

OEH – Report on Site Verification Certificate

DP&E Application No. 14_6609

Project Name : Moolarben Coal Mine

Proponents Name: Moolarben Coal (part of the Yancoal Australia Group).

Proponents Address: 4250 Ulan Road, Ulan NSW 2850

OEH Reference:

Date application received by OEH: 22/7/2014

Date report dispatched to DP&E: 24 July 2014

Summary of Project: The Moolarben Coal Mine open cut and underground coal mining operation is located approximately 40 kilometres north of Mudgee in the Mid-Western local government area and is part of the broader Western Coalfields of New South Wales (NSW). Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Mine on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies. MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited. The Moolarben Coal Mine was approved by the Minister in 2007, and started operating in 2010. Along with the Ulan and Wilpinjong mines it forms part of a large coal mining complex in the region.

Moolarben Coal Mine is seeking a Site Verification Certificate for lands located wholly within Exploration Licence 6288 (the Study Area). The Study Area comprises an area of approximately 770 ha (OEH calculation) and is located immediately adjacent to MCM's existing Mining Leases 1606, 1628 and 1605.

OEH received the documents supporting the SVC application from DP&E on the 17th July, 2014 and accompanying site observation data (BSAL data cards) on the 22nd July, 2014 which enabled OEH to commence the SVC assessment.

This document undertakes a review of data supplied as part of the Moolarben SVC 14_6609 application against the Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land (BSAL). OEH provides the following advice in respect of the Moolarben SVC application.

OEH Advice to DP&E:

Applicant's soil and land data appears consistent with the protocol for site verification and mapping of biophysical strategic agricultural land	No. Insufficient data in a number of areas.
Applicant's soil and land data appears consistent with OEH soil survey knowledge and existing soil and landscape data of the general area	Insufficient data to undertake the assessment

Applicant's project area, or part thereof, is likely to contain BSAL according to the protocol for site verification and mapping of biophysical strategic agricultural land

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assessment

Approved by:

 Z. 24 July 2014

Brian Jenkins, Senior Team Leader, Assessment

OEH ASSESSMENT OF BSAL SITE VERIFICATION CERTIFICATE APPLICATION

14_6609 MOOLARBEN COAL MINE

SUMMARY OF ASSESSED ITEMS	Appropriate as per the Protocol		Justification
	Yes	No	
PERSONNEL			
Evidence provided by the applicant that a qualified soil scientist oversaw the verification assessment and signed off on the quality and extent of the work	X		Soil survey stated to have been undertaken by Dr David McKenzie who is a Certified Professional Soil Scientist Stage 3 accreditation, a PhD in soil science and "Chartered Scientist" accreditation with British Society of Soil Science.
MAPS			
Geographically accurate base map (at 1:25,000) of assessment area supplied as per <i>Interim Protocol</i> . Spatial dataset (boundary of assessment area) supplied in GIS format as per <i>Interim Protocol</i> .	X		
Soil map (at 1:25,000) of project area supplied including all observation (Detailed, Check and Exclusion) sites as per <i>Interim Protocol</i> . Spatial datasets (soil map, observation sites and data reliability/data source diagram) supplied in GIS format as per <i>Interim Protocol</i> .		X	No soil map provided in GIS format. Copy provided in the application report uses the <i>Australian Soil Classification (ASC) Soil Type map of NSW (OEH, 2013)</i> without apparent alteration. This map is based in turn on the regional-scale mapping of the <i>Soil Landscapes of the Dubbo 1:250,000 map sheet</i> (Murphy and Lawrie, 1998).

SUMMARY OF ASSESSED ITEMS	Appropriate as per the Protocol		Justification
	Yes	No	
			This scale of mapping is not appropriate for the site verification of BSAL (<i>Interim Protocol</i>, 9.6.1 Map scales and site density, p.13). No additional soil or landscape information was provided with the ASC soil type map to provide map unit context, which is desirable (<i>Interim Protocol</i> 9.3 Site selection and description, p.11). Incomplete Check sites data was provided to support the soils map. Location of all site observations have been provided in GIS format.
Map of assessment area showing BSAL (at 1:25,000) and exclusion zones marked according to their BSAL limitation. Spatial dataset (boundary of BSAL areas) supplied in GIS format as per the <i>Interim Protocol</i>.		X	The BSAL maps, which identified the whole area as non-BSAL (Figure 1 and Figure 2 in the SVC application) were based on incorrect methodology. BSAL criteria and status was not determined based on the dominant soil type within a soil map unit (<i>Interim Protocol</i> 9.6.3 Preparing the BSAL map, p.14) Three exclusion zones, based on slope gradient >10%, were identified (Figure 2 in the SVC application) but no other zones were provided to support the status of non-BSAL for the remaining project area – only sites were used.

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	Yes	No	
Maps presented in correct datum with appropriate symbology, north points, unambiguous legends, meaningful colour ramps, scale bars, and sampling grid included as per the <i>Interim Protocol</i> .	X		
Metadata for spatial datasets have been provided as per the <i>Interim Protocol</i> .		X	The metadata provided for the spatial data is not compliant with the ISO 19115 standard, as required by the <i>Interim Protocol</i> . There is no information provided about the source, lineage or quality of the data involved.
LODGEMENT OF SITE AND LABORATORY DATA			
All Site observations lodged on BSAL Soil Data Cards and all required field attributes completed correctly for each observation type as per the <i>Interim Protocol</i> (i.e. check. exclusion and detailed).			None of the sites described in the application are valid for BSAL site assessment under the <i>Interim Protocol</i> , as none qualify as either Detailed, Check or Exclusion sites.
		X	The sites could not be loaded into SALIS as they are missing the identity of the person who was responsible for describing the soil data cards in the field (to be recorded in the Described by field on the BSAL Soil Data Card). The sites are nominated as Check sites. However, much of the data required for these sites to be useable as Check

SUMMARY OF ASSESSED ITEMS	Appropriate as per the Protocol		Justification
	Yes	No	
			sites are missing. The sites are improperly located and have insufficient data to qualify as Detailed or Exclusion sites.
			No laboratory data supplied or undertaken. Each soil type identified is required to have at least 3 detailed sites (<i>Interim Protocol, 9.5 Site observation requirements, p.13</i>). Detailed sites require complete field and laboratory analysis as listed in the <i>Interim Protocol (9.4.2 Detailed sites, pp.11-12)</i> .
All Laboratory data supplied in the SALIS Lab Data Template, appropriate test procedures (e.g. National Test Code) identified and all relevant test results completed as per the <i>Interim Protocol</i> .		X	There is a question over the exact nature of the pH testing done during the soil survey. The soil data card data indicates that pH was tested using Raupach indicator method in-the-field, however the application report (p.1) says that the pHs – which are used for 2 sites to exclude them from consideration as BSAL – were tested “in water”. No further information is provided to describe the method used, although it is also noted that no laboratory testing was done for any of the profiles described during the soil survey. If the soil pHs used were indeed tested at a soil laboratory

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	Yes	No	
			then the lab test data should have been provided by the proponent as part of their application for loading into SALIS.
MODEL OF SOILS DISTRIBUTION			
Where the proponent does not have access to the land, a model of soils distribution is provided detailing the methodology used to enable an assessment of the land in question to be made.	N/A	N/A	
SITE ASSESSMENT			
The project area or part thereof contains a contiguous area of at least 20 hectares which meets all BSAL conditions – possible/verified BSAL adjoining the assessment area may need to be considered			Insufficient data on which to make an assessment as required under the <i>Interim Protocol</i> .
Sampling density is as specified in the <i>Interim Protocol</i>	X		Sampling density is 1 site per 96 hectares based on total of 8 sites over a project area of 771 hectares (calculated by OEH using proponent's data). This falls within 1 site per 25 – 400 hectares (ha) as specified for low risk activities in the interim protocol.
Site observations are recorded as specified in the <i>Interim Protocol</i>		X	All sites are provided on BSAL Soil Data Cards have been designated as Check sites. However, they have insufficient

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	Yes	No	
			data recorded to be useable as Check sites (see below).
Observation sites (check, detailed and exclusion sites) are relatively evenly distributed across the survey area		X	Sites are not evenly distributed across the entire survey area. Sites are concentrated in the north (6) and south (2) but none occur in the central area with slopes <10%. There are no Detailed sites or (designated) Exclusion sites. Instead, what are described as Check sites (used to allocate a site to a soil type or adjust soil map unit boundaries) have been used inappropriately by the proponent to exclude all site observations as meeting requirements for BSAL. The criteria used for exclusion of sites are only steps 1 through 6 of Figure 2 (Interim Protocol, p.11) and the sites provided by the proponent attempt exclusion based on criterias 8, 9 or 10, which require full profile description plus lab data (i.e., Detailed sites).
Each soil type identified has at least three Detailed sites		X	There are no Detailed sites identified. Each soil type identified is required to have at least 3 detailed sites (Interim Protocol 9.5 Site observation requirements, p.13) . Detailed sites require complete field and laboratory

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			analysis as listed in the <i>Interim Protocol</i> (9.4.2 Detailed sites pp. 11-12). A backhoe or soil pit is to be used for all detailed sites (<i>Interim Protocol</i> , 10 Soil profile description requirements, p.15). All sites undertaken for the SVC were by hand auger and spade and thus are not suitable for undertaking a detailed sites assessment.
All relevant data has been collected and provided for detailed sites as per the <i>Interim Protocol</i>		X	No Detailed sites have been undertaken.
Detailed sites are representative of the soil type being assessed		X	No Detailed sites have been undertaken.
Description of detailed sites is accompanied by a photograph of the site and of the soil profile being described		X	No Detailed sites have been undertaken. Photographs (thumbnails) of site and soil profile have been provided for all sites within the application report.
Appropriate information (as specified in the <i>Interim Protocol</i>) collected for all exclusion sites	X		Exclusion sites are not required for this area as LIDAR was used to measure slope.
At least two exclusion sites per polygon in excluded areas (except for areas with no access e.g. only remote modelling of attributes)	X		Exclusion sites are not required for this area as LIDAR was used to measure slope.

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Adequate numbers of check sites used to (i) allocate a site to a soil type and soil map unit and, (ii) confirm existing mapping		X	All observation sites recorded across the project area have been designated as Check sites on BSAL Soil Data Cards. They do not meet the requirements for Detailed sites which are required (3) for each soil map unit (as described above). Check sites are intended to confirm soil mapping. However, in this application the sites are not appropriately located to delineate or define soil map units. One of the 3 soil map units, Rudosols and Tenosols, has no Check sites at all, and map unit Rudosols has only 1 site. Also, the Check sites have not been described in sufficient detail to be useable as Check sites, i.e., to allow either (i) allocation of a site to a soil type and soil map unit, or (ii) confirm existing mapping. The sites as supplied on the BSAL Soil Data Cards have no descriptions of landform, lithology, land use, hydrology, soil texture or soil structure, and limited data to effectively corroborate their stated reasons for being excluded from further assessment for BSAL. Most importantly, Check sites have not been assessed for Australian Soil Classification (ASC), which is

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	Yes	No	
			the basis for the soil map units mapped in the application.
CROSS REFERENCE ASSESSMENT WITH OEH SOILS DATA			
Soil mapping and attributes appear consistent with OEH soil and landscape data and expected/anticipated soil types in the project area or locality		X	Insufficient data to undertake an assessment as required under the <i>Interim Protocol</i> .