checkbox"/>		cirque <input type="checkbox"/>	fill top <input type="checkbox"/>	maar <input type="checkbox"/>	scree <input type="checkbox"/>	trench <input type="checkbox"/>				
S	swamp complex <input type="checkbox"/>		cliff <input type="checkbox"/>	flood-out <input type="checkbox"/>	mound <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>				
E	littoral complex <input type="checkbox"/>										
N	no vegetation <input type="checkbox"/>										
Growth Forms (4)				LITHOLOGY				TOPOGRAPHY			
				Substrate (3)				Slope Percent			
				not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	flat <input type="checkbox"/>
				unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	crest <input type="checkbox"/>
				gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	hillock <input type="checkbox"/>
				sand <input type="checkbox"/>	greywacke <input type="checkbox"/>	fine-basic <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ridge <input type="checkbox"/>
				silt <input type="checkbox"/>	arkose <input type="checkbox"/>	serpentine <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	upper slope <input type="checkbox"/>
				clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	gabbro <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	midslope <input type="checkbox"/>
				organic material <input type="checkbox"/>	calcrete <input type="checkbox"/>	dolerite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	simple slope <input type="checkbox"/>
				alluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	diorite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	lower slope <input type="checkbox"/>
				colluvium <input type="checkbox"/>	chert <input type="checkbox"/>	syenite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	open depression <input type="checkbox"/>
				lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	granodiorite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	closed depression <input type="checkbox"/>
				aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	adamellite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				marine <input type="checkbox"/>	gneiss <input type="checkbox"/>	granite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				calcareous sand <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	aplite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				fill <input type="checkbox"/>	slate <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				mud <input type="checkbox"/>	hornfels <input type="checkbox"/>	basalt <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				till <input type="checkbox"/>	quartzite <input type="checkbox"/>	andesite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				sedimentary <input type="checkbox"/>	greenstone <input type="checkbox"/>	trachyte <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				shale <input type="checkbox"/>	amphibolite <input type="checkbox"/>	ryholite <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				siltstone/mudstone <input type="checkbox"/>	marble <input type="checkbox"/>	obsidian <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				sandstone-quartz <input type="checkbox"/>	Igneous <input type="checkbox"/>	scoria <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				sandstone-lithic <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	ash <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				conglomerate <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	agglomerate <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
					other <input type="checkbox"/>	other <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LAND USE (1)				Identification Method (1)				Slope Measurement Method (1)			
				personal assessment <input type="checkbox"/>				inclinometer <input type="checkbox"/>			Aspect (1)
				geology map <input type="checkbox"/>				Abney level <input type="checkbox"/>			waxing <input type="checkbox"/>
				both assessment & map <input type="checkbox"/>				total station <input type="checkbox"/>			waning <input type="checkbox"/>
				Rock Outcrop % (1)				RTK GPS <input type="checkbox"/>			maximal <input type="checkbox"/>
				nil <input type="checkbox"/> >20 - 30% <input type="checkbox"/>				LIDAR <input type="checkbox"/>			minimal <input type="checkbox"/>
				<2% <input type="checkbox"/> >30 - 50% <input type="checkbox"/>							
				2 - 10% <input type="checkbox"/> >50% <input type="checkbox"/>							
				>10 - 20% <input type="checkbox"/>							
				Profile Drainage (1)				Permeability (1)	Depth (1) & Extent (1)		
				very poorly drained <input type="checkbox"/>				very slowly permeable <input type="checkbox"/>	≤ 500 mm depth <input type="checkbox"/>		
				poorly drained <input type="checkbox"/>				slowly permeable <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>		
				imperfectly drained <input type="checkbox"/>				moderately permeable <input type="checkbox"/>	≤ 50% area <input type="checkbox"/>		
				mod. well-drained <input type="checkbox"/>				highly permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>		
				well-drained <input type="checkbox"/>							
				rapidly drained <input type="checkbox"/>							
SITE CONDITION				Surface Condition				SITE FIELD NOTES			
Site Disturbance(s) (2)				Current (2)				Expected			
				Ground Cover %							
				cracked <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				self-mulched <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				loose <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				soft <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				firm <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				hardset <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				surface crust <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				trampled <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				poached <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				recently cultivated <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				water repellent <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				gravelly <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
				other <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
GREY CHROMOSOL											
DETAILED SITE 3											

Please do not mark this space.

cm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
LAYER STATUS		COLOUR (Munsell, 1994)										Field pH							
Lower		Moist Munsell										(1 per layer)							
1		Horizon										1							
2		Moist Munsell										Raupach pH meter							
3		HCl (1)										test strip							
4		no effervescence										HCl (1)							
5		audible/slight efferv.										no effervescence							
6		strong effervescence										audible/slight efferv.							
7		Boundary Distinctiveness										(1 per layer)							
8		1 2 3 4 5										not evident							
9		sharp (<5 mm)										gradual (50-100 mm)							
10		abrupt (5-20 mm)										diffuse (>100 mm)							
11		clear (20-50 mm)										STRUCTURE							
12		Grade of Pedality (1)										1 2 3 4 5							
13		single-grained										massive							
14		weak pedality										moderate pedality							
15		strong pedality										Fabric (1)							
16		1 2 3 4 5										sandy							
17		earthy										smooth-faced pedds							
18		rough-faced pedds										smooth-faced pedds							
19		Ped Shear										Sub-dominant (1)							
20		1 2 3 4 5										ped size							
21		Sub-dominant (1)										1 2 3 4 5							
22		1 2 3 4 5										Soil Water Status (1 each per layer)							
23		1 2 3 4 5										dry							
24		mod. moist										wet							
25		calcareous										TEXTURE (1 each per layer)							
26		organic										Texture Grade 1 2 3 4 5							
27		not identified										sand							
28		other										loamy sand							
29		clayey sand										sandy loam							
30		silty clay loam										silty clay							
31		clay loam sandy										clay							
32		fibrile peat										1 2 3 4 5							
33		humic peat										soft segregations							
34		sapric peat										nODULES							
35		coarse										fragments							
36		fine										CRYSTALS							
37		veins										VAINs							
38		concretions										CONCRETIONs							
39		root linings										ROOT LININGS							
40		tubules										TUBULEs							
41		Size (1 per layer)										Size (1 per layer) Sur. 1 2 3 4 5							
42		fine gravel (2-6 mm)										Size (1 per layer) 1 2 3 4 5							
43		gravel (6-20 mm)										fine (>2 mm)							
44		medium (2-6 mm)										medium							
45		coarse gravel (20-60 mm)										medium heavy							
46		cobbles (60-200 mm)										medium heavy							
47		stones (200-600 mm)										ext coarse (>600 mm)							
48		boulders (>600 mm)										ext coarse (>600 mm)							

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKHANS FLAT

DET 114

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
		Described By	Profile Date
		Photo Taken (1)	No. of Layers
		profile	site
		both profile & site	core sample
		batter	other
		pit	
		auger	
		batter	
		gully	
		core sample	
		other	
Potential BSAL? (1)	Site type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD	
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	detailed <input type="checkbox"/>	excavation <input checked="" type="checkbox"/>
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)	
A.S.C.	Vegetation Community (1)	alcove <input type="checkbox"/>	cone <input type="checkbox"/>
O	wet sclerophyll forest <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>
D	dry sclerophyll forest <input type="checkbox"/>	foredune <input type="checkbox"/>	pant playa <input type="checkbox"/>
SO	woodland grass vstory <input type="checkbox"/>	cut face <input type="checkbox"/>	pediment <input type="checkbox"/>
G	woodland shrub vstory <input type="checkbox"/>	beach <input type="checkbox"/>	cut-over surface <input type="checkbox"/>
GG	tall shrubland <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillcrest <input type="checkbox"/>
SG	low shrubland <input type="checkbox"/>	bench <input type="checkbox"/>	dam <input type="checkbox"/>
F	heath <input type="checkbox"/>	berm <input type="checkbox"/>	hillside <input type="checkbox"/>
M	grassland/herbland <input type="checkbox"/>	embankment <input type="checkbox"/>	lagoon <input type="checkbox"/>
A	swamp/complex <input type="checkbox"/>	blow-out <input type="checkbox"/>	prior stream <input type="checkbox"/>
M	no vegetation <input type="checkbox"/>	channel bank <input type="checkbox"/>	rock flat <input type="checkbox"/>
A		cirque <input type="checkbox"/>	fan <input type="checkbox"/>
M		cliff <input type="checkbox"/>	fill top <input type="checkbox"/>
A		flood-out <input type="checkbox"/>	maar <input type="checkbox"/>
M		mound <input type="checkbox"/>	scarp <input type="checkbox"/>
A		soil <input type="checkbox"/>	talus <input type="checkbox"/>
M			valley flat <input type="checkbox"/>
Growth Forms (4)	LITHOLOGY	TOPOGRAPHY	
tree <input type="checkbox"/>	not identified <input type="checkbox"/>	Substrate (3)	Slope Percent
shrub <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	limestone <input type="checkbox"/>	Site Morphology (1)
mallee shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	cone <input type="checkbox"/>	flat <input type="checkbox"/>
heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	tuff <input type="checkbox"/>	ridge <input type="checkbox"/>
chenopod shrub <input type="checkbox"/>	silt <input type="checkbox"/>	breccia <input type="checkbox"/>	hillside <input type="checkbox"/>
hummock grass <input type="checkbox"/>	clay <input type="checkbox"/>	greywacke <input type="checkbox"/>	upper slope <input type="checkbox"/>
tussock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	arkose <input type="checkbox"/>	mid-slope <input type="checkbox"/>
sod grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	dolomite <input type="checkbox"/>	simple slope <input type="checkbox"/>
sedge <input type="checkbox"/>	colluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	lower slope <input type="checkbox"/>
rush <input type="checkbox"/>	lacustrine <input type="checkbox"/>	chert <input type="checkbox"/>	open depression <input type="checkbox"/>
fern/cycad <input type="checkbox"/>	aeolian <input type="checkbox"/>	jasper <input type="checkbox"/>	closed depression <input type="checkbox"/>
forb <input type="checkbox"/>	marine <input type="checkbox"/>	metamorphic <input type="checkbox"/>	
grass <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	gneiss <input type="checkbox"/>	
lichen <input type="checkbox"/>	siltsilicate/mudstone <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	
liverwort <input type="checkbox"/>	sandstone-quartz <input type="checkbox"/>	slate <input type="checkbox"/>	
vine <input type="checkbox"/>	sandstone-illitic <input type="checkbox"/>	hornfels <input type="checkbox"/>	
fern <input type="checkbox"/>	conglomerate <input type="checkbox"/>	quartzite <input type="checkbox"/>	
fern/cycad <input type="checkbox"/>	igneous <input type="checkbox"/>	greenstone <input type="checkbox"/>	
forb <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	amphibolite <input type="checkbox"/>	
grass <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	pyroxenite <input type="checkbox"/>	
lichen <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	granite <input type="checkbox"/>	
liverwort <input type="checkbox"/>	other <input type="checkbox"/>	agglomerate <input type="checkbox"/>	
vine <input type="checkbox"/>		rhylolite <input type="checkbox"/>	
fern <input type="checkbox"/>		obsidian <input type="checkbox"/>	
fern/cycad <input type="checkbox"/>		scoria <input type="checkbox"/>	
forb <input type="checkbox"/>		ash <input type="checkbox"/>	
grass <input type="checkbox"/>		normal gigar <input type="checkbox"/>	
lichen <input type="checkbox"/>		crabhole gigar <input type="checkbox"/>	
liverwort <input type="checkbox"/>		linear gigar <input type="checkbox"/>	
vine <input type="checkbox"/>		lattice gigar <input type="checkbox"/>	
fern <input type="checkbox"/>		meadowhole gigar <input type="checkbox"/>	
fern/cycad <input type="checkbox"/>		other <input type="checkbox"/>	
forb <input type="checkbox"/>			
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liverwort <input type="checkbox"/>			
vine <input type="checkbox"/>			</

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SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

DETAILS

PROFILE MAP DETAILS		SURVEY DETAILS		NSW SOIL AND LAND INFORMATION SYSTEM	
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date
					Photo Taken (1)
					profile <input type="checkbox"/>
					site <input type="checkbox"/>
					both profile & site <input type="checkbox"/>
					Nature of Exposure (2)
					auger <input type="checkbox"/>
					pit <input type="checkbox"/>
					batter <input type="checkbox"/>
					gully <input type="checkbox"/>
					core sample <input type="checkbox"/>
					other <input type="checkbox"/>
Potential BSAL? (1)	Site Type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD			
yes <input type="checkbox"/>	no <input type="checkbox"/>	checked <input type="checkbox"/>	detailed <input type="checkbox"/>	exclusion <input type="checkbox"/>	
SOIL TYPE		LANDFORM ELEMENT (1)		LITHOLOGY	
A.S.C.	VEGETATION				
O	Vegetation Community (1)	alcore <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>
O	Unknown <input type="checkbox"/>	backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/playa <input type="checkbox"/>
O	rainforest <input type="checkbox"/>	bank <input type="checkbox"/>	cut face <input type="checkbox"/>	gully <input type="checkbox"/>	sink hollow/doline <input type="checkbox"/>
S	wet sclerophyll forest <input type="checkbox"/>	bar <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	hillcrest <input type="checkbox"/>	stream channel <input type="checkbox"/>
S	dry sclerophyll forest <input type="checkbox"/>	beach <input type="checkbox"/>	dam <input type="checkbox"/>	pediment <input type="checkbox"/>	site <input type="checkbox"/>
S	woodland grass u storey <input type="checkbox"/>	beach ridge <input type="checkbox"/>	drainage depression <input type="checkbox"/>	pit <input type="checkbox"/>	both profile & site <input type="checkbox"/>
G	woodland shrub u storey <input type="checkbox"/>	berm <input type="checkbox"/>	dune <input type="checkbox"/>	prior stream <input type="checkbox"/>	core sample <input type="checkbox"/>
G	tall shrubland <input type="checkbox"/>	berm <input type="checkbox"/>	embankment <input type="checkbox"/>	rock flat <input type="checkbox"/>	batter <input type="checkbox"/>
S	low shrubland <input type="checkbox"/>	blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>	rock platform <input type="checkbox"/>	gully <input type="checkbox"/>
S	grassland/herbland <input type="checkbox"/>	channel bench <input type="checkbox"/>	fan <input type="checkbox"/>	scald <input type="checkbox"/>	core sample <input type="checkbox"/>
S	swamp complex <input type="checkbox"/>	cirque <input type="checkbox"/>	fan top <input type="checkbox"/>	scree <input type="checkbox"/>	other <input type="checkbox"/>
F	litoral complex <input type="checkbox"/>	cliff <input type="checkbox"/>	flood-out <input type="checkbox"/>	mound <input type="checkbox"/>	other <input type="checkbox"/>
F	no vegetation <input type="checkbox"/>			scroll <input type="checkbox"/>	
Growth Forms (4)		Substrate (3)		TOPOGRAPHY	
M	tree <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	Site Morphology (1)	
M	tree mallee <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	Slope Percent	
L	shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	coastal-basic <input type="checkbox"/>	
L	mallee shrub <input type="checkbox"/>	sand <input type="checkbox"/>	greywacke <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	
C	heath shrub <input type="checkbox"/>	silt <input type="checkbox"/>	arkose <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	
C	chenopod shrub <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	fine-basic <input type="checkbox"/>	
G.S.G.	hummock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	calcareous <input type="checkbox"/>	serpentine <input type="checkbox"/>	
G.S.G.	tussock grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	gabro <input type="checkbox"/>	
S	sod grass <input type="checkbox"/>	colluvium <input type="checkbox"/>	chert <input type="checkbox"/>	dolerite <input type="checkbox"/>	
S	sedge <input type="checkbox"/>	lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	diorite <input type="checkbox"/>	
S	rush <input type="checkbox"/>	aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	gneiss <input type="checkbox"/>	
F	fern/cycad <input type="checkbox"/>	marine <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	amphibolite <input type="checkbox"/>	
F	moss <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	slate <input type="checkbox"/>	aplite <input type="checkbox"/>	
F	lichen <input type="checkbox"/>	tilt <input type="checkbox"/>	hornfels <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	
F	liverwort <input type="checkbox"/>	mud <input type="checkbox"/>	quartzite <input type="checkbox"/>	basalt <input type="checkbox"/>	
F	vine <input type="checkbox"/>	tilt <input type="checkbox"/>	greenstone <input type="checkbox"/>	andesite <input type="checkbox"/>	
LAND USE (1)		sedimentary	igneous <input type="checkbox"/>	trachyte <input type="checkbox"/>	
		shale <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	ryolite <input type="checkbox"/>	
		silstone/mudstone <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	obsidian <input type="checkbox"/>	
		sandstone-quartz <input type="checkbox"/>	igneous <input type="checkbox"/>	normal gilgai <input type="checkbox"/>	
		conglomerate <input type="checkbox"/>	igneous <input type="checkbox"/>	crabhole gilgai <input type="checkbox"/>	
		soft <input type="checkbox"/>	igneous <input type="checkbox"/>	linear gilgai <input type="checkbox"/>	
		firm <input type="checkbox"/>	igneous <input type="checkbox"/>	lattice gilgai <input type="checkbox"/>	
		hardset <input type="checkbox"/>	igneous <input type="checkbox"/>	melonhole gilgai <input type="checkbox"/>	
		surface crust <input type="checkbox"/>	igneous <input type="checkbox"/>	other <input type="checkbox"/>	
		trampled <input type="checkbox"/>	igneous <input type="checkbox"/>		
		poached <input type="checkbox"/>	igneous <input type="checkbox"/>		
		recently cultivated <input type="checkbox"/>	igneous <input type="checkbox"/>		
		water repellent <input type="checkbox"/>	igneous <input type="checkbox"/>		
		gravelly <input type="checkbox"/>	igneous <input type="checkbox"/>		
		other <input type="checkbox"/>	igneous <input type="checkbox"/>		
SITE CONDITION		HYDROLOGY		Depth (1) & Extent (1)	
Site Disturbance(s) (2)		Profile Drainage (1)	Permeability (1)	Depth (1) <input type="checkbox"/>	Extent (1) <input type="checkbox"/>
natural disturbance <input type="checkbox"/>		both assessment & map <input type="checkbox"/>	very poorly drained <input type="checkbox"/>	≤ 500 mm depth <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>
no effective disturbance <input type="checkbox"/>		self-mulched <input type="checkbox"/>	poorly drained <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>	
limited clearing <input type="checkbox"/>		loose <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	≤ 50% area <input type="checkbox"/>	
extensive clearing <input type="checkbox"/>		soft <input type="checkbox"/>	highly permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>	
cleared, no cultivation <input type="checkbox"/>		firm <input type="checkbox"/>			
occasional cultivation <input type="checkbox"/>		hardset <input type="checkbox"/>			
irrigated cultivation <input type="checkbox"/>		surface crust <input type="checkbox"/>			
highly disturbed <input type="checkbox"/>		trampled <input type="checkbox"/>			
recently cultivated <input type="checkbox"/>		poached <input type="checkbox"/>			
water repellent <input type="checkbox"/>		recently cultivated <input type="checkbox"/>			
gravelly <input type="checkbox"/>		water repellent <input type="checkbox"/>			
other <input type="checkbox"/>		other <input type="checkbox"/>			
Surface Condition		Current (2)	Expected (2)		
		(Wet (2))	(Dry (2))		
SITE FIELD NOTES		RED DERNOL			
Photo file names: DETAILED SITE S					

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mm 0	mm 10	mm 20	mm 30	mm 40	mm 50	mm 60	mm 70	mm 80	mm 90	mm 100	mm 110	mm 120	mm 130	mm 140	mm 150	mm 160	mm 170	mm 180	Field pH Test Method (1)		Field pH Test Method (1)			
																			1 per layer	1	Raupach ohm meter	test strip		
LAYER STATUS	COLOUR (Munsell, 1994)	Field pH	Layer Notes																					
Lower	Horizon	Dry Munsell	1																					
1	Lower	Horizon	Dry Munsell	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
2	Lower	Horizon	Dry Munsell	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
3	Lower	Horizon	Dry Munsell	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
4	Lower	Horizon	Dry Munsell	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
5	Lower	Horizon	Dry Munsell	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
SUBSTRATE	Estimated Effective Rooting Depth (m)	Sample Taken	Type (1 per layer)	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
S	B	A	T	E	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Dominant (1)	MOTTLES Sub-dominant (1)	1	2	3	4	5	Abundance	1	2	3	4	5	Amount (1 per layer)	1	2	3	4	5	1	2	3	4	5	
1	1	2	3	4	5	<2%	not evident	1	2	3	4	5	Very few (<2%)	1	2	3	4	5	soft segregations	1	2	3	4	5
1	1	2	3	4	5	2-10%	1	2	3	4	5	Few (2-10%)	1	2	3	4	5	nodules	1	2	3	4	5	
1	1	2	3	4	5	10-20%	1	2	3	4	5	Common (10-20%)	1	2	3	4	5	fragments	1	2	3	4	5	
1	1	2	3	4	5	20-50%	1	2	3	4	5	Many (20-50%)	1	2	3	4	5	crystals	1	2	3	4	5	
1	1	2	3	4	5	Colour	1	2	3	4	5	Abundant (50-90%)	1	2	3	4	5	veins	1	2	3	4	5	
1	1	2	3	4	5	dark	1	2	3	4	5	Very abundant (>90%)	1	2	3	4	5	concretions	1	2	3	4	5	
1	1	2	3	4	5	red	1	2	3	4	5	Size (1 per layer)	1	2	3	4	5	root linings	1	2	3	4	5	
1	1	2	3	4	5	orange	1	2	3	4	5	fine gravel (2-6 mm)	1	2	3	4	5	tubules	1	2	3	4	5	
1	1	2	3	4	5	yellow	1	2	3	4	5	gravel (6-20 mm)	1	2	3	4	5	Size (1 per layer)	1	2	3	4	5	
1	1	2	3	4	5	brown	1	2	3	4	5	coarse gravel (20-50 mm)	1	2	3	4	5	fine (2-6 mm)	1	2	3	4	5	
1	1	2	3	4	5	pale	1	2	3	4	5	cobbles (60-200 mm)	1	2	3	4	5	medium (2-6 mm)	1	2	3	4	5	
1	1	2	3	4	5	grey	1	2	3	4	5	stones (200-600 mm)	1	2	3	4	5	coarse (6-20 mm)	1	2	3	4	5	
1	1	2	3	4	5	clayey	1	2	3	4	5	boulders (>600 mm)	1	2	3	4	5	medium heavy (20-60 mm)	1	2	3	4	5	
1	1	2	3	4	5	Contrast	1	2	3	4	5	ext coarse (>60 mm)	1	2	3	4	5	heavy (60-100 mm)	1	2	3	4	5	

SURVEY TITLE: NEWBERRY COAL PROJECT
SITE LOCATION: BACKMAN'S PIT

SITE LOCATION:

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SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKMANS BAY

DET A11 L8

PROFILE MAP DETAILS		SURVEY DETAILS		NSW SOIL AND LAND INFORMATION SYSTEM			
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date	Photo Taken (1)	No. of Layers
						profile	1
						site	1
						both profile & site	1
						Nature of Exposure (2)	1
						auger	1
						pit	1
						batter	1
						gully	1
						core sample	1
						other	1
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD			
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	checked <input type="checkbox"/>	detailed <input type="checkbox"/>				
SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)			
A.S.C.	Vegetation Community (1)	backstein	cone	footslope	ox-bow	sink hole/bathtub	2
O	Unknown	bank	crater	foredune	parcplaya	stream channel	1
R	Rainforest	bar	cut-face	gully	pediment	steambed	1
S	wet sclerophyll forest	beach	cut-over surface	hillcrest	pit	summit surface	1
D	dry sclerophyll forest	beach	dam	hillslope	plain	swale	1
SO	woodland grassy storey	beach	drainage depression	lagoon	prior stream	swamp	1
G	woodland shrub storey	berm	dune	lake	rock flat	falus	1
GG	tall shrubland	berm	embankment	landslide	rock platform	tidal creek	1
L	low shrubland	blow-out	estuary	levee	scald	tidal flat	1
SG	heath	channel bench	fan	lunette	scarp	• Make no	1
J	grassland/herbland	cirque	fill top	marr	scrub	stray marks	1
P	swamp complex	cliff	flood-out	mound	scroll	• Numbers in (1)	1
F	litter/complex	no vegetation				show max.	1
M						entries allowed	1
L							1
I							1
T							1
V							1
C							1
G.S.G.							1
							1
GROWTH FORMS (4)		Substrate (3)		LITHOLOGY			
tree	not identified	limestone	coarse-basic	fine-acidic	fine-intermediate	fine-basic	flat
tree mallee	unconsolidated	tuff	lime	serpentine	serpentinite	hillock	1
shrub	sand	breccia	lime	dolomite	gabbro	ridge	1
mallee shrub	clay	greywacke	lime	calcareous	dolerite	mid-slope	1
heath shrub	organic material	arkose	lime	aeolianite	diorite	simple slope	1
chenopod shrub	tussock grass	dolomite	lime	chert	gneiss	lower slope	1
hummock grass	sod grass	alluvium	lime	jasper	schist/phyllite	open depression	1
tussock grass	sedge	colluvium	lime	metamorphic	slate	closed depression	1
sod grass	rush	lacustrine	lime	marble	hornfels	valley fill	1
sedge	fern	marine	lime	igneous	quartzite		1
rush	temperate	calcareous sand	lime	amphibolite	andesite		1
fern/ycad	temperate	calcareous sand	lime	gneiss	trachyte		1
moss	temperate	shale	lime	metamorphic	trachyte		1
lichen	temperate	slate	lime	metamorphic	trachyte		1
lichen	temperate	hornfels	lime	metamorphic	trachyte		1
lichen	temperate	quartzite	lime	metamorphic	trachyte		1
lichen	temperate	greenstone	lime	metamorphic	trachyte		1
sandstone/mudstone	temperate	greenstone	lime	metamorphic	trachyte		1
sandstone-quartz	temperate	amphibolite	lime	metamorphic	trachyte		1
sandstone-quartz	temperate	marble	lime	metamorphic	trachyte		1
sandstone-quartz	temperate	igneous	lime	metamorphic	trachyte		1
sandstone-quartz	temperate	coarse-acidic	lime	metamorphic	trachyte		1
sandstone-quartz	temperate	agglomerate	lime	metamorphic	trachyte		1
conglomerate	temperate	other	lime	metamorphic	trachyte		1
conglomerate	temperate		lime	metamorphic	trachyte		1
affinity	temperate		lime	metamorphic	trachyte		1
with	temperate		lime	metamorphic	trachyte		1
affinity	temperate		lime	metamorphic	trachyte		1
with	temperate		lime	metamorphic	trachyte		1
improved pasture	temperate		lime	metamorphic	trachyte		1
cropping	temperate		lime	metamorphic	trachyte		1
orchard/vineyard	temperate		lime	metamorphic	trachyte		1
vegetables/flowers	temperate		lime	metamorphic	trachyte		1
urban	temperate		lime	metamorphic	trachyte		1
industrial	temperate		lime	metamorphic	trachyte		1
quarry/mining	temperate		lime	metamorphic	trachyte		1
other	temperate		lime	metamorphic	trachyte		1
SITE CONDITION		Surface Condition		HYDROLOGY			
Site Disturbance(s) (2)	Ground Cover %	Current (2)	Expected (2)	Permeability (1)	Depth (1) & Extent (1)		
natural disturbance	self-mulched	Wet (2)	Dry (2)	very poorly drained	≤ 500 mm depth		
no effective disturbance	loose			poorly drained	> 500 mm depth		
limited clearing	soft			moderately permeable	≤ 50% area		
extensive clearing	firm			highly permeable	> 50% area		
cleared, no cultivation	hardset						
occasional cultivation	surface crust						
rained cultivation	trampled						
irrigated cultivation	poached						
highly disturbed	recently cultivated						
quarry/mining	water repellent						
other	gravelly						
other	other						
SITE FIELD NOTES		BROWN LANDSCAPE					
Photo file name/s: DETAIL SITE 8							

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LAYER STATUS					COLOUR (Munsell, 1994)					Field pH					FIELD NOTES							
cm	mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180		
1	Lower	Horizon	Dry Munsell	(1 per layer)	1																	
2																						
3	1																					
4	2																					
5	Lower	Horizon	Dry Munsell	(1 per layer)	1																	
6	2																					
7	3																					
8	4																					
9	Lower	Horizon	Dry Munsell	(1 per layer)	1																	
10	5																					
11	6																					
12	7																					
13	8																					
14	9																					
15	10																					
16	11																					
17	12																					
18	13																					
19	14																					
S	Upper	Sub-dominant (1)	(3 per layer)	1	2	3	4	5	Type (1 per layer)	Sur.	1	2	3	4	5	COARSE FRAGMENTS						
U	B								disturbed	not evident												
S	T								undisturbed	not identified												
T	R								bulked	as substrate												
A	A								bulk density	as rock outcrop												
E	E								as parent material													
1	2	3	4	5	Colour	1	2	3	4	5	Type (1 per layer)	Sur.	1	2	3	4	5	SEgregations				
1	2	3	4	5	Abundance	1	2	3	4	5	not evident							Type (1 per layer)	1	2	3	4
1	2	3	4	5	Estimated Effective Rooting Depth (m)	<2%					very few (<2%)							not evident	1	2	3	4
1	2	3	4	5		2-10%					few (2-10%)							calcareous	1	2	3	4
1	2	3	4	5		10-20%					many (20-50%)							gypseous	1	2	3	4
1	2	3	4	5		20-50%					abundant (50-90%)							manganiferous	1	2	3	4
1	2	3	4	5							very abundant (>90%)							feruginous	1	2	3	4
1	2	3	4	5							bedrock reached							ironomanganeseous	1	2	3	4
1	2	3	4	5														calcareous	1	2	3	4
1	2	3	4	5														organic	1	2	3	4
1	2	3	4	5														not identified	1	2	3	4
1	2	3	4	5														other	1	2	3	4
1	2	3	4	5														Amount (1 per layer)	1	2	3	4
1	2	3	4	5														none	1	2	3	4
1	2	3	4	5														few (<25%)	1	2	3	4
1	2	3	4	5														few (25-10%)	1	2	3	4
1	2	3	4	5														common (10-20%)	1	2	3	4
1	2	3	4	5														many (20-50%)	1	2	3	4
1	2	3	4	5														abundant (>50%)	1	2	3	4
1	2	3	4	5														Strength (1 per layer)	1	2	3	4
1	2	3	4	5														weak	1	2	3	4
1	2	3	4	5														strong	1	2	3	4
1	2	3	4	5														Form (1 per layer)	1	2	3	4
1	2	3	4	5														soft segregations	1	2	3	4
1	2	3	4	5														nodules	1	2	3	4
1	2	3	4	5														fragments	1	2	3	4
1	2	3	4	5														crystals	1	2	3	4
1	2	3	4	5														veins	1	2	3	4
1	2	3	4	5														concretions	1	2	3	4
1	2	3	4	5														root linings	1	2	3	4
1	2	3	4	5														tubules	1	2	3	4
1	2	3	4	5														Size (1 per layer)	1	2	3	4
1	2	3	4	5														Sur.	1	2	3	4
1	2	3	4	5														fine (<2 mm)	1	2	3	4
1	2	3	4	5														medium (2-6 mm)	1	2	3	4
1	2	3	4	5														coarse (6-20 mm)	1	2	3	4
1	2	3	4	5														very coarse (20-60 mm)	1	2	3	4
1	2	3	4	5														boulders (>60 mm)	1	2	3	4

SURVEY TITLE: NEWBECk COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK ✓

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
		Described By	Profile Date
		Photo Taken (1)	Photo Taken (1)
		No. of Layers	No. of Layers
		core sample	core sample
		gully	gully
		batter	batter
		pit	pit
		auger	auger
		both profile & site	both profile & site
		site	site
		other	other
Potential BSAL? (1)		Site type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	checked <input type="checkbox"/>	deserted <input type="checkbox"/>
		LANDFORM ELEMENT (1)	
SOIL TYPE	VEGETATION		
A.S.C.	Vegetation Community (1)	alcove <input type="checkbox"/>	cone <input type="checkbox"/>
O	Unknown	bank <input type="checkbox"/>	footslope <input type="checkbox"/>
T	rainforest	cut face <input type="checkbox"/>	ox-bow <input type="checkbox"/>
V	wet sclerophyll forest	bar <input type="checkbox"/>	polygonal <input type="checkbox"/>
L	dry sclerophyll forest	beach <input type="checkbox"/>	panhandle <input type="checkbox"/>
C	woodland grassy storey	beach ridge <input type="checkbox"/>	pediment <input type="checkbox"/>
G.S.G.	tall shrubland	bench <input type="checkbox"/>	drainage depression <input type="checkbox"/>
A	low shrubland	berm <input type="checkbox"/>	dune <input type="checkbox"/>
G	grassland/herbland	blow-out <input type="checkbox"/>	embankment <input type="checkbox"/>
S.G.	heath	channel bench <input type="checkbox"/>	estuary <input type="checkbox"/>
F	swamp complex	cirque <input type="checkbox"/>	fan <input type="checkbox"/>
M	littoral complex	cliff <input type="checkbox"/>	flood-out <input type="checkbox"/>
A	no vegetation	mound <input type="checkbox"/>	mound <input type="checkbox"/>
		LITHOLOGY	
		Substrate (3)	Slope Percent
L	tree mallee	not identified <input type="checkbox"/>	coarse-basic <input type="checkbox"/>
V	shrub	unconsolidated <input type="checkbox"/>	fine-acidic <input type="checkbox"/>
C	malee shrub	sand <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>
2	health shrub	gravel <input type="checkbox"/>	fine-basic <input type="checkbox"/>
G.S.G.	chenopod shrub	silt <input type="checkbox"/>	serpentinite <input type="checkbox"/>
A	hummock grass	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>
G	tussock grass	organic material <input type="checkbox"/>	calcrite <input type="checkbox"/>
S.G.	soil grass	alluvium <input type="checkbox"/>	dolerite <input type="checkbox"/>
F	sedge	colluvium <input type="checkbox"/>	diorite <input type="checkbox"/>
M	rush	lacustrine <input type="checkbox"/>	diopside <input type="checkbox"/>
A	fernycied	aeolianite <input type="checkbox"/>	jasper <input type="checkbox"/>
M	fern	marine <input type="checkbox"/>	granodiorite <input type="checkbox"/>
A	moss	calcareous sand <input type="checkbox"/>	metamorphic <input type="checkbox"/>
G	lichen	fill <input type="checkbox"/>	gneiss <input type="checkbox"/>
S.G.	livewort	mud <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>
A	vine	tilt <input type="checkbox"/>	aplite <input type="checkbox"/>
		TOPOGRAPHY	
		Slope Morphology (1)	Site Morphology (1)
L	LAND USE (1)	limestone <input type="checkbox"/>	flat <input type="checkbox"/>
V	national/state parks	tuff <input type="checkbox"/>	crest <input type="checkbox"/>
C	timber/scrub/unused	breccia <input type="checkbox"/>	hillside <input type="checkbox"/>
A	logged native forest	greywacke <input type="checkbox"/>	upper slope <input type="checkbox"/>
G	hardwood plantation	arkose <input type="checkbox"/>	mid-slope <input type="checkbox"/>
S.G.	softwood plantation	dolomite <input type="checkbox"/>	simple slope <input type="checkbox"/>
F	volume/native pasture	calcareous <input type="checkbox"/>	lower slope <input type="checkbox"/>
M	improved pasture	aeolianite <input type="checkbox"/>	open depression <input type="checkbox"/>
A	cropping	chert <input type="checkbox"/>	closed depression <input type="checkbox"/>
M	orchard/avocado	metamorphic <input type="checkbox"/>	
A	vegetables/flowers	shale <input type="checkbox"/>	
G	urban	silicate/mudstone <input type="checkbox"/>	
S.G.	industrial	sandstone-quartz <input type="checkbox"/>	
A	quarry/mining	sandstone-itic <input type="checkbox"/>	
G	other	conglomerate <input type="checkbox"/>	
		HYDROLOGY	
		Profile Drainage (1)	Permeability (1)
N	Site Disturbance(s) (2)	very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>
N	no effective disturbance	poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>
N	limited clearing	mod. well-drained <input type="checkbox"/>	moderately permeable <input type="checkbox"/>
N	extensive clearing	well-drained <input type="checkbox"/>	highly permeable <input type="checkbox"/>
N	cleared, no cultivation		
N	occasional cultivation		
N	irrigated cultivation		
N	highly disturbed		
		Depth (1) & Extent (1)	Aspect (1)
N	Site Condition	Current (2)	Expected
N	Site Disturbance(s) (2)	Wet (2)	Dry (2)
N	Ground Cover %		
N	Cracked	<input type="checkbox"/>	<input type="checkbox"/>
N	self-mulched	<input type="checkbox"/>	<input type="checkbox"/>
N	loose	<input type="checkbox"/>	<input type="checkbox"/>
N	soft	<input type="checkbox"/>	<input type="checkbox"/>
N	firm	<input type="checkbox"/>	<input type="checkbox"/>
N	harder	<input type="checkbox"/>	<input type="checkbox"/>
N	surface crust	<input type="checkbox"/>	<input type="checkbox"/>
N	trampled	<input type="checkbox"/>	<input type="checkbox"/>
N	poached	<input type="checkbox"/>	<input type="checkbox"/>
N	recently cultivated	<input type="checkbox"/>	<input type="checkbox"/>
N	water repellent	<input type="checkbox"/>	<input type="checkbox"/>
N	gravelly	<input type="checkbox"/>	<input type="checkbox"/>
N	other	<input type="checkbox"/>	<input type="checkbox"/>
		SITE FIELD NOTES	
		Yellow Chromosol	
		Photo file name/s: CHECK SITE	

Please do not mark this space.

cm	mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180		
LAYER STATUS																						
Lower	Horizon	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell	Dry Munsell		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
COLOUR (Munsell, 1994)			FIELD pH										LAYER NOTES									
1			Field pH (1 per layer)										Field pH Test Method (1)									
2			Raupach pH meter										HCl (1)									
3			no effervescence										audible/slight efferv.									
4			strong effervescence										Boundary Distinctiveness									
5			(1 per layer) 1 2 3 4 5										not evident									
6			sharp (<5 mm)										gradual (50-100 mm)									
7			abrupt (5-20 mm)										clear (20-50 mm)									
8			diffuse (>100 mm)										STRUCTURE									
9			Grade of Pedality (1) 1 2 3 4 5										single-grained									
10			massive										weak pedality									
11			moderate pedality										strong pedality									
12			Fabric (1) 1 2 3 4 5										Sandy									
13			earthy										smooth-faced pads									
14			rough-faced pads										Ped Shape									
15			platy										Sub-dominant (1)									
16			lenticular										Dominant (1)									
17			prismatic										columnar									
18			angular blocky										Sub-dominant (1)									
19			round										Ped Size									
20			<2 mm										2-5 mm									
21			5-10 mm										10-20 mm									
22			20-50 mm										>50 mm									
23			SEgregations										Soil Water Status									
24			(1 each per layer)										1 2 3 4 5									
25			Texture										dry									
26			mod. moist										wet									
27			Soil Water Status										1 2 3 4 5									
28			(1 each per layer)										1 2 3 4 5									
29			1 2 3 4 5										1 2 3 4 5									
30			1 2 3 4 5										1 2 3 4 5									
31			1 2 3 4 5										1 2 3 4 5									
32			1 2 3 4 5										1 2 3 4 5									
33			1 2 3 4 5										1 2 3 4 5									
34			1 2 3 4 5										1 2 3 4 5									
35			1 2 3 4 5										1 2 3 4 5									
36			1 2 3 4 5										1 2 3 4 5									
37			1 2 3 4 5										1 2 3 4 5									
38			1 2 3 4 5										1 2 3 4 5									
39			1 2 3 4 5										1 2 3 4 5									
40			1 2 3 4 5										1 2 3 4 5									
41			1 2 3 4 5										1 2 3 4 5									
42			1 2 3 4 5										1 2 3 4 5									
43			1 2 3 4 5										1 2 3 4 5									
44			1 2 3 4 5																			

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK 2

PROFILE MAP DETAILS		SURVEY DETAILS		Nature of Exposure (2)	No. of Layers				
		Profile No.	Map Sheet No.			Eastings	Northings	Described By	Profile Data
<input checked="" type="checkbox"/> yes	<input type="checkbox"/>	<input checked="" type="checkbox"/> Site type (1) checked	<input type="checkbox"/> detailed	<input checked="" type="checkbox"/> exclusion	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD				
SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)		LITHOLOGY		TOPOGRAPHY	
A.S.C.	Vegetation Community (1)	Substrate (3)	Landform Element (1)	Slope Percent	Site Morphology (1)	Depth (1) & Extent (1)	Permeability (1)	Hydrology (1)	Hydrology (1)
O	C	Unknown	alcove (1)	cone (1)	coarse-basic	≤ 500 mm depth (1)	very poorly drained (1)	water repellent (1)	water repellent (1)
H	A	wet sclerophyll forest	backplain (1)	crater (1)	fine-acidic	> 500 mm depth (1)	poorly drained (1)	gravelly (1)	gravelly (1)
SO	A	dry sclerophyll forest	bank (1)	foredune (1)	fine-intermediate	500-1000 mm depth (1)	moderately permeable (1)	well-drained (1)	well-drained (1)
C	G	woodland grassy storey	bar (1)	on-bow (1)	fine-basic	> 1000 mm depth (1)	mod. well-drained (1)	highly permeable (1)	highly permeable (1)
GG	G	woodland shrub upstorey	beach ridge (1)	pan-playa (1)	serpentine	streambed (1)	normal gilgal (1)	linear gilgal (1)	lattice gilgal (1)
SG	G	tall shrubland	drainage depression (1)	hillcrest (1)	dolomite	pediment (1)	crabhole gilgal (1)	other (1)	melonhole gilgal (1)
G	G	low shrubland	bench (1)	dune (1)	dolomitic	pit (1)	other (1)	other (1)	other (1)
F	G	grassland/herbland	berm (1)	lake (1)	gneiss	summit surface (1)	swale (1)	swale (1)	swale (1)
M	G	swamp complex	embankment (1)	prior stream (1)	metamorphic	• Use 2B pencil	• No pen or biro	• Fully erase	• Make no
AM	G	illitoral complex	channel-bench (1)	rock flat (1)	adamellite	• stray marks	• show max.	• mistakes	• Numbers in (1)
LY	G	no vegetation	clifftop (1)	talus (1)	granodiorite	• entries allowed	• trench (1)	• tidal creek (1)	• tidal flat (1)
Y	G		flood-out (1)	mound (1)	granite	• valley flat (1)	• for (1)	• tidal flat (1)	• tidal flat (1)
Growth Forms (4)		LANDFORM ELEMENT (1)		LITHOLOGY		TOPOGRAPHY			
Tree	Shrub	not identified	unconsolidated	lime-stone (1)	calcareous sand	Method (1)	Abney level (1)	waning (1)	
tree mallee	shrub	gravel	sand	tuff (1)	calcareous sand	inclinometer (1)	total station (1)	maximal (1)	
heath	heath	gravel	silt	brackia (1)	calcareous sand	RTK GPS (1)	RTK GPS (1)	minimal (1)	
g.s.g.	g.s.g.	gravel	clay	greywacke (1)	metamorphic	LIDAR (1)	LIDAR (1)		
hummock grass	hummock grass	organic material	clay	arkose (1)	igneous	Aspect (1)			
tussock grass	tussock grass	alluvium	dolomite	dolomite (1)	amphibolite				
sod grass	sod grass	alluvium	calcarenous	gabbro (1)	metamorphic				
sedge	sedge	lacustrine	aeolianite	diorite (1)	gneiss (1)				
rush	rush	aeolianite	aeolianite	chert (1)	schistophyllite				
fern/cycad	fern/cycad	marine	aeolianite	slate (1)	quartz porphyry				
moss	moss	marine	aeolianite	hornfels (1)	quartz				
lichen	lichen	calcareous sand	aeolianite	quartz	andesite				
liverwort	liverwort	calcareous sand	metamorphic	trachyte (1)	trachyte				
vine	vine	calcareous sand	metamorphic	ryholite (1)	ryholite				
LAND USE (1)		LAND USE (1)		LITHOLOGY		TOPOGRAPHY			
national/state parks	timber/scrub/unused	silstone/mudstone	metamorphic	gneiss (1)	gneiss				
logged native forest	hardwood plantation	sandstone-quartz	igneous	amphibolite	igneous				
softwood plantation	volcanic/rainforest	sandstone-lithic	coarse-acidic	obsidian (1)	obsidian				
affinity with	improved pasture	conglomerate	agglomerate	scoria (1)	scoria				
	cropping		other	ash (1)	ash				
	orchard/vineyard			melonhole gilgal (1)	lattice gilgal (1)				
	vegetables/flowers			crabhole gilgal (1)	linear gilgal (1)				
	occasional cultivation			other (1)	other (1)				
	irrigated cultivation								
	highly disturbed								
SITE CONDITION		Surface Condition		HYDROLOGY		HYDROLOGY			
Site Disturbance(s) (2)	Ground Cover %	Current (2)	Expected	Permeability (1)	Depth (1) & Extent (1)	Permeability (1)	Depth (1) & Extent (1)	Hydrology (1)	Hydrology (1)
no effective disturbance	self-mulched	cracked (1)	dry (1)	very poorly drained (1)	≤ 500 mm depth (1)	very poorly drained (1)	≤ 500 mm depth (1)	water repellent (1)	water repellent (1)
limited clearing	loose	soft (1)	dry (1)	poorly drained (1)	> 500 mm depth (1)	poorly drained (1)	> 500 mm depth (1)	gravelly (1)	gravelly (1)
cleared, no cultivation	firm	hardset (1)	dry (1)	imperfectly drained (1)	500-1000 mm depth (1)	moderately permeable (1)	500-1000 mm depth (1)	well-drained (1)	well-drained (1)
occasional cultivation	surface crust	trampled (1)	dry (1)	mod. well-drained (1)	> 1000 mm depth (1)	highly permeable (1)	> 1000 mm depth (1)	highly permeable (1)	highly permeable (1)
irrigated cultivation	poached	poached (1)	dry (1)	well-drained (1)					
highly disturbed	recently cultivated	water repellent (1)	dry (1)	rapidly drained (1)					
	water repellent	gravelly (1)	dry (1)						
	other	other (1)	dry (1)						

Please do not mark this space.

LAYER STATUS		COLOUR (Munsell, 1934)					FIELD NOTES					FIELD pH TEST METHOD (1)				
mm 0	100	90	80	70	60	50	40	30	20	10	0	100	120	140	160	180
Lower	Horizon	Dry Munsell	Field pH (1 per layer)	1								Raupach.	pH meter.	test strip.		
Moist Munsell												HCI (1)				
												no effervescence				
												audible/slight efferv.				
												strong effervescence.				
												Boundary Distinctiveness				
												(1 per layer)	1	2	3	4
												not evident				
												sharp (<5 mm)				
												abrupt (5-20 mm)				
												clear (20-50 mm)				
												gradual (50-100 mm)				
												diffuse (>100 mm)				
												STRUCTURE				
												Grade of Pedality (1)	1	2	3	4
												single-grained				
												massive				
												weak pedality				
												moderate pedality				
												strong pedality				
												Fabric (1)	1	2	3	4
												Sandy				
												earthy				
												rough-faced ped.				
												smooth-faced ped.				
												Dominant (1)	1	2	3	4
												Ped Shape	1	2	3	4
												1	2	3	4	5
												Sub-dominant (1)	1	2	3	4
												Platy				
												Lenticular				
												Prismatic				
												Columnar				
												Angular				
												Blocky				
												Polyhedral				
												Granular				
												Crumb				
												Round				
												Dominant (1)	1	2	3	4
												Ped Size	1	2	3	4
												<2 mm				
												2-5 mm				
												5-10 mm				
												10-20 mm				
												20-50 mm				
												50-100 mm				
												100-200 mm				
												200-500 mm				
												>500 mm				
												SEGREGATIONS				
												Type (1 per layer)	1	2	3	4
												not evident				
												Calcareous				
												Gypseous				
												Manganiferous				
												Feruginous				
												Terranganiciferous				
												Organic				
												Not identified				
												Other				
												Amount (1 per layer)	1	2	3	4
												Very few (<2%)				
												Few (2-10%)				
												Common (10-20%)				
												Many (20-50%)				
												Absent (>50%)				
												Strength (1 per layer)	1	2	3	4
												Weak				
												Strong				
												Form (1 per layer)	1	2	3	4
												Soft segregations				
												Modules				
												Fragments				
												Crystals				
												Veins				
												Concretions				
												Root linings				
												Size (1 per layer)	1	2	3	4
												Surf.	1	2	3	4
												Size (1 per layer)	1	2	3	4
												1-2 mm				
												3-6 mm				
												6-20 mm				
												20-50 mm				
												Coarse gravel (2-6 mm)				
												Medium (2-6 mm)				
												Coarse gravel (6-20 mm)				
												Cobbles (6-20 mm)				
												Stones (20-60 mm)				
												Stones (20-60 mm)				

SURVEY TITLE: NEWBECK COAL PROJECT

SITE LOCATION:

BLACKHAMS FLAT

CHECK 3

PROFILE MAP DETAILS		SURVEY DETAILS		NSW SOIL AND LAND INFORMATION SYSTEM											
Profile No.	Map Sheet No.	Eastings	Northings		Described By	Profile Date	Photo Taken (1)	No. of layers							
Potential BSAL? (1)	Site type (1)	checked <input checked="" type="checkbox"/>	checked <input checked="" type="checkbox"/>	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD											
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	detailed <input type="checkbox"/>	exclusion <input type="checkbox"/>												
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)				LITHOLOGY				TOPOGRAPHY					
A.S.C.	Vegetation Community (1)	alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	pant playa <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	streambed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal creek <input type="checkbox"/>	
O	rainforest <input type="checkbox"/>	backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	profile <input type="checkbox"/>	site <input checked="" type="checkbox"/>	site <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	tidal flat <input type="checkbox"/>	
SO	wet sclerophyll forest <input type="checkbox"/>	dry sclerophyll forest <input type="checkbox"/>	beach <input type="checkbox"/>	cut face <input type="checkbox"/>	hillcrest <input type="checkbox"/>	pit <input type="checkbox"/>	plain <input type="checkbox"/>	both profile & site <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	
G.G.	woodland grass storey <input type="checkbox"/>	woodland shrub storey <input type="checkbox"/>	beach ridge <input type="checkbox"/>	drainage depression <input type="checkbox"/>	dune <input type="checkbox"/>	prior stream <input type="checkbox"/>	rock flat <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	batter <input type="checkbox"/>	
SG	grassland/hisland low shrubland <input type="checkbox"/>	grassland/hisland heath <input type="checkbox"/>	berm <input type="checkbox"/>	embankment <input type="checkbox"/>	lagoon <input type="checkbox"/>	lake <input type="checkbox"/>	rock platform <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	core sample <input type="checkbox"/>	
F	littoral complex <input type="checkbox"/>	swamp complex <input type="checkbox"/>	cliff <input type="checkbox"/>	clifftop <input type="checkbox"/>	fan <input type="checkbox"/>	lunette <input type="checkbox"/>	maar <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	
A	no vegetation <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	cone <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	footslope <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	
M	tree mallee <input type="checkbox"/>	shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	greywacke <input type="checkbox"/>	arkose <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	hillside <input type="checkbox"/>	
L	mallee shrub <input type="checkbox"/>	heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	calcareous <input type="checkbox"/>	fine-basic <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	
Y	chenopod shrub <input type="checkbox"/>	hummock grass <input type="checkbox"/>	tussock grass <input type="checkbox"/>	sod grass <input type="checkbox"/>	calcareous <input type="checkbox"/>	asbolanite <input type="checkbox"/>	intermediate <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	upper slope <input type="checkbox"/>	
C	g.s.g. <input type="checkbox"/>	organic material <input type="checkbox"/>	alluvium <input type="checkbox"/>	colluvium <input type="checkbox"/>	lacustrine <input type="checkbox"/>	aeolianite <input type="checkbox"/>	calcareous <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	mittslopes <input type="checkbox"/>	
Z	soil <input type="checkbox"/>	sedge <input type="checkbox"/>	sedge <input type="checkbox"/>	rush <input type="checkbox"/>	fern <input type="checkbox"/>	fern <input type="checkbox"/>	calcareous <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	
G.S.G.	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	
A	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	farm/croayd <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	open depression <input type="checkbox"/>	
M	forest <input type="checkbox"/>	forest <input type="checkbox"/>	forest <input type="checkbox"/>	forest <input type="checkbox"/>	forest <input type="checkbox"/>	forest <input type="checkbox"/>	forest <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	closed depression <input type="checkbox"/>	
Y	national/state parks <input type="checkbox"/>	timber/scributuned <input type="checkbox"/>	logged native forest <input type="checkbox"/>	hardwood plantation <input type="checkbox"/>	softwood plantation <input type="checkbox"/>	siltstone/mudstone <input type="checkbox"/>	sandstone-quartz <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	
L	affinity <input type="checkbox"/>	with <input type="checkbox"/>	improved pasture <input type="checkbox"/>	cropping <input type="checkbox"/>	orchard/vineyard <input type="checkbox"/>	vegetables/flowers <input type="checkbox"/>	urban <input type="checkbox"/>	industrial <input type="checkbox"/>	quarry/mining <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	
SITE CONDITION		Surface Condition		HYDROLOGY								SITE FIELD NOTES			
Site Disturbance(s) (2)		Ground Cover %		Profile Drainage (1)		Permeability (1)		Depth (1) & Extent (1)		Aspect (1)		Slope Measurement Method (1)		Slope Morphology (1)	
natural disturbance <input type="checkbox"/>	self-mulched <input type="checkbox"/>	cracked <input type="checkbox"/>	very poorly drained <input type="checkbox"/>	poorly drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	well-drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	< 500 mm depth <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>	< 50% area <input type="checkbox"/>	inclinometer <input type="checkbox"/>	Abney level <input type="checkbox"/>	waning <input type="checkbox"/>	
no effective disturbance <input type="checkbox"/>	loose <input type="checkbox"/>	loose <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	RTK GPS <input type="checkbox"/>	LIDAR <input type="checkbox"/>	> 50% area <input type="checkbox"/>	normal gigital <input type="checkbox"/>	normal gigital <input type="checkbox"/>	minimal <input type="checkbox"/>	
limited clearing <input type="checkbox"/>	soft <input type="checkbox"/>	soft <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	crabhole gigital <input type="checkbox"/>	crabhole gigital <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	lattice gigital <input type="checkbox"/>	lattice gigital <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
extensive clearing <input type="checkbox"/>	firm <input type="checkbox"/>	firm <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
cleared, no cultivation <input type="checkbox"/>	hardset <input type="checkbox"/>	hardset <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
occasional cultivation <input type="checkbox"/>	surface crust <input type="checkbox"/>	surface crust <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
rainfed cultivation <input type="checkbox"/>	trample <input type="checkbox"/>	trample <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
irrigated cultivation <input type="checkbox"/>	recently cultivated <input type="checkbox"/>	recently cultivated <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
highly disturbed <input type="checkbox"/>	water repellent <input type="checkbox"/>	water repellent <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	
other <input type="checkbox"/>	gravelly <input type="checkbox"/>	gravelly <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	

Please do not mark this space.

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

CHECK 4

<input type="checkbox"/>																			
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PROFILE MAP DETAILS		SURVEY DETAILS		NSW SOIL AND LAND INFORMATION SYSTEM	
Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Photo Taken (1)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No. of layers
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	profile
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	both profile & site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Nature of Exposure (2)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	auger
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	batter
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pit
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	gully
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	core sample
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	other
Potential BSAL? (1)		Site type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD	
yes <input type="checkbox"/>	no <input type="checkbox"/>	checked <input type="checkbox"/>	detached <input type="checkbox"/>	exclusion <input type="checkbox"/>	
SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)	
A.S.C.	Vegetation Community (1)	alcove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>
O	wet sclerophyll forest <input type="checkbox"/>	backplain <input type="checkbox"/>	crater <input type="checkbox"/>	gully <input type="checkbox"/>	pan/polya <input type="checkbox"/>
C	dry sclerophyll forest <input type="checkbox"/>	bank <input type="checkbox"/>	cut face <input type="checkbox"/>	hillcrest <input type="checkbox"/>	pediment <input type="checkbox"/>
S	woodland grass storey <input type="checkbox"/>	bar <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillside <input type="checkbox"/>	pit <input type="checkbox"/>
G.S.G.	woodland shrub storey <input type="checkbox"/>	beach ridge <input type="checkbox"/>	dune <input type="checkbox"/>	lagoon <input type="checkbox"/>	plain <input type="checkbox"/>
G	tall shrubland <input type="checkbox"/>	bench <input type="checkbox"/>	dune <input type="checkbox"/>	lake <input type="checkbox"/>	prior stream <input type="checkbox"/>
S.G.	low shrubland <input type="checkbox"/>	berm <input type="checkbox"/>	dune <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>
F	heath <input type="checkbox"/>	embankment <input type="checkbox"/>	estuary <input type="checkbox"/>	talus <input type="checkbox"/>	talus <input type="checkbox"/>
A	swamp/riparian complex <input type="checkbox"/>	blow-out <input type="checkbox"/>	fan <input type="checkbox"/>	tidal creek <input type="checkbox"/>	tidal flat <input type="checkbox"/>
M	littoral complex <input type="checkbox"/>	channel bank <input type="checkbox"/>	lunate <input type="checkbox"/>	scald <input type="checkbox"/>	tor <input type="checkbox"/>
L	no vegetation <input type="checkbox"/>	cirque <input type="checkbox"/>	fill top <input type="checkbox"/>	scarp <input type="checkbox"/>	trench <input type="checkbox"/>
V	tree <input type="checkbox"/>	cliff <input type="checkbox"/>	fill top <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>
C	tree mallee <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	slope percent
2	shrub <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	site morphology (1)
G.S.G.	mallee shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	flat <input type="checkbox"/>
G	heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	greywacke <input type="checkbox"/>	serpentinite <input type="checkbox"/>	crest <input type="checkbox"/>
S.G.	chenopod grass <input type="checkbox"/>	silt <input type="checkbox"/>	arkose <input type="checkbox"/>	fine-basic <input type="checkbox"/>	hilltop <input type="checkbox"/>
S	hummock grass <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	gabbro <input type="checkbox"/>	upper slope <input type="checkbox"/>
T	tussock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	calcareous <input type="checkbox"/>	dolerite <input type="checkbox"/>	mid-slope <input type="checkbox"/>
G	sod grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	asbolite <input type="checkbox"/>	diorite <input type="checkbox"/>	simple slope <input type="checkbox"/>
S	sege <input type="checkbox"/>	colluvium <input type="checkbox"/>	jasper <input type="checkbox"/>	syenite <input type="checkbox"/>	lower slope <input type="checkbox"/>
R	nush <input type="checkbox"/>	lacustrine <input type="checkbox"/>	metamorphic <input type="checkbox"/>	granodiorite <input type="checkbox"/>	open depression <input type="checkbox"/>
I	forb <input type="checkbox"/>	aeolianite <input type="checkbox"/>	marble <input type="checkbox"/>	adamellite <input type="checkbox"/>	closed depression <input type="checkbox"/>
F	fern/oyad <input type="checkbox"/>	marine <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	granite <input type="checkbox"/>	•
M	moss <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	slate <input type="checkbox"/>	aplite <input type="checkbox"/>	•
L	lichen <input type="checkbox"/>	hill <input type="checkbox"/>	hornfels <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	waxing <input type="checkbox"/>
H	livewort <input type="checkbox"/>	mud <input type="checkbox"/>	quartzite <input type="checkbox"/>	basalt <input type="checkbox"/>	waning <input type="checkbox"/>
V	vine <input type="checkbox"/>	tilt <input type="checkbox"/>	greenstone <input type="checkbox"/>	andesite <input type="checkbox"/>	minimal <input type="checkbox"/>
LAND USE (1)	sedimentary <input type="checkbox"/>	state <input type="checkbox"/>	amphibolite <input type="checkbox"/>	granite <input type="checkbox"/>	maximal <input type="checkbox"/>
N	silstone/mudstone <input type="checkbox"/>	shale <input type="checkbox"/>	marble <input type="checkbox"/>	rhyolite <input type="checkbox"/>	•
T	sandstone-quartz <input type="checkbox"/>	hill <input type="checkbox"/>	igneous <input type="checkbox"/>	obsidian <input type="checkbox"/>	•
S	sandstone-lithic <input type="checkbox"/>	mud <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	scoria <input type="checkbox"/>	SW <input type="checkbox"/>
C	conglomerate <input type="checkbox"/>	tilt <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	ash <input type="checkbox"/>	SE <input type="checkbox"/>
A	softwood plantation <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	agglomerate <input type="checkbox"/>	meltonite <input type="checkbox"/>	SW <input type="checkbox"/>
W	voln./native pasture <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	giggle <input type="checkbox"/>	SE <input type="checkbox"/>
P	improved pasture <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	•
C	cropping <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	•
O	orchard/vineyard <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	•
V	vegetables/flowers <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	•
U	urban <input type="checkbox"/>	>2% <input type="checkbox"/>	coarse-intermediate <input type="checkbox"/>	other <input type="checkbox"/>	•
U	urban <input type="checkbox"/>	>20-30% <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	other <input type="checkbox"/>	•
I	industrial <input type="checkbox"/>	>30-50% <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	other <input type="checkbox"/>	•
I	industrial <input type="checkbox"/>	>50% <input type="checkbox"/>	well-drained <input type="checkbox"/>	other <input type="checkbox"/>	•
Q	quarry/mining <input type="checkbox"/>	>10-20% <input type="checkbox"/>	rapidly drained <input type="checkbox"/>	other <input type="checkbox"/>	•
Q	other <input type="checkbox"/>	>10-20% <input type="checkbox"/>	other <input type="checkbox"/>	other <input type="checkbox"/>	•
SITE CONDITION		Surface Condition		HYDROLOGY	
Site Disturbance(s) (2)		Current (2)	Expected	Wet (2)	Dry (2)
natural disturbance <input type="checkbox"/>		cracked <input type="checkbox"/>			
no effective disturbance <input type="checkbox"/>		self-mulched <input type="checkbox"/>			
limited clearing <input type="checkbox"/>		loose <input type="checkbox"/>			
extensive clearing <input type="checkbox"/>		soft <input type="checkbox"/>			
cleared, no cultivation <input type="checkbox"/>		firm <input type="checkbox"/>			
occasional cultivation <input type="checkbox"/>		hardset <input type="checkbox"/>			
rainfed cultivation <input type="checkbox"/>		surface crust <input type="checkbox"/>			
irrigated cultivation <input type="checkbox"/>		trampled <input type="checkbox"/>			
highly disturbed <input type="checkbox"/>		poached <input type="checkbox"/>			
recently cultivated <input type="checkbox"/>		recently cultivated <input type="checkbox"/>			
water repellent <input type="checkbox"/>		water repellent <input type="checkbox"/>			
gravelly <input type="checkbox"/>		gravelly <input type="checkbox"/>			
other <input type="checkbox"/>		other <input type="checkbox"/>			
SITE FIELD NOTES					
GREY CHROMOSOL					
Photo file names: CHECK SITE 4					



LAYER STATUS					COLOUR (Munsell, 1994)					Field pH ¹					LAYER NOTES					Field pH Test Method (1)										
cm	mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180										
1	Lower	Horizon	Dry Munsell	(1 per layer)	1											Raupach pH meter	test strip													
2	1	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	HCl (1)													
3	2	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	no effervescence	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5				
4	3	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
5	4	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
6	5	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
7	6	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
8	7	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
9	8	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
10	9	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
11	10	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
12	11	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
13	12	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
14	13	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
15	14	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
16	15	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
17	16	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	audible/light efferv.	strong effervescence	Boundary Distinctiveness	(1 per layer)	1	2	3	4	5					
18	17	Lower	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)								
19	18	Upper	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	Type (1 per layer)	Surf	1	2	3	4	5	SEgregations	Soil Water Status	(1 each per layer)				
S	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
B	T	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
S	T	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
T	R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
T	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
E	E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
Dominant (1)	MOTTLES	Sub-dominant (1)	1	2	3	4	5	Abundance	1	2	3	4	5	Estimated Effective Rooting Depth (m)	1	2	3	4	5	Amount (1 per layer)	Surf	1	2	3	4	5	Coarse Fragments	Texture	(1 each per layer)	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			
23	24																													

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

CHECK 5

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
		Described By	Profile Date
Site type (1)		Photo Taken (1)	
yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	detailed <input checked="" type="checkbox"/>	Exclusion <input type="checkbox"/>

NSW SOIL AND LAND INFORMATION SYSTEM	
Please MARK LIKE THIS ONLY:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Nature of Exposure (2)	<input type="checkbox"/> both profile & site <input type="checkbox"/> auger <input type="checkbox"/> pit <input type="checkbox"/> batter <input type="checkbox"/> gully <input type="checkbox"/> other
NSW GOVERNMENT	

Potential BSAL? (1) Site type (1) checked Site type (1) detailed

BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD

SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)		LITHOLOGY		TOPOGRAPHY	
A.S.C.	Vegetation Community (1)	Soil Type	Vegetation Form (4)	Substrate (3)	Lithology	Soil Profile (5)	Landform Element (1)	Slope Percent	Site Morphology (1)
O	D	unknown	tree	not identified	limestone	coarse-basic	footslope <input checked="" type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>
O	D	rainforest	shrub	unconsolidated	tuff	fine-acidic	foredune <input type="checkbox"/>	pan/polya <input type="checkbox"/>	stream channel <input type="checkbox"/>
O	D	wet sclerophyll forest	heath shrub	gravel	breccia	fine-intermediate	crater <input type="checkbox"/>	gully <input type="checkbox"/>	profile <input type="checkbox"/>
SO	D	dry sclerophyll forest	chenopod shrub	sand	greywacke	fine-basic	cut face <input type="checkbox"/>	hillock <input type="checkbox"/>	site <input type="checkbox"/>
SO	D	woodland grass storey	hummock grass	silt	arkose	serpentine	cut-over surface <input type="checkbox"/>	pit <input type="checkbox"/>	site <input type="checkbox"/>
GG	H	woodland shrub storey	tussock grass	clay	dolomite	calcareous	beach ridge <input type="checkbox"/>	plain <input type="checkbox"/>	site <input type="checkbox"/>
GG	H	low shrubland	soil grass	alluvium	gabbro	aluvium	drainage depression <input type="checkbox"/>	prior stream <input type="checkbox"/>	site <input type="checkbox"/>
SG	H	grassland/herbland	sedge	aeolianite	dolerite	aeolianite	dune <input type="checkbox"/>	rock flat <input type="checkbox"/>	site <input type="checkbox"/>
SG	H	swamp complex	rush	diorite	gneiss	calcareous sand	berm <input type="checkbox"/>	talus <input type="checkbox"/>	site <input type="checkbox"/>
F	M	littoral complex	fernycad	chert	syenite	calcareous sand	embankment <input type="checkbox"/>	tidal creek <input type="checkbox"/>	site <input type="checkbox"/>
F	M	no vegetation	moss	jasper	granodiorite	calcareous sand	estuary <input type="checkbox"/>	tidal flat <input type="checkbox"/>	site <input type="checkbox"/>
L	V	tree	lichen	metamorphic	adamellite	calcareous sand	flood-out <input type="checkbox"/>	• Fully erase	site <input type="checkbox"/>
L	V	shrub	liverwort	gneiss	granite	calcareous sand	fan <input type="checkbox"/>	• Make no	site <input type="checkbox"/>
C	Z	heath shrub	vine	aplite	aplite	calcareous sand	lignite <input type="checkbox"/>	stray marks	site <input type="checkbox"/>
G.S.G.	Z	chenopod shrub	vine	quartz porphyry	Abney level <input type="checkbox"/>	calcareous sand	normal lignite <input type="checkbox"/>	• Numbers in ()	site <input type="checkbox"/>
G.S.G.	Z	hummock grass	vine	basalt	RTK GPS <input type="checkbox"/>	calcareous sand	lignite/gigai <input type="checkbox"/>	show max.	site <input type="checkbox"/>
G.S.G.	Z	tussock grass	vine	andesite	LIDAR <input type="checkbox"/>	calcareous sand	lignite/gigai <input type="checkbox"/>	entries allowed	site <input type="checkbox"/>
G.S.G.	Z	soil grass	vine	trachyte		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	sedge	vine	myiolite		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	rush	vine	obsidian		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	fernycad	vine	igneous		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	moss	vine	coarse-acidic		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	lichen	vine	coarse-intermediate		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	liverwort	vine	agglomerate		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
G.S.G.	Z	vine	vine	other		calcareous sand	lignite/gigai <input type="checkbox"/>		site <input type="checkbox"/>
LAND USE (1)		HYDROLOGY		SITE FIELD NOTES		BLACK DERMOGOL			
Site Disturbance(s) (2)		Current (2)		Expected		Wet (2) Dry (2)			
natural disturbance <input type="checkbox"/>		Ground Cover %		Depth (1) & Extent (1)					
no effective disturbance <input type="checkbox"/>		self-mulched <input type="checkbox"/>		≤ 500 mm depth <input type="checkbox"/>					
limited clearing <input type="checkbox"/>		loose <input type="checkbox"/>		> 500 mm depth <input type="checkbox"/>					
extensive clearing <input type="checkbox"/>		soft <input type="checkbox"/>		imperfectly drained <input type="checkbox"/>					
cleared, no cultivation <input type="checkbox"/>		firm <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
occasional cultivation <input type="checkbox"/>		hardset <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
irrigated cultivation <input type="checkbox"/>		surface crust <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
industrial <input type="checkbox"/>		trampled <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
highly disturbed <input type="checkbox"/>		poached <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
quarry/mining <input type="checkbox"/>		recently cultivated <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
other <input type="checkbox"/>		water repellent <input type="checkbox"/>		mod. well-drained <input type="checkbox"/>					
		gravelly <input type="checkbox"/>							
		other <input type="checkbox"/>							

Please do not mark this space.

LAYER STATUS					COLOUR (Munsell, 1994)					Field pH					LAYER NOTES					Field pH Test Method (1)					
cm	mm	Lower	Horizon	Moist Munsell	Dry Munsell	(1 per layer)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29			
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29				
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29					
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29						
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29							
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29								
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29									
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29										
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29											
16	17	18	19	20	21	22	23	24	25	26	27	28	29												
17	18	19	20	21	22	23	24	25	26	27	28	29													
18	19	20	21	22	23	24	25	26	27	28	29														
19	20	21	22	23	24	25	26	27	28	29															
20	21	22	23	24	25	26	27	28	29																
21	22	23	24	25	26	27	28	29																	
22	23	24	25	26	27	28	29																		
23	24	25	26	27	28	29																			
24	25	26	27	28	29																				
25	26	27	28	29																					
26	27	28	29																						
27	28	29																							
28	29																								
29																									

SURVEY TITLE: NEARBECK COAL PROJECT
SITE LOCATION: BLAACKMAN'S FARM

CHECK

PROFILE MAP DETAILS												SURVEY DETAILS							
Potential BSAL? (1)		Site type (1)		Map Sheet No.		Easting(s)		Northing(s)		Described By		Profile Date	Photo Taken (1)	No. of Layers					
<input checked="" type="checkbox"/> yes		<input type="checkbox"/> no																	
												profile	profile						
												slope	slope						
												both profile & site	both profile & site						
												auger	auger						
												pit	pit						
												batter	batter						
												gully	gully						
												core sample	core sample						
												other	other						
A		SOIL TYPE		VEGETATION		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD													
S.C.		Vegetation Community (1)		LANDFORM ELEMENT (1)															
O	D	unknown (1)		alcove (1)	cone (1)	footslope (1)	ox-bow (1)	sink hole/doline (1)	LITHOLOGY				TOPOGRAPHY						
S.O.	L	rainforest (1)		backplain (1)	crater (1)	foredune (1)	pan/palaya (1)	stream channel (1)	Substrate (3)				Site Morphology (1)						
G.G.	Z	wet sclerophyll forest (1)		bank (1)	cut face (1)	gully (1)	pediment (1)	streambed (1)	unconsolidated (1)	limestone (1)	coarse-basic (1)	flat (1)	crest (1)	like this only:					
		dry sclerophyll forest (1)		bar (1)	cut-over surface (1)	hillcrest (1)	pediment (1)	summit surface (1)	gravel (1)	fine-intermediate (1)	fire-acidic (1)	flat (1)	hillock (1)						
		woodland shrub storey (1)		beach (1)	drainage depression (1)	hillside (1)	pit (1)	swale (1)	arkose (1)	intermediate (1)	gabbro (1)	ridge (1)	ridge (1)						
		tall shrubland (1)		bench (1)	dune (1)	lagoon (1)	rock platform (1)	talus (1)	dolomite (1)	gneiss (1)	mid-slope (1)	mid-slope (1)							
		low shrubland (1)		berm (1)	embankment (1)	lake (1)	rock flat (1)	talus (1)	aeolianite (1)	gneiss (1)	simple slope (1)	simple slope (1)							
		heath (1)		blow-out (1)	estuary (1)	levee (1)	tidal creek (1)	•	chlorite (1)	gneiss (1)	lower slope (1)	lower slope (1)							
		grassland/herbland (1)		channel bench (1)	fan (1)	lunette (1)	tidal flat (1)	•	chert (1)	gneiss (1)	open depression (1)	open depression (1)							
		swamp complex (1)		cirque (1)	fan top (1)	maar (1)	tidal flat (1)	•	jasper (1)	gneiss (1)	closed depression (1)	closed depression (1)							
		littoral complex (1)		cliff (1)	flood-out (1)	mound (1)	valley flat (1)	•	metamorphic (1)	gneiss (1)	stray marks (1)	stray marks (1)							
		no vegetation (1)						•	metamorphic (1)	gneiss (1)	show max. (1)	show max. (1)							
F		Growth Forms (4)		LANDFORM ELEMENT (1)															
A	M	tree (1)		not identified (1)	limestone (1)	coarse-basic (1)	flat (1)	flat (1)	unconsolidated (1)	tuff (1)	fire-acidic (1)	flat (1)	flat (1)	Please mark like this only:					
L	V	tree mallee (1)		gravel (1)	breccia (1)	fine-intermediate (1)	flat (1)	flat (1)	mallee shrub (1)	gravel (1)	intermediate (1)	flat (1)	flat (1)						
C	Y	heath shrub (1)		sand (1)	greywacke (1)	intermediate (1)	flat (1)	flat (1)	heath (1)	greywacke (1)	intermediate (1)	flat (1)	flat (1)						
G.S.G.	Z	chenopod shrub (1)		silt (1)	arkose (1)	intermediate (1)	flat (1)	flat (1)	hummock grass (1)	arkose (1)	intermediate (1)	flat (1)	flat (1)						
		tussock grass (1)		clay (1)	serpentinite (1)	intermediate (1)	flat (1)	flat (1)	sod grass (1)	clay (1)	intermediate (1)	flat (1)	flat (1)						
		sege (1)		organic material (1)	dolomite (1)	intermediate (1)	flat (1)	flat (1)	sege (1)	organic material (1)	intermediate (1)	flat (1)	flat (1)						
		rush (1)		alluvium (1)	calcareous (1)	intermediate (1)	flat (1)	flat (1)	rush (1)	alluvium (1)	intermediate (1)	flat (1)	flat (1)						
		fern/cycad (1)		colluvium (1)	calcareous (1)	intermediate (1)	flat (1)	flat (1)	fern/cycad (1)	colluvium (1)	intermediate (1)	flat (1)	flat (1)						
		moss (1)		lacustrine (1)	aeolianite (1)	intermediate (1)	flat (1)	flat (1)	moss (1)	lacustrine (1)	intermediate (1)	flat (1)	flat (1)						
		lichen (1)		aeolian (1)	aeolianite (1)	intermediate (1)	flat (1)	flat (1)	lichen (1)	aeolian (1)	intermediate (1)	flat (1)	flat (1)						
		livewort (1)		marine (1)	aeolianite (1)	intermediate (1)	flat (1)	flat (1)	livewort (1)	marine (1)	intermediate (1)	flat (1)	flat (1)						
		vine (1)		calcareous sand (1)	aeolianite (1)	intermediate (1)	flat (1)	flat (1)	vine (1)	calcareous sand (1)	intermediate (1)	flat (1)	flat (1)						
LAND USE (1)		Sedimentation (1)		shale (1)	schist/phyllite (1)	intermediate (1)	flat (1)	flat (1)		shale (1)	schist/phyllite (1)	intermediate (1)	flat (1)						
		soilstone/mudstone (1)		fill (1)	slate (1)	intermediate (1)	flat (1)	flat (1)		fill (1)	slate (1)	intermediate (1)	flat (1)						
		sandstone-quartz (1)		mud (1)	hornfels (1)	intermediate (1)	flat (1)	flat (1)		mud (1)	hornfels (1)	intermediate (1)	flat (1)						
		conglomerate (1)		tilt (1)	quartz porphyry (1)	intermediate (1)	flat (1)	flat (1)		tilt (1)	quartz porphyry (1)	intermediate (1)	flat (1)						
		calcareous (1)		sedimentary (1)	basalt (1)	intermediate (1)	flat (1)	flat (1)		sedimentary (1)	basalt (1)	intermediate (1)	flat (1)						
		igneous (1)		marble (1)	andesite (1)	intermediate (1)	flat (1)	flat (1)		igneous (1)	andesite (1)	intermediate (1)	flat (1)						
		coarse-acidic (1)		greenstone (1)	trachyte (1)	intermediate (1)	flat (1)	flat (1)		greenstone (1)	trachyte (1)	intermediate (1)	flat (1)						
		coarse-intermediate (1)		marble (1)	ryholite (1)	intermediate (1)	flat (1)	flat (1)		marble (1)	ryholite (1)	intermediate (1)	flat (1)						
		coarse-acidic (1)		ash (1)	obsidian (1)	intermediate (1)	flat (1)	flat (1)		ash (1)	obsidian (1)	intermediate (1)	flat (1)						
		other (1)		agglomerate (1)	pyroclastic (1)	intermediate (1)	flat (1)	flat (1)		agglomerate (1)	pyroclastic (1)	intermediate (1)	flat (1)						
SITE CONDITION		Surface Condition		SITE FIELD NOTES															
Site Disturbance(s) (2)		Current (2)		Expected		BLACK DENSOL													
natural disturbance (1)		Ground Cover %		Wet (2)		Dry (2)													
no effective disturbance (1)		self-mulched		(1)		(1)													
limited clearing (1)		loose		(1)		(1)													
extensive clearing (1)		soft		(1)		(1)													
cleared, no cultivation (1)		firm		(1)		(1)													
occasional cultivation (1)		harder		(1)		(1)													
refined cultivation (1)		surface crust		(1)		(1)													
irrigated cultivation (1)		trampled		(1)		(1)													
highly disturbed (1)		water repellent		(1)		(1)													
		other (1)		(1)		(1)													

LAYER STATUS		COLOUR (Munsell, 1994)					Field pH					LAYER NOTES					Field pH Test Method (1)							
cm	mm	Lower	Horizon	Dry Munsell	Moist Munsell	1 (per layer)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
S	Upper	(3 per layer)	1	2	3	4	5	Type (1 per layer)	Sur. 1	2	3	4	5	COARSE FRAGMENTS					Soil Water Status (reach per layer)					
U	B							not evident						Sub-dominant (1)					1 each per layer					
S	T							not identified						STRUCTURE					TEXTURE					
T	R							as substrate						Grade of Pedality (1)					1					
R	A							as rock outcrop						1					2					
A	E							as parent material						1					3					
E								bauxite						1					4					
								shells						1					5					
								charcoal						Sub-base					Texture					
								pumice						Sand					1					
								opalised wood						1					2					
								bedrock reached						1					3					
														1					4					
														1					5					
														1					6					
														1					7					
														1					8					
														1					9					
														1					10					
														1					11					
														1					12					
														1					13					
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														1					25					
														1					26					
														1					27					
														1					28					
														1					29					

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK ✓

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
		Described By	Profile Date
		Photo Taken (1)	No. of Layers
		profile <input type="checkbox"/>	site <input type="checkbox"/>
		both profile & site <input type="checkbox"/>	
		auger <input type="checkbox"/>	
		pit <input type="checkbox"/>	
		batter <input type="checkbox"/>	
		gully <input type="checkbox"/>	
		core sample <input type="checkbox"/>	
		other <input type="checkbox"/>	
Potential BSAL? (1)		Site type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD
yes <input type="checkbox"/>		checked <input checked="" type="checkbox"/>	excavated <input type="checkbox"/>
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)	
A.S.C.	Vegetation Community (1)	alcove <input type="checkbox"/>	cone <input type="checkbox"/>
O	unknown <input type="checkbox"/>	backplain <input type="checkbox"/>	crater <input type="checkbox"/>
D	wet sclerophyll forest <input type="checkbox"/>	bank <input type="checkbox"/>	cut face <input type="checkbox"/>
C	dry sclerophyll forest <input type="checkbox"/>	bar <input type="checkbox"/>	foreslope <input type="checkbox"/>
G.S.G.	woodland grass storey <input type="checkbox"/>	beach <input type="checkbox"/>	pan-playa <input type="checkbox"/>
A	tall shrub storey <input type="checkbox"/>	beach ridge <input type="checkbox"/>	pediment <input type="checkbox"/>
H	low shrubland <input type="checkbox"/>	bench <input type="checkbox"/>	sink hollow/doline <input type="checkbox"/>
GG	grassland/herbland <input type="checkbox"/>	berm <input type="checkbox"/>	streambed <input type="checkbox"/>
SG	swamp complex <input type="checkbox"/>	blow-out <input type="checkbox"/>	summit surface <input type="checkbox"/>
F	litoral complex <input type="checkbox"/>	channel/bench <input type="checkbox"/>	• Use 2B pencil
M	no vegetation <input type="checkbox"/>	cirque <input type="checkbox"/>	estuary <input type="checkbox"/>
L		cliff <input type="checkbox"/>	fan <input type="checkbox"/>
V			• Fully erase
		flood-out <input type="checkbox"/>	taurus <input type="checkbox"/>
		fill top <input type="checkbox"/>	tidal creek <input type="checkbox"/>
		maar <input type="checkbox"/>	tidal flat <input type="checkbox"/>
		mound <input type="checkbox"/>	trench <input type="checkbox"/>
		scroll <input type="checkbox"/>	valley/flat <input type="checkbox"/>
LITHOLOGY			
Substrate (3)		Slope Percent	
not identified <input type="checkbox"/>		coarse-basic <input type="checkbox"/>	Site Morphology (1)
unconsolidated <input type="checkbox"/>		fine-intermediate <input type="checkbox"/>	hat <input type="checkbox"/>
gravel <input type="checkbox"/>		fine-acidic <input type="checkbox"/>	crest <input type="checkbox"/>
sand <input type="checkbox"/>		breccia <input type="checkbox"/>	hilllock <input type="checkbox"/>
silt <input type="checkbox"/>		greywacke <input type="checkbox"/>	ridge <input type="checkbox"/>
clay <input type="checkbox"/>		arkose <input type="checkbox"/>	upper slope <input type="checkbox"/>
organic material <input type="checkbox"/>		dolomite <input type="checkbox"/>	mid-slope <input type="checkbox"/>
alluvium <input type="checkbox"/>		calcareous <input type="checkbox"/>	Simple slope <input type="checkbox"/>
colluvium <input type="checkbox"/>		aeolianite <input type="checkbox"/>	lower slope <input type="checkbox"/>
lacustrine <input type="checkbox"/>		chert <input type="checkbox"/>	open depression <input type="checkbox"/>
aeolian <input type="checkbox"/>		jasper <input type="checkbox"/>	closed depression <input type="checkbox"/>
marine <input type="checkbox"/>		metamorphic <input type="checkbox"/>	
shale <input type="checkbox"/>		gneiss <input type="checkbox"/>	
calcareous sand <input type="checkbox"/>		schistophyllite <input type="checkbox"/>	
tilt <input type="checkbox"/>		state <input type="checkbox"/>	
mud <input type="checkbox"/>		hornefels <input type="checkbox"/>	
till <input type="checkbox"/>		quartzite <input type="checkbox"/>	
sedimentary <input type="checkbox"/>		greensand <input type="checkbox"/>	
igneous <input type="checkbox"/>		amphibolite <input type="checkbox"/>	
marble <input type="checkbox"/>		trachyte <input type="checkbox"/>	
coarse-acidic <input type="checkbox"/>		rhyolite <input type="checkbox"/>	
coarse-intermediate <input type="checkbox"/>		obsidian <input type="checkbox"/>	
igneous <input type="checkbox"/>		scoria <input type="checkbox"/>	
ash <input type="checkbox"/>		normal gneiss <input type="checkbox"/>	
ash <input type="checkbox"/>		orobbole gneiss <input type="checkbox"/>	
agglomerate <input type="checkbox"/>		linear gneiss <input type="checkbox"/>	
other <input type="checkbox"/>		lattice gneiss <input type="checkbox"/>	
		melanosome gneiss <input type="checkbox"/>	
		other <input type="checkbox"/>	
TOPOGRAPHY			
Slope Measurement		Aspect (1)	
Inclinometer <input type="checkbox"/>		Abney level <input type="checkbox"/>	waxing <input type="checkbox"/>
RTK GPS <input type="checkbox"/>		Total station <input type="checkbox"/>	waning <input type="checkbox"/>
LIDAR <input type="checkbox"/>		minimal <input type="checkbox"/>	maximal <input type="checkbox"/>
HYDROLOGY			
Profile Drainage (1)		Permeability (1)	
very poorly drained <input type="checkbox"/>		very slowly permeable <input type="checkbox"/>	≤ 500 mm depth <input type="checkbox"/>
poorly drained <input type="checkbox"/>		slowly permeable <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>
moderately permeable <input type="checkbox"/>		moderately permeable <input type="checkbox"/>	≤ 50% area <input type="checkbox"/>
highly permeable <input type="checkbox"/>		highly permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
SITE FIELD NOTES			
BLACK DELTA SLOPE			
SITE CONDITION	Surface Condition		
Site Disturbance(s) (2)	Current (2)	Expected	
natural disturbance <input type="checkbox"/>	Wet (2)	Dry (2)	
no effective disturbance <input type="checkbox"/>			
limited clearing <input type="checkbox"/>			
extensive clearing <input type="checkbox"/>			
cleared, no cultivation <input type="checkbox"/>			
occasional cultivation <input type="checkbox"/>			
rainfed cultivation <input type="checkbox"/>			
irrigated cultivation <input type="checkbox"/>			
highly disturbed <input type="checkbox"/>			
industrial <input type="checkbox"/>			
urban <input type="checkbox"/>	<2% <input type="checkbox"/>	>30-50% <input type="checkbox"/>	
recently cultivated <input type="checkbox"/>	2-10% <input type="checkbox"/>	>50% <input type="checkbox"/>	
quarry/mining <input type="checkbox"/>	>10-20% <input type="checkbox"/>		
other <input type="checkbox"/>			
Ground Cover %			
self-mulched <input type="checkbox"/>	cracked <input type="checkbox"/>		
loose <input type="checkbox"/>	loose <input type="checkbox"/>		
soft <input type="checkbox"/>	soft <input type="checkbox"/>		
firm <input type="checkbox"/>	firm <input type="checkbox"/>		
hardset <input type="checkbox"/>	hardset <input type="checkbox"/>		
surface crust <input type="checkbox"/>	surface crust <input type="checkbox"/>		
trampled <input type="checkbox"/>	trampled <input type="checkbox"/>		
poached <input type="checkbox"/>	poached <input type="checkbox"/>		
water repellent <input type="checkbox"/>	water repellent <input type="checkbox"/>		
gravelly <input type="checkbox"/>	gravelly <input type="checkbox"/>		
other <input type="checkbox"/>	other <input type="checkbox"/>		
Photo file name/s: CHECK SITE 7			

Please do not mark this space.

cm		mm 0		LAYER STATUS		COLOUR (Munsell, 1994)		Field pH		LAYER NOTES		Field pH Test Method (1)	
1	Lower	Horizon	Moist Munsell	Dry Munsell	(1 per layer)	1				Raupach pH meter	test strip		
2										HCl (1)			
3										no effervescence	✓		
4										audible/slight efferv.	✓		
5	Lower	Horizon	Moist Munsell	Dry Munsell	(1 per layer)	2				strong effervescence	✓		
6										Boundary Distinctiveness	✓		
7										(1 per layer) 1 2 3 4 5			
8										not evident	✓		
9	Lower	Horizon	Moist Munsell	Dry Munsell	(1 per layer)	3				sharp (>5 mm)	✓		
10										abrupt (5-20 mm)	✓		
11										clear (20-50 mm)	✓		
12										gradual (50-100 mm)	✓		
13	Lower	Horizon	Moist Munsell	Dry Munsell	(1 per layer)	4				diffuse (>100 mm)	✓		
14										STRUCTURE	✓		
15										Grade of Pedality (1)	1 2 3 4 5		
16										single-grained	✓		
17										massive	✓		
18										weak pedality	✓		
19										moderate pedality	✓		
S	Upper									strong pedality	✓		
U										Fabric (1)	1 2 3 4 5		
B										sandy	✓		
S										earthy	✓		
T										rough-faced peds	✓		
R										smooth-faced peds	✓		
A													
T													
E													
Dominant (1)	MOTTLES Sub-dominant (1)	Sample Taken (3 per layer)	1 2 3 4 5	Type (1 per layer)	Sur 1 2 3 4 5	CORES/FRAGMENTS	SEGREGATIONS	Soil Water Status (1 each per layer)	1 2 3 4 5	TEXTURE (1 each per layer)	1 2 3 4 5		
1	2	3	4	5	Abundance	disturbed	not evident	dry	<2 mm	Texture Grade 1	1		
23	24	25	26	27	28	undisturbed	not identified	moist	2-5 mm	2	2		
20	21	22	23	24	25	bulked	as substrate	wet	5-10 mm	3	3		
21	22	23	24	25	26	bulk density	as rock outcrop	clayey sand	10-20 mm	4	4		
22	23	24	25	26	27	as parent material	ferromanganiferous	sandy loam	20-50 mm	5	5		
23	24	25	26	27	28	layer continues	organic	silty loam	>50 mm				
24	25	26	27	28		soil continues	not identified	sandy clay loam					
25	26	27	28			equipment refusal	gypseous	clay loam					
26	27	28				bedrock reached	manganiferous	sandy loam sandy					
27	28						other	clay loam sandy					
28													
1	2	3	4	5	Colour	1 2 3 4 5	Amount (1 per layer)	Sur 1 2 3 4 5	Form (1 per layer)	1 2 3 4 5			
1	2	3	4	5	Contrast	dark	very few (<2%)	soft segregations	fibrile peat	1			
25	26	27	28			red	few (2-10%)	nodules	hemic peat	2			
26	27	28				orange	common (10-20%)	fragments	sapric peat	3			
27	28					yellow	many (20-50%)	crystals	coarse	4			
28						brown	abundant (50-90%)	veins	line	5			
1	2	3	4	5		pale	very abundant (>90%)	concretions	Clay Fraction	1			
1	2	3	4	5		grey		root linings	1	2			
1	2	3	4	5		grey		tubules	light	3			
1	2	3	4	5		tint			medium	4			
1	2	3	4	5		distinct			heavy	5			
1	2	3	4	5		prominent			ext. coarse (>60 mm)				
29													

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK 8

Potential BSAL? (1)	Site type (1)	checked <input checked="" type="checkbox"/>	detailed <input type="checkbox"/>	exclusion <input type="checkbox"/>
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PROFILE MAP DETAILS		SURVEY DETAILS		No. of Layers
Profile No.	Map Sheet No.	Eastings	Northings	Described By
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Profile Date
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Photo Taken (1)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	profile <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	site <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	both profile & site <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Nature of Exposure (2)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	auger <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	batter <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pit <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	gully <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	core sample <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	other <input type="checkbox"/>

NSW SOIL AND LAND INFORMATION SYSTEM



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AND LAND
INFORMATION
SYSTEM

Soil Type (A.S.C.)	Vegetation Community (1)	Landform Element (1)	Topography
O	wet sclerophyll forest	valley <input type="checkbox"/>	valley flat <input type="checkbox"/>
C	dry sclerophyll forest	footslope <input type="checkbox"/>	valley side <input type="checkbox"/>
G.S.G.	hummocky grass	on-bow <input type="checkbox"/>	valley bank <input type="checkbox"/>
A	tall shrub U-story	cut face <input type="checkbox"/>	valley head <input type="checkbox"/>
GG	woodland shrub U-story	cut-over surface <input type="checkbox"/>	valley floor <input type="checkbox"/>
G	low shrubland	beach <input type="checkbox"/>	valley bottom <input type="checkbox"/>
SG	grassland/herbland	beach ridge <input type="checkbox"/>	valley end <input type="checkbox"/>
F	swamp/complex	drainage depression <input type="checkbox"/>	valley mouth <input type="checkbox"/>
A	littoral complex	bench <input type="checkbox"/>	valley head <input type="checkbox"/>
M	no vegetation	bench <input type="checkbox"/>	valley floor <input type="checkbox"/>
L		barn <input type="checkbox"/>	valley end <input type="checkbox"/>
V		embankment <input type="checkbox"/>	valley side <input type="checkbox"/>
T		blow-out <input type="checkbox"/>	valley floor <input type="checkbox"/>
Y		estuary <input type="checkbox"/>	valley end <input type="checkbox"/>
		fan <input type="checkbox"/>	valley floor <input type="checkbox"/>
		channel bench <input type="checkbox"/>	valley floor <input type="checkbox"/>
		cirque <input type="checkbox"/>	valley floor <input type="checkbox"/>
		flood-out <input type="checkbox"/>	valley floor <input type="checkbox"/>
		cliff <input type="checkbox"/>	valley floor <input type="checkbox"/>
		mound <input type="checkbox"/>	valley floor <input type="checkbox"/>
		scroll <input type="checkbox"/>	valley floor <input type="checkbox"/>

Growth Forms (4)	Substrate (3)	Slope Percent	Site Morphology (1)
tree <input type="checkbox"/>	not identified <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>
shrub <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	limestone <input type="checkbox"/>	crest <input type="checkbox"/>
mallee shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	cone <input type="checkbox"/>	hillside <input type="checkbox"/>
heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	cone <input type="checkbox"/>	ridge <input type="checkbox"/>
chenopod shrub <input type="checkbox"/>	organic material <input type="checkbox"/>	crater <input type="checkbox"/>	summit <input type="checkbox"/>
hummocky grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	foredune <input type="checkbox"/>	summit surface <input type="checkbox"/>
tussock grass <input type="checkbox"/>	calcareous <input type="checkbox"/>	gully <input type="checkbox"/>	swale <input type="checkbox"/>
sod grass <input type="checkbox"/>	asbolite <input type="checkbox"/>	cut face <input type="checkbox"/>	swamp <input type="checkbox"/>
sedge <input type="checkbox"/>	chert <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	• Fully erase
rush <input type="checkbox"/>	jasper <input type="checkbox"/>	beach <input type="checkbox"/>	• Make no
fern <input type="checkbox"/>	metamorphic <input type="checkbox"/>	drainage depression <input type="checkbox"/>	stray marks
leptoscyad <input type="checkbox"/>	gneiss <input type="checkbox"/>	bench <input type="checkbox"/>	• Numbers in ()
lichen <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	bench <input type="checkbox"/>	show max.
liverwort <input type="checkbox"/>	slate <input type="checkbox"/>	cliff <input type="checkbox"/>	entries allowed
vine <input type="checkbox"/>	hornfels <input type="checkbox"/>	fill <input type="checkbox"/>	
	quartzite <input type="checkbox"/>	mud <input type="checkbox"/>	
	greenstone <input type="checkbox"/>	tilt <input type="checkbox"/>	
	amphibolite <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	
	marble <input type="checkbox"/>	basalt <input type="checkbox"/>	
	igneous <input type="checkbox"/>	andesite <input type="checkbox"/>	
	coarse-acidic <input type="checkbox"/>	trachyte <input type="checkbox"/>	
	coarse-intermediate <input type="checkbox"/>	pyrolyte <input type="checkbox"/>	
	agglomerate <input type="checkbox"/>	obsidian <input type="checkbox"/>	
	other <input type="checkbox"/>	scoria <input type="checkbox"/>	
		ash <input type="checkbox"/>	
		melanohole gilgal <input type="checkbox"/>	
		lattice gilgal <input type="checkbox"/>	
		other <input type="checkbox"/>	

Hydrology	Depth (1) & Extent (1)	Please mark ONLY:
Profile Drainage (1)	Permeability (1)	Like this ONLY:
very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
imperfectly drained <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
mod. well-drained <input type="checkbox"/>	highly permeable <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
well-drained <input type="checkbox"/>		
rapidly drained <input type="checkbox"/>		

Site Field Notes	Aspect (1)	Microrelief Type (1)
	Inclinometer <input type="checkbox"/>	waxing <input type="checkbox"/>
	Abney level <input type="checkbox"/>	waning <input type="checkbox"/>
	Total station <input type="checkbox"/>	maximal <input type="checkbox"/>
	RTK GPS <input type="checkbox"/>	minimal <input type="checkbox"/>
	LIDAR <input type="checkbox"/>	

Site Condition	Current (2)	Expected (2)	Red Dermosol
Site Disturbance(s) (2)	Ground Cover %	Wet (2) Dry (2)	
natural disturbance <input type="checkbox"/>	self-mulched <input type="checkbox"/>	<input type="checkbox"/>	
no effective disturbance <input type="checkbox"/>	loose <input type="checkbox"/>	<input type="checkbox"/>	
limited clearing <input type="checkbox"/>	soft <input type="checkbox"/>	<input type="checkbox"/>	
extensive clearing <input type="checkbox"/>	firm <input type="checkbox"/>	<input type="checkbox"/>	
cleared, no cultivation <input type="checkbox"/>	hardset <input type="checkbox"/>	<input type="checkbox"/>	
occasional cultivation <input type="checkbox"/>	surface crust <input type="checkbox"/>	<input type="checkbox"/>	
rainfed cultivation <input type="checkbox"/>	trampled <input type="checkbox"/>	<input type="checkbox"/>	
irrigated cultivation <input type="checkbox"/>	poached <input type="checkbox"/>	<input type="checkbox"/>	
highly disturbed <input type="checkbox"/>	recently cultivated <input type="checkbox"/>	<input type="checkbox"/>	
	water repellent <input type="checkbox"/>	<input type="checkbox"/>	
	gravelly <input type="checkbox"/>	<input type="checkbox"/>	
	other <input type="checkbox"/>	<input type="checkbox"/>	

Please do not mark this space.

cm	mm 0	LAYER STATUS					COLOUR (Munsell, 1994)					Field pH					LAYER NOTES					Field pH Test Method (1)							
		Horizon					Moist Munsell					Dry Munsell					Field pH					Raupach test strip							
1	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
4	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
5	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
6	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
7	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
8	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
9	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
10	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
11	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11		
12	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
13	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
14	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14		
15	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
16	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16		
17	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
18	Lower	Horizon	Horizon	Horizon	Horizon	Horizon	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		
19	Upper	Sample Taken	(3 per layer)	1	2	3	4	5	Type (1 per layer)	Sur.	1	2	3	4	5	COARSE FRAGMENTS	Field pH					Soil Water Status (1 each per layer)							
20	U	disturbed	disturbed	disturbed	disturbed	disturbed	U	U	U	U	U	U	U	U	U	not evident	terriginous	1	2	3	4	5	Texture (1 each per layer)	1	2	3	4	5	
21	B	undisturbed	undisturbed	undisturbed	undisturbed	undisturbed	B	B	B	B	B	B	B	B	B	not identified	calcareous	dry	mod.	moist	wet	Sub-dominant (1)	sandy	loamy	silty	clayey	clay		
22	S	bulked	bulked	bulked	bulked	bulked	S	S	S	S	S	S	S	S	S	as substrate	organic	sand	silt	clay	clay loam	Amount (1 per layer)	none	few (<2%)	few (2-10%)	common (10-20%)	abundant (>20%)		
23	T	bulk density	bulk density	bulk density	bulk density	bulk density	T	T	T	T	T	T	T	T	T	as rock outcrop	not identified	loamy sand	loamy	sandy loam	clay loam	Segregations (1 per layer)	very few (<2%)	few (2-10%)	common (10-20%)	abundant (>20%)	none		
24	R	Base of Observation (1)	layer continues	soil continues	soil continues	soil continues	R	R	R	R	R	R	R	R	R	as parent material	quartz	fragments	organic	fine	coarse	Strength (1 per layer)	1	2	3	4	5		
25	A	equipment refusal	equipment refusal	equipment refusal	equipment refusal	equipment refusal	A	A	A	A	A	A	A	A	A	charcoal	feldspar	organic	mod.	mod.	mod.	Form (1 per layer)	1	2	3	4	5		
26	T	bedrock reached	bedrock reached	bedrock reached	bedrock reached	bedrock reached	T	T	T	T	T	T	T	T	T	ironstone	silicate	organic	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
27	E	Dominant (1) MOTTLES Sub-dominant (1)	1	2	3	4	5	Abundance	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	Texture Grade (1 per layer)	1	2	3	4	5
28	U	not evident	<2%	2-10%	10-20%	20-50%	U	U	U	U	U	U	U	U	U	not identified	nodules	fragments	organic	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
29	B	dark	red	orange	yellow	brown	B	B	B	B	B	B	B	B	B	pumice	crystals	organic	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
30	S	grey	grey	grey	grey	grey	S	S	S	S	S	S	S	S	S	opalised wood	veins	organic	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
31	T	Contrast	1	2	3	4	5	Contrast	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	Strength (1 per layer)	1	2	3	4	5
32	E	faint	distinct	prominent	prominent	prominent	E	E	E	E	E	E	E	E	E	gravel (6-20 mm)	gravel (2-6 mm)	gravel (2-6 mm)	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
33	U	coarse gravel (20-60 mm)	cobbles (60-200 mm)	stones (200-600 mm)	boulders (>600 mm)	boulders (>600 mm)	U	U	U	U	U	U	U	U	U	medium heavy	medium	medium	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		
34	B	coarse gravel (6-20 mm)	cobbles (20-60 mm)	stones (60-200 mm)	boulders (20-60 mm)	boulders (>60 mm)	B	B	B	B	B	B	B	B	B	heavy	heavy	heavy	mod.	mod.	mod.	Strength (1 per layer)	1	2	3	4	5		

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK 9

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
0	A1	1000000	1000000
1	A2	1000000	1000000
2	A3	1000000	1000000
3	A4	1000000	1000000
4	A5	1000000	1000000
5	A6	1000000	1000000
6	A7	1000000	1000000
7	A8	1000000	1000000
8	A9	1000000	1000000
9	A10	1000000	1000000
10	A11	1000000	1000000
11	A12	1000000	1000000
12	A13	1000000	1000000
13	A14	1000000	1000000
14	A15	1000000	1000000
15	A16	1000000	1000000
16	A17	1000000	1000000
17	A18	1000000	1000000
18	A19	1000000	1000000
19	A20	1000000	1000000
20	A21	1000000	1000000
21	A22	1000000	1000000
22	A23	1000000	1000000
23	A24	1000000	1000000
24	A25	1000000	1000000
25	A26	1000000	1000000
26	A27	1000000	1000000
27	A28	1000000	1000000
28	A29	1000000	1000000
29	A30	1000000	1000000
30	A31	1000000	1000000
31	A32	1000000	1000000
32	A33	1000000	1000000
33	A34	1000000	1000000
34	A35	1000000	1000000
35	A36	1000000	1000000
36	A37	1000000	1000000
37	A38	1000000	1000000
38	A39	1000000	1000000
39	A40	1000000	1000000
40	A41	1000000	1000000
41	A42	1000000	1000000
42	A43	1000000	1000000
43	A44	1000000	1000000
44	A45	1000000	1000000
45	A46	1000000	1000000
46	A47	1000000	1000000
47	A48	1000000	1000000
48	A49	1000000	1000000
49	A50	1000000	1000000
50	A51	1000000	1000000
51	A52	1000000	1000000
52	A53	1000000	1000000
53	A54	1000000	1000000
54	A55	1000000	1000000
55	A56	1000000	1000000
56	A57	1000000	1000000
57	A58	1000000	1000000
58	A59	1000000	1000000
59	A60	1000000	1000000
60	A61	1000000	1000000
61	A62	1000000	1000000
62	A63	1000000	1000000
63	A64	1000000	1000000
64	A65	1000000	1000000
65	A66	1000000	1000000
66	A67	1000000	1000000
67	A68	1000000	1000000
68	A69	1000000	1000000
69	A70	1000000	1000000
70	A71	1000000	1000000
71	A72	1000000	1000000
72	A73	1000000	1000000
73	A74	1000000	1000000
74	A75	1000000	1000000
75	A76	1000000	1000000
76	A77	1000000	1000000
77	A78	1000000	1000000
78	A79	1000000	1000000
79	A80	1000000	1000000
80	A81	1000000	1000000
81	A82	1000000	1000000
82	A83	1000000	1000000
83	A84	1000000	1000000
84	A85	1000000	1000000
85	A86	1000000	1000000
86	A87	1000000	1000000
87	A88	1000000	1000000
88	A89	1000000	1000000
89	A90	1000000	1000000
90	A91	1000000	1000000
91	A92	1000000	1000000
92	A93	1000000	1000000
93	A94	1000000	1000000
94	A95	1000000	1000000
95	A96	1000000	1000000
96	A97	1000000	1000000
97	A98	1000000	1000000
98	A99	1000000	1000000
99	A100	1000000	1000000



Potential BSAL? (1)	Site type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD	
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	detailed <input type="checkbox"/>	excavation <input type="checkbox"/>
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)	
A.S.C.	Vegetation Community (1)	Substrate (3)	Slope Percent
O	wet sclerophyll forest	allochne <input type="checkbox"/>	not identified <input type="checkbox"/>
1	dry sclerophyll forest	backplain <input type="checkbox"/>	cone <input type="checkbox"/>
C	woodland grass/ustory	bank <input type="checkbox"/>	crater <input type="checkbox"/>
2	tall shrubland	bar <input type="checkbox"/>	cut face <input type="checkbox"/>
G.S.G.	low shrubland	beach <input type="checkbox"/>	gully <input type="checkbox"/>
3	heath	beach ridge <input type="checkbox"/>	hillcrest <input type="checkbox"/>
4	hummock grass	drainage depression <input type="checkbox"/>	hillside <input type="checkbox"/>
5	tussock grass	bench <input type="checkbox"/>	dune <input type="checkbox"/>
6	sod grass	barn <input type="checkbox"/>	embankment <input type="checkbox"/>
7	sedge	blow-out <input type="checkbox"/>	estuary <input type="checkbox"/>
8	rush	channel bench <input type="checkbox"/>	fan <input type="checkbox"/>
9	fern	crique <input type="checkbox"/>	levee <input type="checkbox"/>
10	temperate rainforest	cliff <input type="checkbox"/>	maar <input type="checkbox"/>
11	lichen	float-out <input type="checkbox"/>	mound <input type="checkbox"/>
12	liverwort	gravel <input type="checkbox"/>	scroll <input type="checkbox"/>
13	vine	limestone <input type="checkbox"/>	valley flat <input type="checkbox"/>
LAND USE (1)	LITHOLOGY		
national/state parks	not identified <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	flat <input type="checkbox"/>
timber/scrub/unused	unconsolidated <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	hillside <input type="checkbox"/>
logged native forest	gravels <input type="checkbox"/>	fine-basic <input type="checkbox"/>	ridge <input type="checkbox"/>
hardwood plantation	sand <input type="checkbox"/>	seepeline <input type="checkbox"/>	upper slope <input type="checkbox"/>
softwood plantation	organic material <input type="checkbox"/>	dolomite <input type="checkbox"/>	mid-slope <input type="checkbox"/>
improved pasture	alluvium <input type="checkbox"/>	aeolianite <input type="checkbox"/>	simple slope <input type="checkbox"/>
cropping	co-luuum <input type="checkbox"/>	chert <input type="checkbox"/>	lower slope <input type="checkbox"/>
orchard/vineyard	acelastine <input type="checkbox"/>	jasper <input type="checkbox"/>	open depression <input type="checkbox"/>
vegetables/flowers	shale <input type="checkbox"/>	metamorphic <input type="checkbox"/>	closed depression <input type="checkbox"/>
urban	silicate/mudstone <input type="checkbox"/>	adamellite <input type="checkbox"/>	
irrigated cultivation	sandstone-quartz <input type="checkbox"/>	igneous <input type="checkbox"/>	
highly disturbed	conglomerate <input type="checkbox"/>	schist/phyllite <input type="checkbox"/>	
with affinity	coarse-intermediate <input type="checkbox"/>	slate <input type="checkbox"/>	
	other <input type="checkbox"/>	hornfels <input type="checkbox"/>	
		quartzite <input type="checkbox"/>	
		greenstone <input type="checkbox"/>	
		trachyte <input type="checkbox"/>	
		rhyolite <input type="checkbox"/>	
		normal gilgai <input type="checkbox"/>	
		crabhole gilgai <input type="checkbox"/>	
		linear gilgai <input type="checkbox"/>	
		lattice gilgai <input type="checkbox"/>	
		other <input type="checkbox"/>	
Identification Method (1)	HYDROLOGY		
geology map	Permeability (1)	Depth (1) & Extent (1)	
both assessment & map	very poorly drained <input type="checkbox"/>	< 500 mm depth <input type="checkbox"/>	
extensive clearing	poorly drained <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>	
cleared, no cultivation	mod. imperfectly drained <input type="checkbox"/>	> 50% area <input type="checkbox"/>	
occasional cultivation	mod. well-drained <input type="checkbox"/>		
rained cultivation	well-drained <input type="checkbox"/>		
irrigated cultivation	rapidly drained <input type="checkbox"/>		
highly disturbed	other <input type="checkbox"/>		
SITE CONDITION	Surface Condition	SITE FIELD NOTES	
Site Disturbance(s) (2)	Current (2)	Expected (2)	KED KANDJOL
no effective disturbance	Ground Cover %	Wet (2)	
limited clearing	self-niched <input type="checkbox"/>	Dry (2)	
extensive clearing	loose <input type="checkbox"/>		
cleared, no cultivation	soft <input type="checkbox"/>		
occasional cultivation	firm <input type="checkbox"/>		
rained cultivation	hardset <input type="checkbox"/>		
irrigated cultivation	surface crust <input type="checkbox"/>		
highly disturbed	trampled <input type="checkbox"/>		
	poached <input type="checkbox"/>		
	recently cultivated <input type="checkbox"/>		
	water repellent <input type="checkbox"/>		
	gravelly <input type="checkbox"/>		
	other <input type="checkbox"/>		

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SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK 10

PROFILE MAP DETAILS		SURVEY DETAILS			
Potential BSAL? (1)	Site type (1)	checked <input checked="" type="checkbox"/>	Map Sheet No. Eastings: Northings:		
yes <input type="checkbox"/>	Site type (1)	checked <input checked="" type="checkbox"/>	Described By Profile Date Photo Taken (1) No. of Layers		
no <input type="checkbox"/>	detailed <input type="checkbox"/>	exclusion <input type="checkbox"/>	profile site <input type="checkbox"/> both profile & site <input type="checkbox"/> auger pit <input type="checkbox"/> batter pit <input type="checkbox"/> gully <input type="checkbox"/> core sample <input type="checkbox"/> other <input type="checkbox"/>		
BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD					
SOIL TYPE		LANDFORM ELEMENT (1)			
A.S.C.	VEGETATION	Vegetation Community (1)	Lithology		
O	R	unknown <input type="checkbox"/>	backplain <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>
C	A	wet sclerophyll forest <input type="checkbox"/>	bank <input type="checkbox"/>	foredune <input type="checkbox"/>	stream channel <input type="checkbox"/>
G.S.G.	H	dry sclerophyll forest <input type="checkbox"/>	bar <input type="checkbox"/>	cut face <input type="checkbox"/>	streambed <input type="checkbox"/>
GG	A	woodland grassy storey <input type="checkbox"/>	beach <input type="checkbox"/>	gully <input type="checkbox"/>	summit surface <input type="checkbox"/>
SG	H	tall shrubland <input type="checkbox"/>	beach ridge <input type="checkbox"/>	dam <input type="checkbox"/>	hillcrest <input type="checkbox"/>
F	A	low shrubland <input type="checkbox"/>	bench <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillslope <input type="checkbox"/>
M	I	grassland/herbland <input type="checkbox"/>	berm <input type="checkbox"/>	duna <input type="checkbox"/>	prior stream <input type="checkbox"/>
L	Y	swamp complex <input type="checkbox"/>	blow-out <input type="checkbox"/>	embankment <input type="checkbox"/>	plain <input type="checkbox"/>
		no vegetation <input type="checkbox"/>	channel bench <input type="checkbox"/>	estuary <input type="checkbox"/>	lagoon <input type="checkbox"/>
			cirque <input type="checkbox"/>	fan <input type="checkbox"/>	lake <input type="checkbox"/>
			cliff <input type="checkbox"/>	fill top <input type="checkbox"/>	rock flat <input type="checkbox"/>
				flood-out <input type="checkbox"/>	rock platform <input type="checkbox"/>
				mound <input type="checkbox"/>	scoar <input type="checkbox"/>
					scree <input type="checkbox"/>
					scroll <input type="checkbox"/>
					valley flat <input type="checkbox"/>
Growth Forms (4)		Substrate (3)		Slope Percent	
tree <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	flat <input type="checkbox"/>	Site Morphology (1)
tree mallee <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	crest <input type="checkbox"/>	like this only: <input type="checkbox"/>
shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	breccia <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	hilltop <input type="checkbox"/>	
heath shrub <input type="checkbox"/>	sand <input type="checkbox"/>	greywacke <input type="checkbox"/>	fine-basic <input type="checkbox"/>	ridge <input type="checkbox"/>	
chenopod shrub <input type="checkbox"/>	silt <input type="checkbox"/>	arkose <input type="checkbox"/>	serpentine <input type="checkbox"/>	upper slope <input type="checkbox"/>	
hummock grass <input type="checkbox"/>	clay <input type="checkbox"/>	dolomite <input type="checkbox"/>	gabbro <input type="checkbox"/>	midslope <input type="checkbox"/>	
tussock grass <input type="checkbox"/>	organic material <input type="checkbox"/>	calcareous <input type="checkbox"/>	dolerite <input type="checkbox"/>	simple slope <input type="checkbox"/>	
sod grass <input type="checkbox"/>	alluvium <input type="checkbox"/>	aedonite <input type="checkbox"/>	diorite <input type="checkbox"/>	lower slope <input type="checkbox"/>	
sege <input type="checkbox"/>	colluvium <input type="checkbox"/>	cher <input type="checkbox"/>	syenite <input type="checkbox"/>	open depression <input type="checkbox"/>	
rush <input type="checkbox"/>	lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	granodiorite <input type="checkbox"/>	closed depression <input type="checkbox"/>	
fern <input type="checkbox"/>	aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	adamellite <input type="checkbox"/>		
fern/cyad <input type="checkbox"/>	marine <input type="checkbox"/>	greis <input type="checkbox"/>	granite <input type="checkbox"/>		
moss <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	aplite <input type="checkbox"/>		
lichen <input type="checkbox"/>	fill <input type="checkbox"/>	state <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>		
liverwort <input type="checkbox"/>	ill <input type="checkbox"/>	hornfels <input type="checkbox"/>	quartz <input type="checkbox"/>		
vine <input type="checkbox"/>	sedimentary <input type="checkbox"/>	quartzite <input type="checkbox"/>	basalt <input type="checkbox"/>		
	shale <input type="checkbox"/>	greenstone <input type="checkbox"/>	andesite <input type="checkbox"/>		
	silicate/mudstone <input type="checkbox"/>	amphibolite <input type="checkbox"/>	trachyte <input type="checkbox"/>		
	sandstone-quartz <input type="checkbox"/>	marble <input type="checkbox"/>	obsidian <input type="checkbox"/>		
	sandstone-ilitic <input type="checkbox"/>	igneous <input type="checkbox"/>	sonora <input type="checkbox"/>		
	conglomerate <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	ash <input type="checkbox"/>		
		coarse-intermediate <input type="checkbox"/>	crabhole giga <input type="checkbox"/>		
		igneous <input type="checkbox"/>	linear giga <input type="checkbox"/>		
		ash <input type="checkbox"/>	lattice giga <input type="checkbox"/>		
		crabhole giga <input type="checkbox"/>	melanophile giga <input type="checkbox"/>		
		linear giga <input type="checkbox"/>	other <input type="checkbox"/>		
LAND USE (1)		HYDROLOGY		Slope Measurement Method (1)	
national/state parks <input type="checkbox"/>	improved pasture <input type="checkbox"/>	geology map <input type="checkbox"/>	inclinometer <input type="checkbox"/>	waxing <input type="checkbox"/>	Aspect (1)
timber/scrub/unused <input type="checkbox"/>	cropping <input type="checkbox"/>	both assessment & map <input type="checkbox"/>	Aneroid level <input type="checkbox"/>	warning <input type="checkbox"/>	none <input type="checkbox"/>
logged native forest <input type="checkbox"/>	orchard/lyneryard <input type="checkbox"/>	Rock Outcrop % (1)	total station <input type="checkbox"/>	maximal <input type="checkbox"/>	RTK GPS <input type="checkbox"/>
hardwood plantation <input type="checkbox"/>	vegetables/flowers <input type="checkbox"/>	nil <input type="checkbox"/>	RTK GPS <input type="checkbox"/>	minimal <input type="checkbox"/>	LIDAR <input type="checkbox"/>
softwood plantation <input type="checkbox"/>	urban <input type="checkbox"/>	>20-30% <input type="checkbox"/>			
volcanic/native pasture <input type="checkbox"/>	industrial <input type="checkbox"/>	>30-50% <input type="checkbox"/>			
improved pasture <input type="checkbox"/>	quarry/mining <input type="checkbox"/>	>50% <input type="checkbox"/>			
cropping <input type="checkbox"/>	other <input type="checkbox"/>	>10% <input type="checkbox"/>			
both assessment & map <input type="checkbox"/>					
Rock Outcrop % (1)					
Profile Drainage (1)	Permeability (1)	Depth (1) & Extent (1)			
Very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>	< 500 mm depth <input type="checkbox"/>			
poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>			
mod. well-drained <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	< 50% area <input type="checkbox"/>			
well-drained <input type="checkbox"/>	highly permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>			
SITE FIELD NOTES					
Surface Condition					
Current (2)		Expected			
Wet (2)		Dry (2)			
YELLOW KANDOSOL					
Site Disturbance(s) (2)		Ground Cover %		Microrelief Type (1)	
Natural disturbance <input type="checkbox"/>	Ground Cover %	self-mulched <input type="checkbox"/>	normal giga <input type="checkbox"/>	waxing <input type="checkbox"/>	Aspect (1)
no effective disturbance <input type="checkbox"/>	Cover %	loose <input type="checkbox"/>	crabhole giga <input type="checkbox"/>	warning <input type="checkbox"/>	none <input type="checkbox"/>
limited clearing <input type="checkbox"/>	Cover %	soft <input type="checkbox"/>	linear giga <input type="checkbox"/>	maximal <input type="checkbox"/>	RTK GPS <input type="checkbox"/>
extensive clearing <input type="checkbox"/>	Cover %	firm <input type="checkbox"/>	lattice giga <input type="checkbox"/>	minimal <input type="checkbox"/>	LIDAR <input type="checkbox"/>
cleared, no cultivation <input type="checkbox"/>	Cover %	hardset <input type="checkbox"/>	melanophile giga <input type="checkbox"/>		
occasional cultivation <input type="checkbox"/>	Cover %	surface crust <input type="checkbox"/>	other <input type="checkbox"/>		
rained cultivation <input type="checkbox"/>	Cover %	trambed <input type="checkbox"/>			
irrigated cultivation <input type="checkbox"/>	Cover %	poached <input type="checkbox"/>			
highly disturbed <input type="checkbox"/>	Cover %	water repellent <input type="checkbox"/>			
		gravelly <input type="checkbox"/>			
		other <input type="checkbox"/>			
Photo file names: CHECK SITE 10					

SURVEY TITLE: NEUBECK COAL PROJECT

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LAYER STATUS					COLOUR (Munsell, 1994)					FIELD pH TEST NOTES					FIELD pH TEST METHOD (1)							
cm	mm	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180		
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
S	Upper	1	2	3	4	5	Type (1 per layer)	Sur. 1	2	3	4	5	COARSE FRAGMENTS	SEGREGATIONS					SOIL WATER STATUS			
B	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	not evident	calcareous	gypseous	mangiferous	(1 per layer)	dry	
B	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	very few (<2%)	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	mod. moist	
T	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	other	not identified	organic	ferniferous	organic	wet	
T	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	none	very few (<2%)	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	clayey sand
R	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	other	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	strong	sandy loam
A	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	other	common (10-20%)	many (20-50%)	abundant (>50%)	strong	clay loam	
T	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	other	common (10-20%)	many (20-50%)	abundant (>50%)	strong	clay loam sandy	
E	Sub	disturbed	undisturbed	bulked	as rock outcrop	as parent material	Quartz	feldspar	silicate	silcrete	bauxite	shales	charcoal	purple	opalised wood	other	common (10-20%)	many (20-50%)	abundant (>50%)	strong	silty clay loam	
Dominant (1)	MOTTLES	Sub-dominant (1)	Abundance	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	Form (1 per layer)	1	2	3	4	5	Clay Fraction	
1	2	3	4	5	not evident	<2%	2-10%	10-20%	20-50%	very few (<2%)	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	soft segregations	1	2	3	4	5	light	
2	2	2	2	2	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	nodules	1	2	3	4	5	medium	
3	3	3	3	3	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	fragments	1	2	3	4	5	medium heavy	
4	4	4	4	4	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	crystals	1	2	3	4	5	heavy	
5	5	5	5	5	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	concretions	1	2	3	4	5	ext. coarse	
6	6	6	6	6	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	root linings	1	2	3	4	5	coarse	
7	7	7	7	7	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	tubules	1	2	3	4	5	fine	
8	8	8	8	8	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	fine gravel (2-6 mm)	1	2	3	4	5	fine	
9	9	9	9	9	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	gravel (6-20 mm)	1	2	3	4	5	medium	
10	10	10	10	10	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	coarse gravel (20-60 mm)	1	2	3	4	5	medium heavy	
11	11	11	11	11	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	cobbles (60-200 mm)	1	2	3	4	5	heavy	
12	12	12	12	12	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	stones (200-600 mm)	1	2	3	4	5	boulders (>600 mm)	
13	13	13	13	13	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. coarse (>600 mm)	
14	14	14	14	14	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	pebbles	1	2	3	4	5	ext. fine (<2 mm)	
15	15	15	15	15	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	gravel	1	2	3	4	5	ext. medium	
16	16	16	16	16	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	pebbles	1	2	3	4	5	ext. medium heavy	
17	17	17	17	17	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	gravel	1	2	3	4	5	ext. heavy	
18	18	18	18	18	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	pebbles	1	2	3	4	5	ext. very heavy	
19	19	19	19	19	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. very very heavy	
20	20	20	20	20	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. coarse	
21	21	21	21	21	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. fine	
22	22	22	22	22	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. medium	
23	23	23	23	23	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. medium heavy	
24	24	24	24	24	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. heavy	
25	25	25	25	25	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. very heavy	
26	26	26	26	26	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. very very heavy	
27	27	27	27	27	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. ext. coarse	
28	28	28	28	28	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. ext. fine	
29	29	29	29	29	not evident	<2%	2-10%	10-20%	20-50%	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	rocks	1	2	3	4	5	ext. ext. ext. medium	

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

CHECK 12

PROFILE MAP DETAILS		SURVEY DETAILS		 GOVERNMENT 																																																																																																																																																																																																																																																																																																																																	
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V	swamp complex (2)	cliff (2)	rock platform (2)	<input checked="" type="checkbox"/> gully (2)																																																																																																																																																																																																																																																																																																																																	
Y	littoral complex (2)	no vegetation (2)	flood-out (2)	<input checked="" type="checkbox"/> talus (2)																																																																																																																																																																																																																																																																																																																																	
T	tree (2)	not identified (2)	mound (2)	<input checked="" type="checkbox"/> talus (2)																																																																																																																																																																																																																																																																																																																																	
I	shrub (2)	unconsolidated (2)	scroll (2)	<input checked="" type="checkbox"/> tidal creek (2)																																																																																																																																																																																																																																																																																																																																	
R	malee shrub (2)	gravel (2)	valley (2)	<input checked="" type="checkbox"/> tidal flat (2)																																																																																																																																																																																																																																																																																																																																	
H	heath shrub (2)	sand (2)	• Fully erase mistakes																																																																																																																																																																																																																																																																																																																																		
B	heathopod shrub (2)	silt (2)	• Make no stray marks																																																																																																																																																																																																																																																																																																																																		
S	hummock grass (2)	clay (2)	• Numbers in () show max. entries allowed																																																																																																																																																																																																																																																																																																																																		
G	tussock grass (2)	organic material (2)																																																																																																																																																																																																																																																																																																																																			
S	sod grass (2)	alluvium (2)																																																																																																																																																																																																																																																																																																																																			
E	sege (2)	calcareous (2)																																																																																																																																																																																																																																																																																																																																			
R	rush (2)	colluvium (2)																																																																																																																																																																																																																																																																																																																																			
F	fern/cycad (2)	lacustrine (2)																																																																																																																																																																																																																																																																																																																																			
M	fern (2)	aeolianite (2)																																																																																																																																																																																																																																																																																																																																			
O	moss (2)	aeolianite (2)																																																																																																																																																																																																																																																																																																																																			
L	lichen (2)	calcarenous sand (2)																																																																																																																																																																																																																																																																																																																																			
N	lichen (2)	calcareous shale (2)																																																																																																																																																																																																																																																																																																																																			
V	liverwort (2)	fill (2)																																																																																																																																																																																																																																																																																																																																			
C	vine (2)	mud (2)																																																																																																																																																																																																																																																																																																																																			
P	soil	tilt (2)																																																																																																																																																																																																																																																																																																																																			
LAND USE (1)																																																																																																																																																																																																																																																																																																																																					
W	national/state parks (2)	sedimentary (2)	HYDROLOGY																																																																																																																																																																																																																																																																																																																																		
W	timber/scrub/unused (2)	silicate (2)	Profile Drainage (1)																																																																																																																																																																																																																																																																																																																																		
W	logged native forest (2)	sandstone-quartz (2)	Permeability (1)																																																																																																																																																																																																																																																																																																																																		
W	hardwood plantation (2)	sandstone-lithic (2)	Depth (1) & Extent (1)																																																																																																																																																																																																																																																																																																																																		
W	softwood plantation (2)	conglomerate (2)	<input checked="" type="checkbox"/> < 500 mm depth (2)																																																																																																																																																																																																																																																																																																																																		
W	voluminous pasture (2)	Identification Method (1)	<input checked="" type="checkbox"/> > 500 mm depth (2)																																																																																																																																																																																																																																																																																																																																		
W	improved pasture (2)	geology map (2)	<input checked="" type="checkbox"/> ≤ 50% area (2)																																																																																																																																																																																																																																																																																																																																		
W	cropping (2)	both assessment & map (2)	<input checked="" type="checkbox"/> > 50% area (2)																																																																																																																																																																																																																																																																																																																																		
W	orchard/vineyard (2)	Rock Outcrop % (1)																																																																																																																																																																																																																																																																																																																																			
W	vegetables/flowers (2)	nil (2)																																																																																																																																																																																																																																																																																																																																			
W	urban (2)	>20-30% (2)																																																																																																																																																																																																																																																																																																																																			
W	industrial (2)	>30-50% (2)																																																																																																																																																																																																																																																																																																																																			
W	quarry/mining (2)	>50% (2)																																																																																																																																																																																																																																																																																																																																			
W	other (2)	>10-20% (2)																																																																																																																																																																																																																																																																																																																																			
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<p>Photo file name/s: <i>CHECK SITE 12</i></p> <p><i>YELLOH CH ROMOSOL</i></p>																																																																																																																																																																																																																																																																																																																																					

Please do not mark this space.

LAYER STATUS		COLOUR (Munsell, 1994)					Field pH Test Method (1)					LAYER NOTES												
Horizon	Moist Munsell	Dry Munsell					Raupach (1 per layer)					RH strip (1 per layer)												
Lower	Horizon	Moist Munsell	dry	brown	black	grey	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	diffuse (>100 mm)	no effervescence	audible/light efferv.	strong effervescence	Boundary Distinctiveness								
1	Lower	Horizon	Moist Munsell	dry	brown	black	<2%	2-10%	10-20%	20-50%	50-90%	>90%	faint	distinct	coarse	fine								
2	Lower	Horizon	Moist Munsell	dry	brown	black	<2%	2-10%	10-20%	20-50%	50-90%	>90%	faint	distinct	coarse	fine								
3	Lower	Horizon	Moist Munsell	dry	brown	black	<2%	2-10%	10-20%	20-50%	50-90%	>90%	faint	distinct	coarse	fine								
4	Lower	Horizon	Moist Munsell	dry	brown	black	<2%	2-10%	10-20%	20-50%	50-90%	>90%	faint	distinct	coarse	fine								
5	Lower	Horizon	Moist Munsell	dry	brown	black	<2%	2-10%	10-20%	20-50%	50-90%	>90%	faint	distinct	coarse	fine								
Estimated Effective Rooting Depth (m)		Sample Taken					Type (1 per layer)					Soil Water Status (1 each per layer)												
S	Upper	(3 per layer)	1	2	3	4	5	Type (1 per layer)	Surf	1	2	3	4	5	1	2	3	4	5					
B			disturbed	undisturbed	bulked	bulk density		not evident	common	common	common	common	common	common	dry	mod. moist	wet	mod. moist	wet					
S								not identified	not identified	not identified	not identified	not identified	not identified	not identified	sand	sand	sand	sand	sand					
T								as substrate	as rock outcrop	as rock outcrop	as rock outcrop	as rock outcrop	as rock outcrop	loamy sand	sandy loam	sandy clay loam	sandy clay	sandy clay						
R								as parent material	as parent material	as parent material	as parent material	as parent material	as parent material	clay loam	clay loam	clay loam	clay	clay						
A								quartz	feldspar	feldspar	feldspar	feldspar	feldspar	clay	clay	clay	clay	clay						
E								shells	charcoal	charcoal	charcoal	charcoal	charcoal	hemic peat	hemic peat	hemic peat	hemic peat	hemic peat						
Dominant (1)	MOTTLES Sub-dominant (1)							pumice	ironstone	ironstone	ironstone	ironstone	ironstone	sapric peat	sapric peat	sapric peat	sapric peat	sapric peat						
1	2	3	4	5	Abundance	1	2	3	4	5	Amount (1 per layer)	1	2	3	4	5	1	2	3	4	5			
1	2	3	4	5	Colour	1	2	3	4	5	soft segregations	modules	fragments	crystals	veins	concretions	root linings	fibules	size (1 per layer)	1	2	3	4	5
1	2	3	4	5	dark red	<2%	2-10%	10-20%	20-50%	>50%	very few (<2%)	few (2-10%)	common (10-20%)	many (20-50%)	abundant (>50%)	very abundant (>90%)	fine gravel (2-6 mm)	fine (<2 mm)	medium (2-6 mm)	coarse (6-20 mm)	very coarse (>20 mm)	fine medium (2-6 mm)	medium heavy (6-20 mm)	heavy (20 mm +)
1	2	3	4	5	orange yellow brown pale grey	<2%	2-10%	10-20%	20-50%	>50%	common (10-20%)	common (10-20%)	common (10-20%)	common (10-20%)	common (10-20%)	common (10-20%)	gravel (6-20 mm)	coarse gravel (20-60 mm)	cobbles (60-200 mm)	stones (>200 mm)	bedrock (500 mm +)	medium (2-6 mm)	coarse (6-20 mm)	very coarse (>20 mm)

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

CHECK 13

PROFILE MAP DETAILS		SURVEY DETAILS		NSW SOIL AND LAND INFORMATION SYSTEM																	
Profile No.	Map Sheet No.	Eastings	Northings		Described By	Profile Date	Photo Taken (1)	No. of Layers													
Potential BSAL? (1)		Site Type (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD																	
yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>	checked <input checked="" type="checkbox"/>	detailed <input type="checkbox"/>																		
								Exclusion													
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)						LITHOLOGY	TOPOGRAPHY												
A.S.C.	Vegetation Community (1)	backplain <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	site <input type="checkbox"/>	flat <input type="checkbox"/>	crest <input type="checkbox"/>	hillside <input type="checkbox"/>	ridge <input type="checkbox"/>	upper slope <input type="checkbox"/>	mid-slope <input type="checkbox"/>	simple slope <input type="checkbox"/>	lower slope <input type="checkbox"/>	waxing <input type="checkbox"/>	maximal <input type="checkbox"/>	
O	C unknown <input type="checkbox"/>	bank <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/playa <input type="checkbox"/>	profile <input type="checkbox"/>	site <input type="checkbox"/>	rainforest <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	pan <input type="checkbox"/>	flat <input type="checkbox"/>	hillside <input type="checkbox"/>	cut face <input type="checkbox"/>	hillock <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	tidal creek <input type="checkbox"/>	waning <input type="checkbox"/>		
S	A wet sclerophyll forest <input type="checkbox"/>	bar <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	pit <input type="checkbox"/>	site <input type="checkbox"/>	dry sclerophyll forest <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	playa <input type="checkbox"/>	flat <input type="checkbox"/>	beach <input type="checkbox"/>	dam <input type="checkbox"/>	hillock <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	tidal flat <input type="checkbox"/>	tidal flat <input type="checkbox"/>			
G.G.	A woodland shrub storey <input type="checkbox"/>	beach ridge <input type="checkbox"/>	drainage depression <input type="checkbox"/>	plain <input type="checkbox"/>	prior stream <input type="checkbox"/>	pit <input type="checkbox"/>	site <input type="checkbox"/>	woodland shrub storey <input type="checkbox"/>	fine-basic <input type="checkbox"/>	playa <input type="checkbox"/>	flat <input type="checkbox"/>	berm <input type="checkbox"/>	dune <input type="checkbox"/>	lagoon <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	talus <input type="checkbox"/>			
S.G.	A tail shrubland <input type="checkbox"/>	berm <input type="checkbox"/>	embankment <input type="checkbox"/>	rock platform <input type="checkbox"/>	rock flat <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	low shrubland <input type="checkbox"/>	calcrite <input type="checkbox"/>	rock platform <input type="checkbox"/>	flat <input type="checkbox"/>	blow-out <input type="checkbox"/>	channel bench <input type="checkbox"/>	lagoon <input type="checkbox"/>	swale <input type="checkbox"/>	swamp <input type="checkbox"/>	talus <input type="checkbox"/>	talus <input type="checkbox"/>			
F	A grassland/herbland <input type="checkbox"/>	berm <input type="checkbox"/>	estuary <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	swamp/herbland <input type="checkbox"/>	calcareous <input type="checkbox"/>	rock flat <input type="checkbox"/>	flat <input type="checkbox"/>	cirque <input type="checkbox"/>	flood-out <input type="checkbox"/>	lunette <input type="checkbox"/>	scarp <input type="checkbox"/>	scarp <input type="checkbox"/>	trench <input type="checkbox"/>	trench <input type="checkbox"/>			
M	A littoral complex <input type="checkbox"/>	cliff <input type="checkbox"/>	lithological <input type="checkbox"/>	mound <input type="checkbox"/>	scree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	no vegetation <input type="checkbox"/>	clay <input type="checkbox"/>	scree <input type="checkbox"/>	flat <input type="checkbox"/>	cliff <input type="checkbox"/>	cliff <input type="checkbox"/>	scroll <input type="checkbox"/>	scree <input type="checkbox"/>	scree <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>			
L	A tree <input type="checkbox"/>	not identified <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	tree <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	flat <input type="checkbox"/>	tree <input type="checkbox"/>	tree <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>			
V	A tree <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	shrub <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	flat <input type="checkbox"/>	shrub <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>			
C	A tree <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	heath shrub <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	flat <input type="checkbox"/>	heath shrub <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>	lime <input type="checkbox"/>			
G.S.G.	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	chenopod shrub <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	chenopod shrub <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
B	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	hummock grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	hummock grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
T	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	tussock grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	tussock grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
S	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	sod grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	sod grass <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
R	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	sedge <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	sedge <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
N	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	rush <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	rush <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
F	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
I	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
L	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
D	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
P	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
M	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
A	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
Y	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
E	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	site <input type="checkbox"/>	site <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	flat <input type="checkbox"/>	fern <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>	A tree <input type="checkbox"/>			
SITE CONDITION	Current (2)	Expected	FELLOW CHAKRAMOSOL																		
Site Disturbance(s) (2)	Ground Cover %	cracked <input type="checkbox"/>	self-mulched <input type="checkbox"/>	loose <input type="checkbox"/>	soft <input type="checkbox"/>	firm <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	poorly drained <input type="checkbox"/>	very poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	mod. permeable <input type="checkbox"/>	highly permeable <input type="checkbox"/>	well-drained <input type="checkbox"/>	rapidly drained <input type="checkbox"/>	depth (1) & Extent (1)	< 500 mm depth <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>	≤ 50% area <input type="checkbox"/>	> 50% area <input type="checkbox"/>	Permeability (1)	Depth (1) & Extent (1)
no effective disturbance <input type="checkbox"/>	both assessment & map <input type="checkbox"/>																				
extensive clearing <input type="checkbox"/>	extensive clearing <input type="checkbox"/>																				
cleared, no cultivation <input type="checkbox"/>	cleared, no cultivation <input type="checkbox"/>																				
rainforest cultivation <input type="checkbox"/>	rainforest cultivation <input type="checkbox"/>																				
irrigated cultivation <input type="checkbox"/>	irrigated cultivation <input type="checkbox"/>																				
highly disturbed <input type="checkbox"/>	highly disturbed <input type="checkbox"/>																				
recently cultivated <input type="checkbox"/>	recently cultivated <input type="checkbox"/>																				
water repellent <input type="checkbox"/>	water repellent <input type="checkbox"/>																				
gravelly <input type="checkbox"/>	gravelly <input type="checkbox"/>																				
other <input type="checkbox"/>	other <input type="checkbox"/>																				
SITE FIELD NOTES																					
Photo file name/s: CHECK SITE 13																					

Please do not mark this space.

cm	mm 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180			
1		COLOUR (Munsell, 1994)					Field pH					Layer Notes					Field pH Test Method (1)					
		Moist Munsell					Dry Munsell					(1 per layer)					Raupach oH meter (2) HCl (1)					
Lower	Horizon	Moist Munsell	dry	grey	black	brown	dark brown	black	black	black	black	black	black	black	black	black	black	dry	sharp (<5 mm)	not evident		
2			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	test strip	abrupt (5-20 mm)	diffuse (>100 mm)		
3	1		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	no effervescence	moderate pedality	clear (50-100 mm)		
4			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	audible/slight efferv.	strong effervescence	gradual (50-100 mm)		
5	Lower	Horizon	Moist Munsell	dry	grey	black	black	black	black	black	black	black	black	black	black	black	black	Boundary Distinctiveness	smooth-faced peds	rough-faced peds		
6			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Fabric (1)	angular blocky	sub-angular blocky		
7	2		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Grade of Pedality (1)	single-grained	platy		
8			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Ped Shape (1)	lenticular	lenticular		
9	Lower	Horizon	Moist Munsell	dry	grey	black	black	black	black	black	black	black	black	black	black	black	black	Columnar (1)	prismatic	columnar		
10			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Round (1)	angular blocky	angular blocky		
11	3		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Sub-dominant (1)	sub-angular blocky	sub-angular blocky		
12			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Dominant (1)	polyhedral	polyhedral		
13			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Sub-dominant (1)	granular	granular		
14	4		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Dominant (1)	crumb	crumb		
15			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Sub-dominant (1)	round	round		
16	Lower	Horizon	Moist Munsell	dry	grey	black	black	black	black	black	black	black	black	black	black	black	black	Segregations (1 per layer)	1-2 mm	> 500 mm		
17			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Type (1 per layer)	1-2 mm	> 500 mm		
18	5		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	2-5 mm	2-5 mm		
19	Upper		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Type (1 per layer)	5-10 mm	10-20 mm		
S			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	20-50 mm	50-100 mm		
U			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Type (1 per layer)	100-200 mm	200-500 mm		
B			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	> 500 mm	> 500 mm		
T	R		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	> 500 mm	> 500 mm		
A	T		black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	> 500 mm	> 500 mm		
E			black	black	black	black	black	black	black	black	black	black	black	black	black	black	black	Segregation (1 per layer)	> 500 mm	> 500 mm		
Dominant (1)	MOTTLES Sub-dominant (1)	1 2 3 4 5	Abundance	1 2 3 4 5	Type (1 per layer)	1 2 3 4 5	Coarse Fragments (1 per layer)	1 2 3 4 5	Terriginous (1 per layer)	1 2 3 4 5	terriginous (1 per layer)	1 2 3 4 5	terriginous (1 per layer)	1 2 3 4 5	terriginous (1 per layer)	1 2 3 4 5	Soil Water Status (1 each per layer)	1-2 mm	1-2 mm	1-2 mm		
23			disturbed	undisturbed	bulked	bulk density	as parent material	layer continues	soil continues	soil continues	Texture (1 each per layer)	dry	mod. moist	wet								
24			charcoal	pumice	feldspar	silicate	ironstone	bauxite	shells	charcoal	charcoal	charcoal	charcoal	charcoal	charcoal	charcoal	Texture Grade (1)	1	2	3	4	5
25			2-10%	10-20%	20-50%	>50%	very abundant	abundant	common	common	common	common	common	common	common	common	Sand Fraction (1)	coarse	fine	clay	loam	sand
26			dark red	orange	yellow	brown	pale	grey	grey	grey	grey	grey	grey	grey	grey	grey	Clay Fraction (1)	coarse	medium	heavy	medium	light
27			faint	distinct	prominent												Size (1 per layer)	1 2 3 4 5	Size (1 per layer)	1 2 3 4 5	Size (1 per layer)	1 2 3 4 5
28																	Size (1 per layer)	1 2 3 4 5	Size (1 per layer)	1 2 3 4 5	Size (1 per layer)	1 2 3 4 5

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: R. 1 ACTMAN Twp.

KUBBECK COAL PRO
BLACKMANS FLAT.

CHECK 14

PROFILE MAP DETAILS												SURVEY DETAILS					
Potential BSAL? (1)			Site type (1)			BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD											
yes <input checked="" type="checkbox"/> no <input type="checkbox"/>			checked <input checked="" type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>			LANDFORM ELEMENT (1) LITHOLOGY TOPOGRAPHY											
Soil Type (A.S.C.)		Vegetation Community (1)		Substrate (3)		Slope Percent		Site Morphology (1)		Profile Date		Photo Taken (1)		No. of Layers			
O	P	unknown	backpant	cone	footslope	ox-bow	sink hole/doline	flat	profile	Profile No.	Map Sheet No.	Eastings	Northings	Described By			
S	D	Rainforest	crater	foredune	pain/playa	profile	site	crest	Photo Taken (1)					Photo Taken (1)			
G.S.C.	T	wet sclerophyll forest	bank	cut face	pediment	pit	summit surface	ridge	No. of Layers					Nature of Exposure (2)			
GG	H	dry sclerophyll forest	bar	cut-over surface	hillcrest	swale	stream channel	hillside	both profile & site					angler			
SG	A	woodland grass storey	beach ridge	drainage depression	hillslope	plain	streambed	tall shrubland	pit					batter			
F	M	low shrubland	berm	dam	lagoon	prior stream	stepped	channel	gully					batter pit			
A	I	heath	blow-out	embankment	lake	rock flat	talus	channel bench	gully pit					gully			
L	Y	grassland/herbland	fan	estuary	rock	rock platform	tidal creek	cirque	core sample					core sample			
V	C	swamp complex	lunette	levee	scab	tidal flat	other	cliff	other					other			
		no vegetation	maar	scree	trench	tide flat		fill top	stray marks								
			mound	scree	torn	show max.		floor-out	numbers in ()								
			soil	valley flat	valley flat	entries allowed		roll									
GROWTH FORMS (4)												LITHOLOGY					
tree	tree mallee	not identified	limestone	coarse-basic	fine-acidic	fine-intermediate	lime-basic	metamorphic	slope method	slope measurement	site morphology	flat	waxing	Please MARK LIKE THIS ONLY:			
shrub	shrub	unconsolidated	tuff	breccia	greywacke	arkose	serpentinite	schistophyllite	inclinometer	RTK GPS	slope morphology	crest	warning	✓			
heath	heath shrub	gravel	sand	dolomite	dolomite	dolomite	calcarenous	slate	Abney level	LIDAR	microrelief type	hillside	maximal	✓			
chenopod	chenopod shrub	silt	clay	calcareous	calcareous	calcareous	metamorphic	quartz-porphyry	total station	minimal	aspect	ridge	lower slope	• Fully erase			
hummock	hummock grass	organic material	alluvium	aeolianite	aeolianite	aeolianite	igneous	basalt	RTK GPS	other	closed depression	mid-slope	open depression	• Make no mistakes			
tussock	tussock grass	sod grass	colluvium	chert	chert	chert	metamorphic	andesite	LIDAR	other	open depression	simple slope	closed depression	• Show max. numbers in ()			
sod	sod	rush	lacustrine	jasper	jasper	jasper	gneiss	trachyte	other	other	valley flat	upper slope	valley flat	• Show max. entries allowed			
grass	grass	fern	aeolian	metamorphic	metamorphic	metamorphic	gneiss	rhyolite	other	other	valley flat	mid-slope	valley flat				
vine	vine	fern/cyad	marine	gneiss	gneiss	gneiss	schistophyllite	obsidian	other	other	valley flat	upper slope	valley flat				
		fern/cyad	calcareous sand	aplite	aplite	aplite	slate	ash	normal giga	normal giga	valley flat	mid-slope	valley flat				
		fern/cyad	fill	quartz-porphyry	quartz-porphyry	quartz-porphyry	quartz-porphyry	crabiolite	crabiolite	crabiolite	valley flat	upper slope	valley flat				
		fern/cyad	mud	hornfels	hornfels	hornfels	greenstone	melanophyllite	melanophyllite	melanophyllite	valley flat	mid-slope	valley flat				
		fern/cyad	tilt	quartzite	quartzite	quartzite	amphibolite	trachyte	trachyte	trachyte	valley flat	upper slope	valley flat				
		fern/cyad	sedimentary	greenstone	greenstone	greenstone	igneous	obsidian	obsidian	obsidian	valley flat	mid-slope	valley flat				
		fern/cyad	shale	igneous	igneous	igneous	metamorphic	ash	normal giga	normal giga	valley flat	upper slope	valley flat				
		fern/cyad	siltstone/mudstone	metamorphic	metamorphic	metamorphic	metamorphic	ash	crabiolite	crabiolite	valley flat	mid-slope	valley flat				
		fern/cyad	sandstone/quartz	igneous	igneous	igneous	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	sandstone/lithic	coarse-acidic	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	conglomerate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	upper slope	valley flat				
		fern/cyad	coarse-intermediate	coarse-intermediate	coarse-intermediate	coarse-intermediate	igneous	igneous	igneous	igneous	valley flat	mid-slope</					

LAYER STATUS					FIELD pH (Munsell, 1994)					FIELD pH NOTES					FIELD pH TEST METHOD (1)					
cm	mm	Lower	Horizon	Dry Munsell	Field pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29			
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29				
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29					
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29						
16	17	18	19	20	21	22	23	24	25	26	27	28	29							
17	18	19	20	21	22	23	24	25	26	27	28	29								
18	19	20	21	22	23	24	25	26	27	28	29									
19	20	21	22	23	24	25	26	27	28	29										
20	21	22	23	24	25	26	27	28	29											
21	22	23	24	25	26	27	28	29												
22	23	24	25	26	27	28	29													
23	24	25	26	27	28	29														
24	25	26	27	28	29															
25	26	27	28	29																
26	27	28	29																	
27	28	29																		
28	29																			
29																				

Boundary Distinctiveness

(1 per layer) 1, 2, 3, 4, 5

not evident

sharp (<5 mm)

abrupt (5-20 mm)

clear (20-50 mm)

gradual (50-100 mm)

diffuse (>100 mm)

HCl (1)

no effervescence

audible/slight efferv.

strong effervescence

Boundary Distinctiveness

(1 per layer) 1, 2, 3, 4, 5

Raupach

test strip

pH meter

STRUCTURE

Grade of Pedality (1)

1, 2, 3, 4, 5

single-grained

massive

weak pedality

moderate pedality

strong pedality

Fabric (1)

1, 2, 3, 4, 5

sandy

earthy

smooth-faced ped.

rough-faced ped.

ped. shape

Sub-dominant (1)

1, 2, 3, 4, 5

dominant (1)

ped. size

Sub-dominant (1)

1, 2, 3, 4, 5

1 < 2 mm
2-5 mm
5-10 mm
10-20 mm
20-50 mm
50-100 mm
100-200 mm
200-500 mm
> 500 mm

SEGREGATIONS

Type (1 per layer)

1, 2, 3, 4, 5

not evident

calcareous

gypseous

manganese

ferruginous

ferromanganiferous

organic

not identified

other

Texture

(1 each per layer)

Texture Grade

1, 2, 3, 4, 5

loamy sand

sandy loam

silty loam

sandy clay loam

clay loam

clay loam sandy

silty clay loam

sandy clay

fibric peat

humic peat

sapric peat

Sand Fraction

1, 2, 3, 4, 5

coarse

fine

light

medium

medium heavy

heavy

Clay Fraction

1, 2, 3, 4, 5

fine (<2 mm)

medium (2-6 mm)

coarse (6-20 mm)

v coarse (20-60 mm)

ext coarse (>60 mm)

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKMANS FLAT

CHECK 15

PROFILE MAP DETAILS		SURVEY DETAILS	
Profile No.	Map Sheet No.	Eastings	Northings
0	D	Described By	Profile Date
0	D	Photo Taken (1)	No. of Layers
0	D	profile	site (2)
0	D	both profile & site	1
0	D	Nature of Exposure (2)	
0	D	auger	
0	D	batter	
0	D	pit	
0	D	core sample	
0	D	gully	
0	D	batter	
0	D	pit	
0	D	other	

SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD	
A.S.C.	Vegetation Community (1)	alcove (2)	cone (2)	footslope (2)	ox-bow (2)	sink hole/doline (2)	
O	unknown (2)	backplain (2)	crater (2)	foredune (2)	pan/playa (2)	stream channel (2)	
0	D	rainforest (2)	bank (2)	cut face (2)	pediment (2)	streambed (2)	
0	D	wet sclerophyll forest (2)	bar (2)	cut face (2)	pit (2)	summit surface (2)	
SO	A	dry sclerophyll forest (2)	beach (2)	drainage depression (2)	plain (2)	swale (2)	
SO	A	woodland grass storey (2)	beach ridge (2)	dune (2)	prior stream (2)	swamp (2)	
GG	H	woodland shrub storey (2)	bench (2)	dune (2)	rock flat (2)	talus (2)	
GG	H	tall shrubland (2)	berm (2)	embankment (2)	rock platform (2)	tidal creek (2)	
SG	H	low shrubland (2)	blow-out (2)	estuary (2)	rock scald (2)	tidal flat (2)	
SG	H	heath (2)	channel bench (2)	fan (2)	scald (2)	• Fully erase	
SG	H	grassland/herbland (2)	cirque (2)	lunate (2)	maar (2)	• Make no	
F		swamp/complex (2)	cliff (2)	maar (2)	scarp (2)	stray marks	
F		little vegetation (2)	cliff (2)	fluvio-deltaic (2)	scrub (2)	• Numbers in ()	
M				lithology (2)	valley (2)	show max.	
L						entries allowed	
Y							

Growth Forms (4)		Substrate (3)		LITHOLOGY		TOPOGRAPHY	
tree (2)	not identified (2)	limestone (2)	coarse-basic (2)	Slope Percent (1)	Site Morphology (1)	flat (2)	
shrub (2)	unconsolidated (2)	tuff (2)	fine-acidic (2)			crest (2)	
mallee shrub (2)	gravel (2)	breccia (2)	fine-intermediate (2)			hillock (2)	
heath shrub (2)	silt (2)	greywacke (2)	fine-basic (2)			ridge (2)	
chenopod shrub (2)	clay (2)	arkose (2)	saprolite (2)			upper slope (2)	
hummock grass (2)	organic material (2)	dolomite (2)	gabbro (2)			mid-slope (2)	
tussock grass (2)	alluvium (2)	calcareous (2)	dolerite (2)			simple slope (2)	
sod grass (2)	colluvium (2)	aeolianite (2)	diorite (2)			lower slope (2)	
sege (2)	lacustrine (2)	chert (2)	gneiss (2)			open depression (2)	
rush (2)	marine (2)	jasper (2)	granofiorite (2)			closed depression (2)	
fern/cycad (2)	calcareous sand (2)	metamorphic (2)	adamellite (2)				
moss (2)	shale (2)	grains (2)	granite (2)				
lichen (2)	fill (2)	schist/phyllite (2)	aplite (2)				
fernwort (2)	mud (2)	state (2)	quartz porphyry (2)				
vine (2)	ill (2)	hornfels (2)	basalt (2)				
		quartzite (2)	andesite (2)				
		greenstone (2)	trachyte (2)				
		amphibolite (2)	rhyolite (2)				
		marble (2)	obsidian (2)				
		igneous (2)	normal giga (2)				
		coarse-acidic (2)	crabhole giga (2)				
		coarse-intermediate (2)	linear giga (2)				
		agglomerate (2)	lattice giga (2)				
		other (2)	metamorphic giga (2)				

Identification Method (1)		HYDROLOGY		SITE FIELD NOTES	
personal assessment (2)	geology map (2)	Profile Drainage (1)	Permeability (1)	BLACK DERMSOL	
both assessment & map (2)	rock outcrop % (1)	very poorly drained (2)	very slowly permeable (2)		
extensive clearing (2)	nil (2)	poorly drained (2)	slowly permeable (2)		
cleared, no cultivation (2)	>20-30% (2)	mod. well-drained (2)	moderately permeable (2)		
occasional cultivation (2)	<20% (2)	highly drained (2)	highly permeable (2)		
rainfed cultivation (2)	>30-50% (2)				
irrigated cultivation (2)	2-10% (2)				
highly disturbed (2)	>50% (2)				
recently cultivated (2)	>10-20% (2)				
other (2)					

Site Condition		Surface Condition	
Disturbance(s) (2)	Ground Cover %	Current (2)	Expected (2)
natural disturbance (2)	cracked (2)	wet (2)	dry (2)
no effective disturbance (2)	self-mulched (2)		
limited clearing (2)	loose (2)		
extensive clearing (2)	soft (2)		
cleared, no cultivation (2)	firm (2)		
occasional cultivation (2)	hardset (2)		
rainfed cultivation (2)	surface crust (2)		
irrigated cultivation (2)	trampled (2)		
highly disturbed (2)	poached (2)		
recently cultivated (2)			
other (2)			

Please do not mark this space.

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKHANS FLAT

CHECK 16

PROFILE MAP DETAILS		SURVEY DETAILS		No. of Layers			
Profile No.	Map Sheet No.	Eastings	Northings				
				Described By	Profile Date	Photo Taken (1)	Site profile
							both profile & site
							Nature of Exposure (2)
							auger
							batter
							gully
							pit
							core sample
							other
Potential BSAL? (1)	Site type (1)	BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD					
yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	checked <input checked="" type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>						

SOIL TYPE		VEGETATION		LANDFORM ELEMENT (1)		LITHOLOGY		TOPOGRAPHY	
A.S.C.	Vegetation Community (1)	Substrate (3)	Growth Forms (4)	Slope Percent	Site Morphology (1)	Hydrology	Profile Drainage (1)	Permeability (1)	Depth (1) & Extent (1)
O	rainforest <input type="checkbox"/>	limestone <input type="checkbox"/>	tree <input type="checkbox"/>	not identified <input type="checkbox"/>	flat <input type="checkbox"/>	soil water table <input type="checkbox"/>	very poorly drained <input type="checkbox"/>	very slowly permeable <input type="checkbox"/>	< 500 mm depth <input type="checkbox"/>
O	unknown <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	tree mallee <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	flat <input type="checkbox"/>	water table <input type="checkbox"/>	poorly drained <input type="checkbox"/>	slowly permeable <input type="checkbox"/>	> 500 mm depth <input type="checkbox"/>
O	rainforest <input type="checkbox"/>	fine-aeric <input type="checkbox"/>	shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	gentle <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
O	wet sclerophyll forest <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	mallee shrub <input type="checkbox"/>	sand <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	highly permeable <input type="checkbox"/>	highly permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
SO	dry sclerophyll forest <input type="checkbox"/>	fine-basic <input type="checkbox"/>	heath shrub <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	steep <input type="checkbox"/>	water table <input type="checkbox"/>	poorly drained <input type="checkbox"/>	poorly drained <input type="checkbox"/>	> 50% area <input type="checkbox"/>
SO	woodland grassy storey <input type="checkbox"/>	serpentine <input type="checkbox"/>	chapman shrub <input type="checkbox"/>	bar <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
SO	woodland shrub storey <input type="checkbox"/>	dolomite <input type="checkbox"/>	hummock grass <input type="checkbox"/>	beach <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
GG	tall shrubland <input type="checkbox"/>	dolomite <input type="checkbox"/>	tussock grass <input type="checkbox"/>	beach ridge <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
GG	low shrubland <input type="checkbox"/>	dolomite <input type="checkbox"/>	grassland/herbland <input type="checkbox"/>	drainage depression <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
SG	heath <input type="checkbox"/>	dolomite <input type="checkbox"/>	swamp complex <input type="checkbox"/>	bench <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
F	fern <input type="checkbox"/>	dolomite <input type="checkbox"/>	littoral complex <input type="checkbox"/>	dune <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
A	liverwort <input type="checkbox"/>	dolomite <input type="checkbox"/>	no vegetation <input type="checkbox"/>	berm <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
M	vine <input type="checkbox"/>	dolomite <input type="checkbox"/>		embankment <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
L		dolomite <input type="checkbox"/>		blow-out <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
Y		dolomite <input type="checkbox"/>		channel bench <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
		dolomite <input type="checkbox"/>		crique <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
		dolomite <input type="checkbox"/>		cliff <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
		dolomite <input type="checkbox"/>		flood-cut <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
		dolomite <input type="checkbox"/>		mound <input type="checkbox"/>	moderate <input type="checkbox"/>	water table <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	moderately permeable <input type="checkbox"/>	> 50% area <input type="checkbox"/>
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SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN FLAT

CHECK 17

PROFILE MAP DETAILS		SURVEY DETAILS					
		Profile No.	Map Sheet No.	Eastings	Northings	Described By	Profile Date
<input checked="" type="checkbox"/> Potential BSAL? (1) <input checked="" type="checkbox"/> Site type (1) <input type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> detailed exclusion		BIOPHYSICAL STRATEGIC AGRICULTURAL LAND SOIL DATA CARD					
SOIL TYPE	VEGETATION	LANDFORM ELEMENT (1)		LITHOLOGY		TOPOGRAPHY	
A.S.C.	Vegetation Community (1)	alcove (3)	footslope (3)	ox-bow (3)	sink hole/doline (3)	Slope Percent	Site Morphology (1)
O	unknown (3)	backplain (3)	foredune (3)	pan/playa (3)	stream channel (3)	<input type="checkbox"/>	flat (3)
C	wet sclerophyll forest (3)	bank (3)	cut face (3)	gully (3)	streakbed (3)	<input type="checkbox"/>	crest (3)
G.S.C.	dry sclerophyll forest (3)	bar (3)	cult-over surface (3)	hillcrest (3)	summit surface (3)	<input type="checkbox"/>	ridge (3)
SO	woodland grassy storey (3)	beach (3)	drainage depression (3)	hillside (3)	swale (3)	<input type="checkbox"/>	midslope (3)
GG	woodland shrub storey (3)	beach ridge (3)	drainage depression (3)	lagoon (3)	prior stream (3)	<input type="checkbox"/>	simple slope (3)
SG	low shrubland (3)	bench (3)	dune (3)	lake (3)	rock flat (3)	<input type="checkbox"/>	lower slope (3)
F	grassland/herbland (3)	berm (3)	embankment (3)	rock platform (3)	talus (3)	<input type="checkbox"/>	open depression (3)
A	swamp/complex (3)	blow-out (3)	estuary (3)	scald (3)	tidal creek (3)	<input type="checkbox"/>	closed depression (3)
M	littoral complex (3)	channel bench (3)	fan (3)	scarp (3)	tidal flat (3)	<input type="checkbox"/>	valley / flat (3)
L	no vegetation (3)	clif (3)	fill top (3)	maar (3)	trench (3)	<input type="checkbox"/>	for (3)
T			fill-out (3)	mound (3)	valley / flat (3)	<input type="checkbox"/>	show max. entries allowed
Growth Forms (4)		Substrate (3)					
Y	tree (3)	not identified (3)	limestone (3)	coarse-basic (3)	<input type="checkbox"/>		
L	tree mallee (3)	unconsolidated (3)	tuff (3)	fine-acidic (3)	<input type="checkbox"/>		
M	shrub (3)	gravel (3)	breccia (3)	fine-intermediate (3)	<input type="checkbox"/>		
A	mallee shrub (3)	sand (3)	greywacke (3)	fine-basic (3)	<input type="checkbox"/>		
M	heath shrub (3)	arkose (3)	serpentine (3)	serpentine (3)	<input type="checkbox"/>		
R	chenopod shrub (3)	dolomita (3)	gabbro (3)	dolomite (3)	<input type="checkbox"/>		
H	hummock grass (3)	calcareous (3)	dolerite (3)	dolerite (3)	<input type="checkbox"/>		
T	tussock grass (3)	alluvium (3)	diorite (3)	diorite (3)	<input type="checkbox"/>		
S	sod grass (3)	colluvium (3)	jasper (3)	jasper (3)	<input type="checkbox"/>		
G	sedge (3)	lacustrine (3)	syenite (3)	syenite (3)	<input type="checkbox"/>		
P	nush (3)	aerolite (3)	granodiorite (3)	granodiorite (3)	<input type="checkbox"/>		
B	furb (3)	marne (3)	adamellite (3)	adamellite (3)	<input type="checkbox"/>		
C	farm/cyad (3)	calcareous sand (3)	metamorphic (3)	metamorphic (3)	<input type="checkbox"/>		
V	moss (3)	tilt (3)	schist/phyllite (3)	schist/phyllite (3)	<input type="checkbox"/>		
I	lichen (3)	mud (3)	state (3)	state (3)	<input type="checkbox"/>		
O	liverwort (3)	tilt (3)	hornfels (3)	hornfels (3)	<input type="checkbox"/>		
D	vine (3)	sedimentary (3)	quartzite (3)	quartzite (3)	<input type="checkbox"/>		
LAND USE (1)		Sedimentation (3)					
W	national/state parks (3)	siltstone/limestone (3)	greenstone (3)	greenstone (3)	<input type="checkbox"/>		
W	timber/scrub/runused (3)	sandstone-quartz (3)	amphibolite (3)	amphibolite (3)	<input type="checkbox"/>		
W	logged native forest (3)	conglomerate (3)	marble (3)	marble (3)	<input type="checkbox"/>		
W	hardwood plantation (3)		igneous (3)	igneous (3)	<input type="checkbox"/>		
W	softwood plantation (3)		coarse-acidic (3)	coarse-acidic (3)	<input type="checkbox"/>		
W	voln/natire pasture (3)		coarse-intermediate (3)	coarse-intermediate (3)	<input type="checkbox"/>		
W	improved pasture (3)		agglomerate (3)	agglomerate (3)	<input type="checkbox"/>		
W	cropping (3)		other (3)	other (3)	<input type="checkbox"/>		
W	orchard/lineyard (3)		metahole glacial (3)	metahole glacial (3)	<input type="checkbox"/>		
W	vegetables/flowers (3)		crabhole glacial (3)	crabhole glacial (3)	<input type="checkbox"/>		
W	urban (3)	nill (3)	linear glacial (3)	linear glacial (3)	<input type="checkbox"/>		
W	industrial (3)	>2-10% (3)	mod. well-drained (3)	mod. well-drained (3)	<input type="checkbox"/>		
W	quarry/mining (3)	>10-20% (3)	well-drained (3)	well-drained (3)	<input type="checkbox"/>		
Identification Method (1)		HYDROLOGY					
personal assessment (3)		geology map (3)		Permeability (1)		Depth (1) & Extent (1)	
both assessment & map (3)		poorly drained (3)		very slowly permeable (3)		< 500 mm depth (3)	
Rock Outcrop % (1)		imperfectly drained (3)		slowly permeable (3)		> 500 mm depth (3)	
mod. well-drained (3)		moderately permeable (3)		highly permeable (3)		< 50% area (3)	
well-drained (3)		rapidly drained (3)				> 50% area (3)	
SITE CONDITION		Surface Condition		BROWN DEROSOL			
Site Disturbance(s) (2)		Current (2)		Expected (2)			
natural disturbance (2)		Wet (2)		Dry (2)			
no effective disturbance (2)		self-mulched (2)		cracked (2)			
limited clearing (2)		loose (2)		loose (2)			
extensive clearing (2)		soft (2)		firm (2)			
cleared, no cultivation (2)		harder (2)		surface crust (2)			
occasional cultivation (2)		trampled (2)		poached (2)			
rained cultivation (2)							
irrigated cultivation (2)							
highly disturbed (2)							
recently cultivated (2)							
water repellent (2)							
gravelly (2)							
other (2)							

Please do not mark this space.

cm		LAYER STATUS					COLOUR (Munsell, 1994)					FIELD pH					LAYER NOTES					FIELD pH TEST METHOD (1)						
mm		Horizon					Moist Munsell					Dry Munsell					Raupach pH meter					Test strip						
1	Lower	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
3	Lower	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
4	Lower	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
5	Lower	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
19	S	U	B	S	T	R	A	T	E	D	U	B	S	T	R	A	T	E	D	U	B	S	T	R	A	T	E	
20	Upper	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
25	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
27	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
29	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	

SURVEY TITLE: NEWBECK COAL PROJECT
SITE LOCATION: BLACKHAWK FLAT

JULY 10

PROFILE MAP DETAILS														
Profile No.	Map Sheet No.	Easting		Northing		Survey Details		Photo Taken (1)		No. of Layers				
O	D	Unknown		rainforest		Described By		Profile Date		profile				
S	B	wet sclerophyll forest		dry sclerophyll forest						site				
G	A	woodland grassy woodland		shrub u-stroy						both profile & site				
S	G	tall shrubland		low shrubland										
F	A	heath		channel bench						auger				
M	N	grassland/herbland		swamp complex						pit				
L	V	littoral complex		no vegetation						batter				
C	G.S.G.									gully				
										core sample				
										other				
Potential BSAL? (1)			Site type (1)			Biophysical Strategic Agricultural Land Soil Data Card								
yes <input checked="" type="checkbox"/> no <input type="checkbox"/>			checked <input type="checkbox"/> detailed <input type="checkbox"/> exclusion <input type="checkbox"/>											
Soil Type		Vegetation		Landform Element (1)										
A.S.C.	Vegetation Community (1)	aclove <input type="checkbox"/>	cone <input type="checkbox"/>	footslope <input type="checkbox"/>	ox-bow <input type="checkbox"/>	sink hole/doline <input type="checkbox"/>	stream channel <input type="checkbox"/>	stream bed <input type="checkbox"/>	summit surface <input type="checkbox"/>	swale <input type="checkbox"/>	• Use 2B pencil			
O	unknown <input type="checkbox"/>	backplain <input type="checkbox"/>	crater <input type="checkbox"/>	foredune <input type="checkbox"/>	pan/plata <input type="checkbox"/>	steambank <input type="checkbox"/>	steambench <input type="checkbox"/>	steambed <input type="checkbox"/>	steambottom <input type="checkbox"/>	swamp <input type="checkbox"/>	• No pen or biro			
S	wet sclerophyll forest <input type="checkbox"/>	bank <input type="checkbox"/>	cut-face <input type="checkbox"/>	gully <input type="checkbox"/>	pediment <input type="checkbox"/>	summit <input type="checkbox"/>	summit surface <input type="checkbox"/>	summit surface <input type="checkbox"/>	summit surface <input type="checkbox"/>	swamp <input type="checkbox"/>	• Fully erase			
G	dry sclerophyll forest <input type="checkbox"/>	bar <input type="checkbox"/>	cut-over surface <input type="checkbox"/>	hillwash <input type="checkbox"/>	pit <input type="checkbox"/>	summit <input type="checkbox"/>	summit surface <input type="checkbox"/>	summit surface <input type="checkbox"/>	summit surface <input type="checkbox"/>	summit surface <input type="checkbox"/>	mistakes			
S	woodland grassy woodland <input type="checkbox"/>	beach <input type="checkbox"/>	drainage depression <input type="checkbox"/>	hillside <input type="checkbox"/>	plain <input type="checkbox"/>	prior stream <input type="checkbox"/>	prior stream <input type="checkbox"/>	prior stream <input type="checkbox"/>	prior stream <input type="checkbox"/>	prior stream <input type="checkbox"/>	• Make no			
G	shrub u-stroy <input type="checkbox"/>	beach ridge <input type="checkbox"/>	dam <input type="checkbox"/>	lagoon <input type="checkbox"/>	plain <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>	rock flat <input type="checkbox"/>	stray marks			
S	tall shrubland <input type="checkbox"/>	bench <input type="checkbox"/>	embankment <input type="checkbox"/>	lake <input type="checkbox"/>	prior stream <input type="checkbox"/>	tidal creek <input type="checkbox"/>	tidal creek <input type="checkbox"/>	tidal creek <input type="checkbox"/>	tidal creek <input type="checkbox"/>	tidal creek <input type="checkbox"/>	show max.			
G	low shrubland <input type="checkbox"/>	berm <input type="checkbox"/>	estuary <input type="checkbox"/>	lagoon <input type="checkbox"/>	saad <input type="checkbox"/>	tidal flat <input type="checkbox"/>	tidal flat <input type="checkbox"/>	tidal flat <input type="checkbox"/>	tidal flat <input type="checkbox"/>	tidal flat <input type="checkbox"/>	• Numbers in ()			
S	heath <input type="checkbox"/>	blow-out <input type="checkbox"/>	fan <input type="checkbox"/>	maar <input type="checkbox"/>	soap <input type="checkbox"/>	tor <input type="checkbox"/>	tor <input type="checkbox"/>	tor <input type="checkbox"/>	tor <input type="checkbox"/>	tor <input type="checkbox"/>	show max.			
G	grassland/herbland <input type="checkbox"/>	channel bench <input type="checkbox"/>	clifftop <input type="checkbox"/>	maar <input type="checkbox"/>	scree <input type="checkbox"/>	trench <input type="checkbox"/>	trench <input type="checkbox"/>	trench <input type="checkbox"/>	trench <input type="checkbox"/>	trench <input type="checkbox"/>	show max.			
S	swamp complex <input type="checkbox"/>	cliff <input type="checkbox"/>	fill top <input type="checkbox"/>	mound <input type="checkbox"/>	scroll <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>	valley flat <input type="checkbox"/>	show max.			
F	littoral complex <input type="checkbox"/>	no vegetation <input type="checkbox"/>									entries allowed			
Vegetation Forms (4)		Lithology								Topography				
O	tree <input type="checkbox"/>	not identified <input type="checkbox"/>	limestone <input type="checkbox"/>	coarse-basic <input type="checkbox"/>	fine-acidic <input type="checkbox"/>	fine-intermediate <input type="checkbox"/>	fine-basic <input type="checkbox"/>	fine-pelitic <input type="checkbox"/>	upper slope <input type="checkbox"/>	flat <input type="checkbox"/>	Please MARK LIKE THIS ONLY:			
S	malee shrub <input type="checkbox"/>	unconsolidated <input type="checkbox"/>	tuff <input type="checkbox"/>	breccia <input type="checkbox"/>	greywacke <input type="checkbox"/>	arkose <input type="checkbox"/>	dolomite <input type="checkbox"/>	gabbro <input type="checkbox"/>	misslope <input type="checkbox"/>	crest <input type="checkbox"/>	• Use 2B pencil			
G	heath shrub <input type="checkbox"/>	gravel <input type="checkbox"/>	clay <input type="checkbox"/>	calcareous <input type="checkbox"/>	calcareous <input type="checkbox"/>	calcareous <input type="checkbox"/>	calcareous <input type="checkbox"/>	dolerite <input type="checkbox"/>	simple slope <input type="checkbox"/>	ridge <input type="checkbox"/>	• No pen or biro			
S	chenopod shrub <input type="checkbox"/>	silt <input type="checkbox"/>	organic material <input type="checkbox"/>	alluvium <input type="checkbox"/>	alluvium <input type="checkbox"/>	alluvium <input type="checkbox"/>	alluvium <input type="checkbox"/>	diorite <input type="checkbox"/>	lower slope <input type="checkbox"/>	ridge <input type="checkbox"/>	• Fully erase			
G	hummock grass <input type="checkbox"/>	sand <input type="checkbox"/>	colluvium <input type="checkbox"/>	quartzite <input type="checkbox"/>	quartzite <input type="checkbox"/>	quartzite <input type="checkbox"/>	quartzite <input type="checkbox"/>	diabase <input type="checkbox"/>	open depression <input type="checkbox"/>	ridge <input type="checkbox"/>	mistakes			
S	tussock grass <input type="checkbox"/>	sediment <input type="checkbox"/>	lacustrine <input type="checkbox"/>	jasper <input type="checkbox"/>	jasper <input type="checkbox"/>	jasper <input type="checkbox"/>	metamorphic <input type="checkbox"/>	granodiorite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	• Make no			
G	sod grass <input type="checkbox"/>	state <input type="checkbox"/>	aeolian <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	metamorphic <input type="checkbox"/>	gneiss <input type="checkbox"/>	adamellite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	stray marks			
S	sedge <input type="checkbox"/>	shale <input type="checkbox"/>	marine <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	schistophyllite <input type="checkbox"/>	amphibolite <input type="checkbox"/>	granite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
G	rush <input type="checkbox"/>	fill <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	slate <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	quartzite <input type="checkbox"/>	quartzite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	• Numbers in ()			
S	fern/cycad <input type="checkbox"/>	mud <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	slate <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	quartz porphyry <input type="checkbox"/>	quartzite <input type="checkbox"/>	quartzite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
G	fern/cycad <input type="checkbox"/>	moss <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	basalt <input type="checkbox"/>	basalt <input type="checkbox"/>	basalt <input type="checkbox"/>	basalt <input type="checkbox"/>	basalt <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
S	lichen <input type="checkbox"/>	illuv <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	andesite <input type="checkbox"/>	andesite <input type="checkbox"/>	andesite <input type="checkbox"/>	andesite <input type="checkbox"/>	andesite <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
G	liverwort <input type="checkbox"/>	vine <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	trachyte <input type="checkbox"/>	trachyte <input type="checkbox"/>	trachyte <input type="checkbox"/>	trachyte <input type="checkbox"/>	trachyte <input type="checkbox"/>	closed depression <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
LAND USE (1)			HYDROLOGY								Topography			
O	national/state parks <input type="checkbox"/>	silstone/mudstone <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	normal giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	flat <input type="checkbox"/>	flat <input type="checkbox"/>	Please MARK LIKE THIS ONLY:			
S	logged native forest <input type="checkbox"/>	sandstone-quartz <input type="checkbox"/>	calcareous sand <input type="checkbox"/>	crabhole giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	• Use 2B pencil			
G	softwood plantation <input type="checkbox"/>	sandstone-lichic <input type="checkbox"/>	igneous <input type="checkbox"/>	linear giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	• No pen or biro			
S	affinity/with <input type="checkbox"/>	conglomerate <input type="checkbox"/>	coarse-acidic <input type="checkbox"/>	lattice giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	• Fully erase			
G	improved pasture <input type="checkbox"/>	geology map <input type="checkbox"/>	igneous <input type="checkbox"/>	melonhole giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	mistakes			
S	cropping <input type="checkbox"/>	both assessment & map <input type="checkbox"/>	igneous <input type="checkbox"/>	other <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	• Make no			
G	orchard/vineyard <input type="checkbox"/>	Rock Outcrop % (1)	poorly drained <input type="checkbox"/>	melonhole giga <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	stray marks			
S	vegetables/flowers <input type="checkbox"/>	n/a <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
U	urban <input type="checkbox"/>	>20% <input type="checkbox"/>	>30-50% <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	mod. well-drained <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
I	industrial <input type="checkbox"/>	>10-20% <input type="checkbox"/>	>50% <input type="checkbox"/>	well-drained <input type="checkbox"/>	well-drained <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
R	quarry/mining <input type="checkbox"/>	>10-20% <input type="checkbox"/>	>50% <input type="checkbox"/>	rapidly drained <input type="checkbox"/>	rapidly drained <input type="checkbox"/>	waxing <input type="checkbox"/>	waning <input type="checkbox"/>	maximal <input type="checkbox"/>	minimal <input type="checkbox"/>	ridge <input type="checkbox"/>	show max.			
SITE CONDITION			Surface Condition								Site Field Notes			
Site Disturbance(s) (2)			Current (2)								BROWN DERMOSOL			
natural disturbance <input type="checkbox"/>			Expected											
no effective disturbance <input type="checkbox"/>			Wet (2)											
limited clearing <input type="checkbox"/>			Dry (2)											
extensive clearing <input type="checkbox"/>														
cleared, no cultivation <input type="checkbox"/>														
occasional cultivation <input type="checkbox"/>														
rare cultivation <input type="checkbox"/>														
irrigated cultivation <input type="checkbox"/>														
highly disturbed <input type="checkbox"/>														
Photo file names: CHECK SITE 18														
Please do not mark this space.														
4590														

LAYER STATUS					COLOUR (Munsell, 1994)					Field pH					LAYER NOTES					Field pH Test Method (1)													
cm	mm	Lower	Horizon	Dry Munsell	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5									
2	-				1	2	3	4	5	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)	Raupach pH meter	test strip				HCl (1)													
3	-				1	2	3	4	5	no effervescence	audible/slight efferv.	strong effervescence																					
4	-				1	2	3	4	5	not evident	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																			
5	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
6	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
7	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
8	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
9	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
10	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
11	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
12	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
13	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
14	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
15	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
16	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
17	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
18	-				1	2	3	4	5	sharp (<5 mm)	abrupt (5-20 mm)	clear (20-50 mm)	gradual (50-100 mm)																				
19	S	Upper	Sample Taken	(3 per layer)	1	2	3	4	5	Type (1 per layer)	Sur. 1	2	3	4	5	COARSE FRAGMENTS	SEGREGATIONS					Soil Water Status (1 each per layer)											
20	U	B	disturbed							not evident						ferruginous		1	2	3	4	5	dry										
21	S	T	undisturbed							not identified						ferruginous		mod. moist					mod. moist										
22	T	R	bulked							as substrate						organic		loamy sand					loamy sand										
23	A	A	bulk density							as rock outcrop						not identified		sandy loam					sandy loam										
24	T	E	as parent material							as parent material						other		clayey sand					clayey sand										
25	Dominant (1)	MOTTLES	Sub-dominant (1)	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	Base of Observation (1)	Strength (1 per layer)					Amount (1 per layer)	1	2	3	4	5	Texture Grade (1 each per layer)						
26	1	2	3	4	5	Abundance	1	2	3	not evident						layer continues		none					1	2	3	4	5	1	2	3	4	5	
27	2	3	4	5	Colour	1	2	3	4	<2%						soil continues		very few (<2%)					2	3	4	5	6	1	2	3	4	5	
28	2	3	4	5	Contrast	1	2	3	4	2-10%						equipment refusal		few (2-10%)					3	4	5	6	7	2	3	4	5	6	
29	2	3	4	5	Contrast	1	2	3	4	10-20%						bedrock reached		common (10-20%)					4	5	6	7	8	3	4	5	6	7	
30	2	3	4	5	Contrast	1	2	3	4	20-50%						bauxite		common (20-50%)					5	6	7	8	9	4	5	6	7	8	
31	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	opalised wood		abundant (>50%)					6	7	8	9	10	5	6	7	8	9
32	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	charcoal		weak					7	8	9	10	11	6	7	8	9	10
33	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	pumice		strong					8	9	10	11	12	7	8	9	10	11
34	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	opalised wood		other					9	10	11	12	13	8	9	10	11	12
35	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	other		soft segregations					10	11	12	13	14	9	10	11	12	13
36	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	nodules		nodules					11	12	13	14	15	10	11	12	13	14
37	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	fragments		fragments					12	13	14	15	16	11	12	13	14	15
38	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	crystals		crystals					13	14	15	16	17	12	13	14	15	16
39	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	veins		veins					14	15	16	17	18	13	14	15	16	17
40	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	concretions		concretions					15	16	17	18	19	14	15	16	17	18
41	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	root linings		root linings					16	17	18	19	20	15	16	17	18	19
42	2	3	4	5	Contrast	1	2	3	4	5	Amount (1 per layer)	Sur. 1	2	3	4	5	tubules		tubules					17	18	19	20	21	16	17	18	19	20
43	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	Size (1 per layer)		fine (<2 mm)					18	19	20	21	22	17	18	19	20	21
44	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	gravel (6-20 mm)		gravel (6-20 mm)					19	20	21	22	23	18	19	20	21	22
45	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	coarse gravel (20-60 mm)		coarse gravel (20-60 mm)					20	21	22	23	24	19	20	21	22	23
46	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	cobbles (60-200 mm)		cobbles (60-200 mm)					21	22	23	24	25	20	21	22	23	24
47	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	stones (200-600 mm)		stones (200-600 mm)					22	23	24	25	26	21	22	23	24	25
48	2	3	4	5	Contrast	1	2	3	4	5	Size (1 per layer)	Sur. 1	2	3	4	5	boulders (>600 mm)		boulders (>600 mm)					23	24	25	26	27	22	23	24	25	26

SURVEY TITLE: NEUBECK COAL PROJECT
SITE LOCATION: BLACKMAN'S FLAT

CHECK 19

mm	m	LAYER STATUS	COLOUR (Munsell, 1994)					FIELD NOTES					FIELD pH TEST METHOD (1)				
			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	1 (per layer)	1						Raupach	test strip			
													OH meier	CO			
													HCl (1)				
													no effervescence				
													audible/slight efferv.				
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	2											
2	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	3											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	4											
3	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	5											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	6											
4	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	7											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	8											
5	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	9											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	10											
6	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	11											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	12											
7	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	13											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	14											
8	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	15											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	16											
9	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	17											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	18											
10	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	19											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	20											
11	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	21											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	22											
12	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	23											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	24											
13	Lower	Horizon	Moist Munsell	Dry Munsell	Field pH	25											
	Higher	Horizon	Moist Munsell	Dry Munsell	Field pH	26											
		</td															

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Appendix B



Neubreck Coal Project

BSAL Verification Assessment

Laboratory Soil Test Results

SOIL TEST REPORT

Page 1 of 3

Scone Research Centre

REPORT NO: SCO14/155R1

REPORT TO: Murray Fraser
SLR Consulting
10 Kings Road
New Lambton NSW 2305

REPORT ON: Twenty-one soil samples
Your ref: Neubreck

PRELIMINARY RESULTS

ISSUED: Not issued

REPORT STATUS: Final

DATE REPORTED: 5 September 2014

METHODS: Information on test procedures can be obtained from Scone
Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED
THIS DOCUMENT MAY NOT BE REPRODUCED EXCEPT IN FULL



SR Young
(Laboratory Manager)

SOIL CONSERVATION SERVICE
Scone Research Centre

Page 2 of 3

Report No: SCO14/155R1
 Client Reference: Murray Fraser
 SLR Consulting
 10 Kings Road
 New Lambton NSW 2305

Lab No	Method	P7B/2 Particle Size Analysis (%)					C1A/5	C2A/4	C2B/4
		Sample Id	clay	silt	f. sand	c. sand	gravel	EC (dS/m)	pH
1	Neubeck 1 14/7 0-10 cm	10	24	30	26	10	0.01	5.7	4.6
2	Neubeck 1 14/7 15-25 cm	19	17	29	24	11	0.01	5.6	4.4
3	Neubeck 1 14/7 50-60 cm	58	24	11	6	1	0.02	5.8	4.1
4	Neubeck 2 14/7 0-10 cm	33	30	24	13	<1	0.04	5.7	4.7
5	Neubeck 2 14/7 20-30 cm	39	30	23	8	<1	0.01	5.7	4.4
6	Neubeck 2 14/7 50-60 cm	46	19	15	10	10	0.01	5.6	4.4
7	Neubeck 3 14/7 0-10 cm	36	25	24	15	0	0.05	5.1	4.2
8	Neubeck 3 14/7 30-40 cm	52	22	19	7	0	0.01	5.5	4.2
9	Neubeck 3 14/7 50-60 cm	52	26	17	5	0	0.01	5.5	4.3
10	Neubeck 4 15/7 0-10 cm	41	24	20	15	0	0.04	5.7	4.7
11	Neubeck 4 15/7 20-30 cm	74	15	9	2	0	0.02	5.9	4.6
12	Neubeck 4 15/7 50-60 cm	56	28	16	0	0	0.04	6.1	4.8
13	Neubeck 5 15/7 0-10 cm	21	31	27	21	<1	0.02	5.7	4.7
14	Neubeck 5 15/7 20-30 cm	26	25	25	24	<1	0.01	5.7	4.4
15	Neubeck 5 15/7 50-60 cm	28	16	18	36	2	0.02	5.6	4.4
16	Neubeck 7 15/7 0-10 cm	19	24	24	31	2	0.02	6.0	5.0
17	Neubeck 7 15/7 20-30 cm	24	23	19	30	4	0.01	5.9	4.7
18	Neubeck 7 15/7 50-60 cm	23	15	18	35	9	0.01	5.7	4.7
19	Neubeck 8 15/7 0-10 cm	12	18	25	28	17	0.01	6.0	4.9
20	Neubeck 8 15/7 30-40 cm	10	12	20	33	25	0.01	6.0	4.7
21	Neubeck 8 15/7 50-60 cm	11	10	21	39	19	0.01	6.0	4.8

LH Young

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No:
 Client Reference:

SCO14/155R1
 Murray Fraser
 SLR Consulting
 10 Kings Road
 New Lambton NSW 2305

Page 3 of 3

Lab No	Method	C5A/4 CEC & exchangeable cations (me/100g)						Colour	
		Sample Id	CEC	Na	K	Ca	Mg	Al	Dry
1	Neubreck 1 14/7 0-10 cm	5.9	0.1	0.2	3.0	0.9	<0.5	10YR 6/3	10YR 4/3
2	Neubreck 1 14/7 15-25 cm	4.2	0.1	<0.1	1.2	0.8	<0.2	10YR 7/3	10YR 5/6
3	Neubreck 1 14/7 50-60 cm	18.0	0.7	0.2	0.9	3.9	7.7	10YR 7/3	10YR 6/4
4	Neubreck 2 14/7 0-10 cm	14.7	0.3	0.7	7.2	3.1	<0.5	10YR 5/2	10YR 4/2
5	Neubreck 2 14/7 20-30 cm	10.6	0.2	0.2	3.7	2.4	0.8	10YR 6/2	10YR 5/3
6	Neubreck 2 14/7 50-60 cm	12.4	0.2	0.1	2.8	3.4	0.9	10YR 7/6	10YR 6/8
7	Neubreck 3 14/7 0-10 cm	14.2	0.2	0.6	3.0	2.2	3.5	10YR 4/2	10YR 2/2
8	Neubreck 3 14/7 30-40 cm	10.8	0.2	0.2	1.5	2.4	3.3	10YR 6/2	10YR 4/2
9	Neubreck 3 14/7 50-60 cm	9.1	0.1	0.2	1.3	2.6	2.4	10YR 6/2	10YR 5/2
10	Neubreck 4 15/7 0-10 cm	22.7	0.3	1.2	11.4	5.7	<0.5	10YR 4/1	10YR 2/1
11	Neubreck 4 15/7 20-30 cm	24.7	0.5	0.5	10.8	8.1	0.8	10YR 4/2	10YR 3/1
12	Neubreck 4 15/7 50-60 cm	16.5	0.6	0.3	6.9	5.9	<0.5	10YR 5/2	10YR 3/2
13	Neubreck 5 15/7 0-10 cm	7.6	<0.1	0.2	3.6	1.3	<0.5	10YR 6/2	10YR 4/2
14	Neubreck 5 15/7 20-30 cm	4.6	0.1	<0.1	1.9	1.0	<0.5	2.5YR 7/3	2.5YR 6/4
15	Neubreck 5 15/7 50-60 cm	3.2	0.3	<0.1	1.2	1.5	0.5	2.5YR 7/3	2.5YR 6/4
16	Neubreck 7 15/7 0-10 cm	9.2	0.3	0.5	4.6	1.5	<0.5	10YR 5/2	10YR 3/2
17	Neubreck 7 15/7 20-30 cm	5.6	0.1	0.2	2.5	0.9	<0.5	10YR 6/3	10YR 5/3
18	Neubreck 7 15/7 50-60 cm	5.7	<0.1	0.1	1.8	1.0	<0.5	2.5YR 7/3	2.5YR 6/4
19	Neubreck 8 15/7 0-10 cm	14.7	<0.1	0.5	7.5	2.4	<0.5	10YR 4/2	10YR 2/1
20	Neubreck 8 15/7 30-40 cm	7.6	0.1	0.2	2.7	1.6	<0.5	10YR 5/3	10YR 3/3
21	Neubreck 8 15/7 50-60 cm	5.7	0.1	0.1	2.1	1.1	<0.5	10YR 7/3	10YR 5/6

Murray

END OF TEST REPORT



Soil Conservation Service

SOIL TEST REPORT

Page 1 of 4

Scone Research Centre

REPORT NO:

SCO12/344R1

REPORT TO:

Andrew Regan
GSS Environmental
PO Box 907
Hamilton NSW 2303

REPORT ON:

Fourteen soil samples
Ref: CCC25-002

PRELIMINARY RESULTS

ISSUED:

26 October 2012

REPORT STATUS:

Preliminary

DATE REPORTED:

26 October 2012

METHODS:

Information on test procedures can be obtained from Scone
Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED
THIS DOCUMENT MAY NOT BE REPRODUCED EXCEPT IN FULL

A handwritten signature in blue ink, appearing to read "SR Young".

SR Young
(Laboratory Manager)

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No.: SC012/344R1 Client Reference: Andrew Regan
 GSS Environmental PO Box 907

Hamilton NSW 2303

Lab No	Method	CIA/4	C2A/3	C2B/3	CIA/3 CEC & exchangeable cations (me/100g)						
	Sample Id	(dS/m)	pH	(CaCl ₂)	CEC	Na	K	Ca	Mg	Al	
1	Site 6 0-20	0.03	5.7	4.8	12.2	0.3	0.9	6.4	3.1	0.3	
2	Site 6 20-40	<0.01	5.4	4.2	6.7	0.2	0.2	2.8	1.9	0.9	
3	Site 6 40-60	0.01	5.4	4.2	6.1	0.3	0.2	2.2	2.0	0.3	
4	Site 6 60-90	0.03	5.2	4.3	6.6	0.3	0.2	2.3	2.5	0.1	
5	Site 6 0-20	0.02	5.1	4.2	7.1	0.2	0.2	4.8	1.0	0.3	
6	Site 6 0-20	0.02	5.0	4.2	7.0	0.2	0.2	4.1	0.5	0.2	
7	Site 6 0-10	0.01	5.0	4.0	12.7	0.2	0.5	8.1	1.0	0.1	
8	Site 6 10-20	0.02	5.1	4.0	12.9	0.2	0.5	8.1	1.2	0.1	
9	Site 7 0-25	0.01	5.9	4.7	2.7	0.2	0.2	1.8	0.7	0.3	
10	Site 7 25-60	<0.01	6.0	4.8	1.8	0.1	0.1	1.4	0.5	0.2	
11	Site 7 60-80	<0.01	5.9	4.7	3.6	0.1	0.1	1.8	1.1	0.5	
12	Site 2 0-25	0.03	5.7	4.8	8.7	0.1	0.3	6.3	1.5	0.5	
13	Site 2 25-60	<0.01	5.9	4.7	5.0	0.1	0.3	3.1	1.7	0.4	
14	Site 2 60-90	<0.01	5.7	4.5	5.0	0.1	0.3	2.5	2.1	0.3	

nt = not tested

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No: SCO12/334R1
 Client Reference: Andrew Regan
 GSS Environmental
 PO Box 907
 Hamilton NSW 2303

Page 3 of 4

	Method	P7B/2 Particle Size Analysis (%)					P9B/2	
		Sample Id	clay	silt	f sand	c sand		
1	Site 6 0-20		33	33	24	10	0	8
2	Site 6 20-40		39	28	21	12	0	tba
3	Site 6 40-60		36	20	21	23	<1	tba
4	Site 6 60-90		49	18	13	17	3	tba
5	Site 3 0-3		8	3	20	59	10	8
6	Site 3 3-15		10	7	19	57	7	8
7	Site 5 0-15		11	10	21	21	10	8
8	Site 5 15-35		18	23	20	22	17	8
9	Site 7 0-25		8	12	30	45	5	8
10	Site 7 25-60		11	11	28	37	13	3(1)
11	Site 7 60-80		28	12	16	33	11	tba
12	Site 2 0-25		23	23	31	20	3	8
13	Site 2 25-60		28	19	28	19	6	tba
14	Site 2 60-90		32	18	27	19	4	tba

tba = to be advised

SR Young

END OF TEST REPORT

8/12/2014

Sample Id	Method	clay	silt	fine sand	coarse sand	gravel	OC (%)	Dry	Moist	Colour	C6A/2	P7C/2 Particle Size Analysis mech dis (%)	SCO12/334R1
1	Site 6 0-20	22	33	28	17	0	1.75	10YR 5/3	10YR 3/3				
2	Site 6 20-40	32	34	22	12	0	0.65	10YR 6/2	10YR 4/3				
3	Site 6 40-60	28	28	21	23	<1	0.26	10YR 6/3	10YR 5/4				
4	Site 6 60-90	37	30	13	17	3	0.28	10YR 6/6	10YR 5/6				
5	Site 6 90-95	5	5	21	29	10	3.00	10YR 6/5	10YR 4/5				
6	Site 6 95-100	0	0	19	27	7	1.17	10YR 6/5	10YR 4/5				
7	Site 6 100-115	1	1	21	21	0.5	3.00	10YR 3/2	10YR 2/2				
8	Site 6 115-125	0	0	29	29	17	1.74	10YR 6/5	10YR 5/5				
9	Site 7 0-25	2	18	31	44	5	1.12	10YR 6/2	10YR 3/2				
10	Site 7 25-60	4	18	30	35	13	0.40	10YR 7/3	2.5Y 5/3				
11	Site 7 60-80	19	19	16	35	11	0.29	10YR 7/4	10YR 6/8				
12	Site 2 0-25	16	29	31	21	3	2.25	10YR 6/3	10YR 3/3				
13	Site 2 25-60	22	25	28	19	6	0.57	10YR 6/4	10YR 4/6				
14	Site 2 60-90	25	23	29	19	4	0.26	10YR 7/4	10YR 4/6				

Appendix C



Neubeck Coal Project
BSAL Verification Assessment
Slope Analysis Methodology

16 January 2015

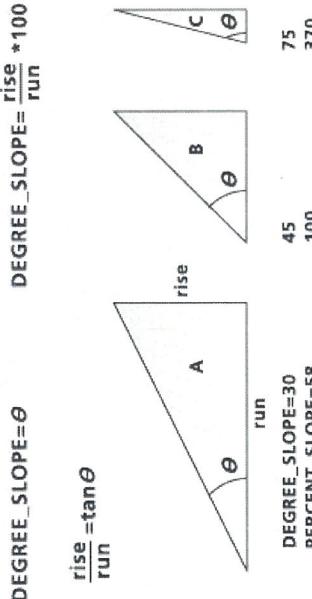
Neubeck Coal Project

SLR Slope Analysis Methodology

1. Acquire appropriate elevation information. In this case, LiDAR data provided by Centennial Angus Place.
2. Load Contours into ArcMap 10.1
3. Using 3D Analyst Extension - Create a TIN Surface based on the contours (
http://resources.arcgis.com/en/help/main/10.1/index.html#/Create_TIN/00q900000001v000000/)
4. Using 3D Analyst Extension – Run the Surface Slope Tool (
<http://resources.arcgis.com/en/help/main/10.1/index.html#/00q9000000076000000>) using a custom Break File (attached).
5. Using a Spatial Join, correlate the Surface Slope at the Soil Survey coordinates.

The Surface Slope Tool:

Surface Slope creates an output polygon feature class containing polygons that classify an input TIN or terrain dataset by slope. The slope is the angle of inclination between the surface and a horizontal plane, which may be analysed in degrees or percent. Slope in degrees is given by calculating the arctangent of the ratio of the change in height (dZ) to the change in horizontal distance (dS), or slope = Arctan (dZ/dS). Percent slope is equal to the change in height divided by the change in horizontal distance multiplied by 100, or $(dZ/dX) * 100$.



The {slope_field} is the name of attribute field used to record the polygon aspect codes. Its default value is SlopeCode.

Each triangle is classified into a slope class. Contiguous triangles belonging to the same class are merged during the formation of output polygons. The {units} parameter can be set to use PERCENT or DEGREES. The default is PERCENT. The default percent slope class breaks are 1.00, 2.15, 4.64, 10.00, 21.50, 46.40, 100.00, 1000.00. Optionally, DEGREES may be used to classify slope. The default degree slope class breaks are 0.57, 1.43, 2.66, 5.71, 12.13, 24.89, 45.0, 90.0.

The `{class_breaks_table}` is used to define custom slope classes. The table can be either a `TXT` or `DBF` file for a `Windows` environment, and a `DBF` file in a `UNIX` environment. Each record in the table needs to contain two values that are used to represent the slope range of the class and its corresponding class code.

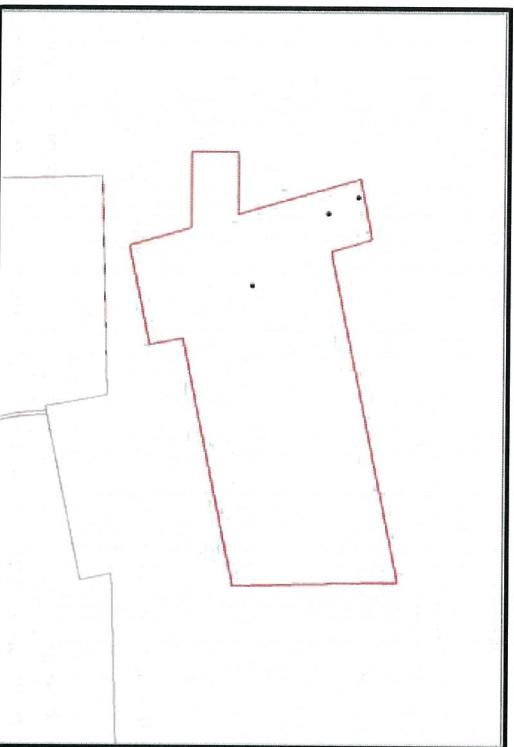
Table example:

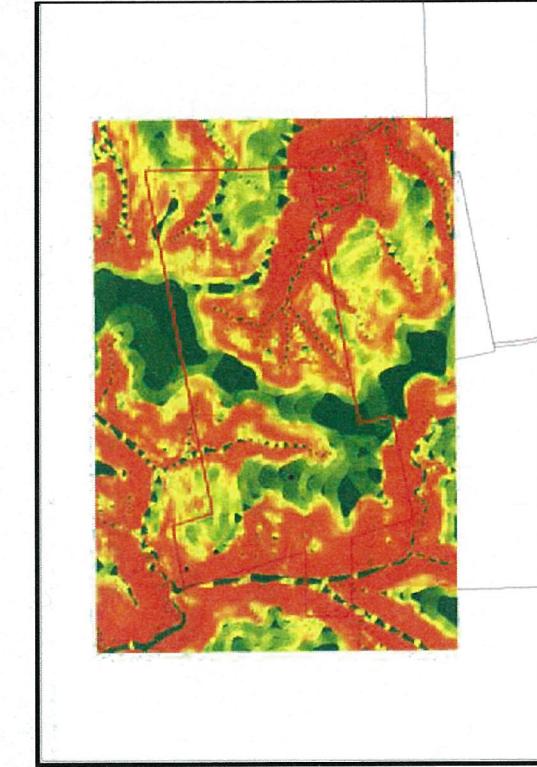
break, code
10.0, 11
25.0, 22
40.0, 33
70.0, 44

Note the comma delineation and use of decimals in the first field. Field names are needed but are ignored. The first field represents the breaks and values need to be decimal, the second field represents codes and values need to be integer. The units of the slope range are defined by the `{units}`. When this argument is not specified, the default classification is used.

Slope code is the terminology used in the descriptors, which directly correlates to slope percentage (i.e. slope code 1 equates to slope 0-1%, slope code 2 equates to slope 1-2% etc.).

And here is how we do it pictographically:





Appendix D



Neubreck Coal Project

BSAL Verification Assessment

OEH Assessment Checklist

Personnel			
Assessment supervised by CPS II or III Soil Scientist	Yes	Clayton Richards CPS II	
Maps			
Soil map with observation sites at 1:25,000 in GIS format	Yes	Figure 3 & data package	
BSSL map with exclusion areas at 1:25,000 in GIS format	Yes	Figures 2, 3 & data package, no BSSL present	
Maps presented in correct datum with appropriate symbology	Yes		
Metadata for spatial datasets provided as per Interim Protocol	Yes	Compiled by Louise Hibbert	
Lodgement of Site & Laboratory Data			
All site observations logged on BSAL Soil Data Cards	Yes	29 observations in total	
All laboratory data supplied on SALIS Lab Data Template	Yes	10 detailed sites	
Model of Soil Distribution			
Model of soil distribution provided with methodology if proponent did not have access to the land	Yes	Application Area correlated as a Kandosol from soil landscape unit mapping	
Site Assessment			
Assessment of all land of >20 hectares contiguous area, with minimum three sites per soil type	Yes	Type Chromosol, Dermosol and Kandosol	
Sampling density as specified in the Interim Protocol	Yes	1 site per 25 - 400 ha required for low risk	
Site observations recorded as specified in the Interim Protocol	Yes		
Observation sites are evenly distributed across the survey area	Yes		

OEH BSSL Verification Assessment Checklist

Nebbeck Coal Project
BSSL Verification Assessment
OEH Checklist

Site Assessment (Continued)		
Each soil type identified has at least three detailed sites	Yes	Three detailed sites for each major soil types Chromosol, Dermosol and Kandosol
All relevant data presented for all detailed sites	Yes	
Detailed sites are representative of the soil type being assessed	Yes	
Detailed sites are accompanied by photo of profile and site	Yes	
Appropriate information collected for all exclusion sites	Yes	Excluded with LIDAR slope and <20 ha contiguous area
At least two exclusion sites per polygon	N/A	No exclusion sites
Adequate number of check sites used to allocate soil type	Yes	19 check sites for 10 detailed sites
Cross Reference With OEH Soil Data		
Mapping and attributes appear consistent with OEH soil landscape data and anticipated soil types	Yes	Podzolics, Earths and Soloths found on the Pipers Flat and Cullen Bullen soil landscapes (Wallerawang 1:100,000 sheet)

Appendix E



OEH Comments & SLR Replies

31st March, 2015

Hello Stuart/Humphrey,

SLR has addressed OEH's comments on the Neubek Coal Project SVC, please see replies and additional comments below in blue.

1. On the soil map (Figure 3) we note that the proponent has separated areas of 'watercourse and waterlogged areas' as a separate mapped area. However, there are no soil observations within this area to describe the soils. If the soils in this area are not the same as adjoining polygons then it needs to be treated as a separate soil map unit, i.e., at least 3 detailed observations are required. Either way, check sites should be described in this area to confirm the decision.

Amended to be mapped as a Dermosol (concurrent with Checked Site data as there was no access on the southern side of Neubek Creek.

2. Some of the areas excluded in the spatial data appear to have been mapped on the soil map (FIDs 117 to 125).

Spatial data corrected and areas revised, Figure 2 has been amended to solid fill rather than hatched fill to avoid confusion.

3. There appears to be no indication of what the slope codes in SLR63010980_SurfaceSlope_100mBuffer_Clip.shp mean.

Slope code is the terminology used in the descriptors, which directly correlates to slope percentage (i.e. slope code 1 equates to slope 0-1%, slope code 2 equates to slope 1-2% etc.). Explanation of slope code has been added into **Appendix C**.

4. Several of the Dermosols with waterlogging problems should probably be classified as Hydrosols, which may change the distribution of soil types.

As per The Australian Soil Classification: Revised Edition (Isbell, 2002) when assessing the classification of a Hydrosol, "the duration and frequency of saturation at a precise section of a profile are not specifically defined". Also, "the extent of soil wetness can seldom be assessed by a single inspection of a particular site".

Using the author and reviewers soil science experience, it is our opinion that whilst there is significant mottling within the profile of the Dermosols to indicate poor drainage, there was insufficient evidence to indicate that the greater part of the soil profile was saturated for at least 2-3 months in most years.

5. Several of the Kurosols (sites 006, 17 and 18) are probably Kandosols (insufficient texture contrast), which may also change the distribution of soil types.

Kurosol sites were re-examined and keyed out again and came out as Dermosols, soil mapping and areas corrected

6. An area of Kandosols has been mapped in the far west of the project area without any sites to describe it. We would recommend at least 1 check site in this area to confirm the soil type(s) there.

At the time of the soil field survey the far western area (approximately 10 ha) was deemed inaccessible due to the presence of woodland forest and very limited access due to the haul road, fencing and locked gates. Therefore this section of the Project Application Area has been correlated by soil landscape units (King, 1993) and vegetation type with other mapped areas.

7. The detailed soil profiles were collected using a combination of cores (7) and by auger (3); however the Interim Protocol requires all detailed observations to be soil pits.

The 7 core sites were completed in 2014 in accordance with the Interim Protocol. The 3 auger sites were completed in 2012, prior to the release of the Interim Protocol, however, methodology for the 2012 sampling involved shovel excavation to a depth well into the B horizon (at least 50 cm) and then subsequent hand auguring down to 100 cm, enabling description of a minimum 50 cm in situ (in effect a small pit). The soil profile was then "re-constructed" in the profile display box.

As these 3 sites were sampled out prior to the release of the Interim Protocol photos of the small pits were not taken as the focus of the survey was on the whole soil profile. Soil profile information for the upper horizons mostly assessed using the small in situ pits.

Please see accompanying photos from recently conducted surveys showing the mini pits.



Soil Data Cards have been amended to include Nature of Exposure as both "pit" and "auger"



8. The profiles described seem to consist of 3 separate sets, with overlapping numbers – for example, two detailed observations and one check site were identified as profile 2 on their Soil Data Cards. The proponent should supply the profiles in a single set of sequentially numbered cards so that each site is uniquely identified, can be definitively located on the map and easily linked to its corresponding laboratory soil test data. The report and GIS layers will also need updating accordingly.

See site survey number and Soil Data Card identifier correlation table below and also added into **Appendix A**. Each Soil Data Card has been amended to having one unique identifying number.

Field Survey Date	Site Survey Number	Unique Soil Data Card Identifier
October 2012	Core 006	1
	Core 007	2
	Core 002	3
	Core 1	4
August 2014	Core 2	5
	Core 3	6
	Core 4	7
	Core 5	8
	Core 7	9
	Core 8	10
	Check 1	11
	Check 2	12
	Check 3	13
	Check 4	14
	Check 5	15
	Check 6	16
	Check 7	17
	Check 8	18
	Check 9	19
August 2014	Check 10	20
	Check 11	21
	Check 12	22
	Check 13	23
	Check 14	24
	Check 15	25
	Check 16	26
	Check 17	27
	Check 18	28
	Check 19	29

9. The laboratory data suggests that the samples for some of the profiles were tested in 2012 by a different person and organisation to the one supplying the SVC application; however all of the cards have the same 'Described by' number. Can the proponent confirm who described the profiles from the 2012 batch?

During August 2013, GSS Environmental merged with SLR Consulting; however the same CPSS 2 oversaw both the field surveys and subsequent site verification (Clayton Richards, 1794).

10. Although ECe results have been supplied in the laboratory spreadsheet, the source EC results should also be supplied.

Source EC results were supplied in Appendix B (test C1A/4) on the Scone Research Centre Report sheets. They have also been entered into the Excel spreadsheet.

11. There are several profiles missing key data (profile 2 is missing colours; profile 6 has no layer data; profile 007 has no mottles described but mottles appear to be visible in the photo). This makes it difficult to confirm the soil classification.

Rectified for the three profiles

King regards,



Murray Fraser
Senior Agronomist