



Appendix G

Agricultural Impact Statement



Hume Coal Project

Environmental Impact Statement | Appendix G

| Agricultural Impact Statement

Prepared for Hume Coal Pty Limited | 1 March 2017



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Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065

T +61 2 9493 9500

F +61 2 9493 9599

E info@emmconsulting.com.au

www.emmconsulting.com.au

Hume Coal Project

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Prepared by **Celeste Ellice**

Approved by **Timothy Rohde**

Position Senior Environmental Scientist

Position Associate – Land Capability and
Rehabilitation Services Manager

Signature



Signature



Date 1 March 2017

Date 1 March 2017

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T +61 (0)2 9493 9500 | F +61 (0)2 9493 9599

Ground Floor | Suite 01 | 20 Chandos Street | St Leonards | New South Wales | 2065 | Australia

www.emmconsulting.com.au

Executive Summary

The agricultural impact statement for the Hume Coal Project was prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) related to agriculture, assessment recommendations from the Department of Resources and Energy and with reference to the outcomes of a comprehensive stakeholder engagement program. It addressed all requirements of the Strategic Agricultural Land Use Policy: *Guideline for Agricultural Impact Statements* (NSW DPE 2015).

The extensive technical investigations that took place over several years to develop and refine the project, have resulted in leading practices in mine design, including underground mining method that results in negligible subsidence, and limited potential impacts on agricultural resources. All mitigated risks on agricultural resources were assessed as low.

The Hume Coal Project area (5,051 ha) is mostly agricultural land, encompassing approximately 6.9% of the land area available for use in agriculture in the Wingecarribee Shire (approximately 73,000 ha).

Approximately three quarters of the project area is privately owned land. The remaining quarter of the project area is Belanglo State Forest. The property sizes in the project area vary from 0.2 ha (house, garden, paddock of grass) to 557 ha (30 paddocks), with the majority of landholders (78%) owning blocks less than 100 ha, 40% of the landholders own properties less than 20 ha.

The predominant land use of privately owned land in the project area is agriculture, including lifestyle rural properties. Relative distribution of land use is broad acre grazing with occasional cultivation (72%), equestrian properties (1.5%), viticulture (0.3%), olives (0.2%), and cropping (pivot irrigation 1%). Native vegetation covers approximately 18% of the privately owned land, within grazing paddocks.

The gross value of agricultural production (GVP) for the Wingecarribee Shire was \$41.3 million in 2010-2011 (ABS 2011). This represents 0.35% of the gross value of agricultural production in NSW. The agricultural industry directly employs 3.3% of total employed people within the Wingecarribee Shire (ABS 2011).

Beef cattle account for 69% of all livestock in the Wingecarribee Shire (ABS 2011), and most cattle are raised for beef or breeding purposes. Cropping is undertaken at a small scale and varies from year to year depending on rainfall with the main crops being wheat and fodder grasses.

The majority of the project area comprises cleared land dominated by exotic grasses and herbs. Remnant native vegetation covers approximately 20% of the project area, mainly restricted to parts of Belanglo State Forest and scattered patches in the central northern area, associated with creeks.

Weeds are prevalent in the eastern part of the study area that is cleared, including Blackberry (*Rubus fruticosus* spp. agg), Fireweed (*Senecio madagascariensis*), Serrated Tussock (*Nassella trichotoma*), Willows (*Salix* spp.) and significant infestations of Gorse (*Ulex europaeus*).

A detailed soil survey was carried out, which identified five major soil types within the project area. The soil types identified and their relative distribution are: Dystrophic Yellow Kandosol (61%), Lithic Leptic Rudosol (17%), Paralithic Leptic Tenosol (14%), Kandosolic Redoxic Hydrosol (5%), and Eutrophic Grey Dermosol (3%).

An assessment of the land and soil capability (LSC) classes of the project area was undertaken in accordance with the requirements of the *Land and soil capability assessment scheme* (OEH 2012). The LSC assessment has mapped 58% of the project area as moderate (Class 4 – 44%) to moderate-low (Class 5 – 14%) capability land. This means that the land has moderate to high limitations for high – impact land uses, which will restrict cropping, high intensity grazing and horticulture (OEH 2012). Low capability land (Class 6) was mapped over 32% of the project area. Very low capability land (Class 7) is mapped across 6% of the project area, suitable for selective forestry and nature conservation. High capability land (Class 3) is mapped on 3% of the project area. None of the individual areas mapped as Class 3 are greater than 20 ha.

A detailed Biophysical strategic agricultural land (BSAL) assessment of the project area and surrounding buffer area was undertaken in accordance with the requirements of the *Interim protocol for site verification and mapping of biophysical strategic agricultural land* (NSWG 2013). Each soil type identified in the project area was assessed against the specified BSAL verification criteria and no type was found to satisfy the criteria, with most failing multiple physical and chemical soil criteria. The conclusion is that BSAL is not present in the project area; this is consistent with the results of the broader scale NSW Government's BSAL mapping. A Site Verification Certificate (SVC) application was lodged on 17 August 2015 and issued on 22 April 2016.

All the land that will be subject to surface disturbance (with the exception of a downcast shaft, which will be in Belanglo State Forest) is Hume Coal affiliated land, and comprises of two properties; namely, Mereworth and Evandale. On 20 July 2016, Mereworth supported 1,090 cattle (steer and weaner cattle) and 1,600 lambs, and cropping of rye grass and canola on 398 ha (PPC 2016). On 20 July 2016 Evandale supported 295 cattle (steer and heifer weaner cattle) and 1,350 lambs, and cropping of rye grass 410 ha (previously rye, canola and buckwheat) (PPC 2016). This stocking rate has been significantly improved since the properties were purchased by Hume Coal.

The underground mining method chosen will have negligible subsidence impacts, therefore the project's potential impacts on agricultural land is restricted to surface infrastructure. The land temporarily removed from agriculture during construction has been calculated as 190 ha. This area includes the actual surface area disturbance of 117 ha and the construction buffer, as well as a very small area of paddocks that will be fragmented by infrastructure. Using the average stocking rate for the region, a reduction of up to 174 cattle at Mereworth, and up to 54 at Evandale has been estimated. During operations, the land temporarily removed from agriculture has been estimated to be 107 ha.

There is no land that is proposed to be permanently removed from agriculture. All land in the project area will be rehabilitated when mining has been completed. Most of the surface infrastructure area will be rehabilitated to enable sustainable livestock grazing to occur.

There will be minor temporary foregone loss of agricultural productivity of \$1.72 million during the project's construction and operation (including the Berrima Rail Project).

Potential impacts to agricultural land from the proposed surface infrastructure will be managed through appropriate mitigation techniques aimed at returning the site to a land use similar to the pre-existing land use of grazing. The topsoils of the area to be disturbed will be stripped (approximately 0.3 m deep) prior to construction and stockpiled for use in later rehabilitation. The soil stripping procedure has been designed to maximise the salvage of suitable materials so pastures can be reinstated to a condition that will support appropriate livestock carrying densities.

Of the 117 ha to be disturbed by infrastructure, 59 ha will be rehabilitated back to the original land and soil capability, as the soil profile will not be significantly altered. The pre-mining land class of the remaining 58 ha of disturbed land (3 ha of Class 3, 37 ha of Class 4 and 18 ha of Class 5) will change to Class 6. The change in LSC class is due to a reduction in soil depth to 0.3m as the replaced topsoil will overlie re-profiled fill materials. However, Class 6 land will still be suitable for grazing and improved pasture, allowing the continuation of agricultural land-use post-mining, as currently occurs.

The Aquifer Interference Policy (NOW 2012) minimal impact criterion is predicted to be exceeded in 93 registered landholder bores. The location of highest impact migrates depending on active mining areas. The median duration of drawdown on the 93 affected bores is 36 years, with the maximum duration being 65 years; however, most of the recovery occurs much faster. Typically, a bore will recover by 75% within 23 years of it first being impacted. Hume Coal will be required to provide 'make good' provisions for landholders that incur impact above the minimal impact threshold of 2m of drawdown in the bore.

There will be no changes to the agricultural industries able to be carried out in the region. The predicted reduction of the livestock production for the Wingecarribee region is 1.9% during construction, and only 0.8% during operations, and will be offset by the increased production from the Hume Coal managed properties, and therefore will have a negligible impact on the regional agricultural support services and processing industries.

The major transport routes used by agricultural producers to access supporting services and to move their products include the Hume Highway and the Illawarra Highway and some major local roads, such as Golden Vale Road and Berrima Road as well as the north-south rail line to Sydney and Goulburn and the eastern rail line to Wollongong. No significant adverse traffic impacts for general traffic or agricultural related traffic have been identified for the future project generated traffic movements.

Based on a 2.7 person household size, and a workforce size of 300 people, the total population increase for all towns is between 0.6% and 1.7%. The closure of the mine is likely to result in a decrease in population in the local area due to job losses and workers moving away in search of new employment opportunities.

The project will not have significant adverse visual impacts on the region surrounding the project area. Due to existing mature vegetation in the landscape, and the area's topography and rural nature, the project will be relatively shielded from view.

A comprehensive mitigation program will be implemented to manage potential impacts on agricultural resources. This will include monitoring and, where appropriate, establishment of triggers and triggers responses. In addition, rehabilitation criteria will be used as the basis for assessing when rehabilitation of the project is complete. The interim completion criteria have been developed and presented in the Rehabilitation and Closure Strategy.

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1 Introduction

1.1 Overview

Hume Coal Pty Limited (Hume Coal) is seeking State significant development consent to construct and operate an underground coal mine and associated mine infrastructure (the 'project') in the Southern Coalfield of New South Wales (NSW). Hume Coal holds exploration Authorisation 349 (A349) to the west of Moss Vale, in the Wingecarribee local government area (LGA). The underground mine will be developed within part of A349 and associated surface facilities will be developed immediately north of A349. The project area and its regional and local setting are shown in Figure 1.1 and Figure 1.2, respectively.

The project has been developed following several years of technical investigations to define the mineable resource and identify and address environmental and other constraints. This has allowed for the development of a well-considered, practical and economic project design that will enable effective resource recovery, while minimising adverse impacts to the environment and community, and delivering socio-economic benefits.

Low impact mining methods will be used which will have negligible subsidence impacts and thereby protect the overlying aquifer and surface features and allow existing land uses to continue at the surface. Post-mining, the mine infrastructure will be decommissioned and these areas rehabilitated to a state where they can support land uses similar to the current land uses.

Approval for the Hume Coal Project is being sought under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Submission of an environmental impact statement (EIS) is a requirement of the approval processes. This Agricultural Impact Statement (AIS) forms part of the EIS.

1.2 Project description

The project involves developing and operating an underground coal mine and associated infrastructure over a total estimated project life of 23 years. Indicative mine and surface infrastructure plans are provided in Figure 1.3 and Figure 1.4. A full description of the project, as assessed in this report, is provided in Chapter 2 of the main EIS report (EMM 2017a).

In summary it involves:

- Ongoing resource definition activities, along with geotechnical and engineering testing, and other fieldwork to facilitate detailed design.
- Establishment of a temporary construction accommodation village.
- Development and operation of an underground coal mine, comprising of approximately two years of construction and 19 years of mining, followed by a closure and rehabilitation phase of up to two years, leading to a total project life of 23 years. Some coal extraction will commence during the second year of construction and hence there will be some overlap between the construction and operational phases.

- Extraction of approximately 50 million tonnes (Mt) of run-of-mine (ROM) coal from the Wongawilli Seam, at a rate of up to 3.5 million tonnes per annum (Mtpa). Low impact mining methods will be used, which will have negligible subsidence impacts.
- Following processing of ROM coal in the coal preparation plant (CPP), production of up to 3 Mtpa of metallurgical and thermal coal for sale to international and domestic markets.
- Construction and operation of associated mine infrastructure, mostly on cleared land, including:
 - one personnel and materials drift access and one conveyor drift access from the surface to the coal seam;
 - ventilation shafts, comprising one upcast ventilation shaft and fans, and up to two downcast shafts installed over the life of the mine, depending on ventilation requirements as the mine progresses;
 - a surface infrastructure area, including administration, bathhouse, washdown and workshop facilities, fuel and lubrication storage, warehouses, laydown areas, and other facilities. The surface infrastructure area will also comprise the CPP and ROM coal, product coal and emergency reject stockpiles;
 - surface and groundwater management and treatment facilities, including storages, pipelines, pumps and associated infrastructure;
 - overland conveyors;
 - rail load-out facilities;
 - a small explosives magazine;
 - ancillary facilities, including fences, access roads, car parking areas, helipad and communications infrastructure; and
 - environmental management and monitoring equipment.
- Establishment of site access from Mereworth Road, and construction of minor internal roads.
- Coal reject emplacement underground, in the mined-out voids.
- Peak workforces of approximately 414 full-time equivalent employees during construction and approximately 300 full-time equivalent employees during operations.
- Decommissioning of mine infrastructure and rehabilitating the area once mining is complete, so that it can support land uses similar to current land uses.

The project area, shown in Figure 1.2 is approximately 5,051 hectares (ha). Surface disturbance will mainly be restricted to the surface infrastructure areas shown indicatively on Figure 1.4 though will include some other areas above the underground mine, such as drill pads and access tracks. The project area generally comprises direct surface disturbance areas of up to approximately 117 ha, and an underground mining area of approximately 3,472 ha, where negligible subsidence impacts are anticipated.

A construction buffer zone will be provided around the direct disturbance areas. The buffer zone will provide an area for construction vehicle and equipment movements, minor stockpiling and equipment laydown, as well as allowing for minor realignments of surface infrastructure. Ground disturbance will generally be minor and associated with temporary vehicle tracks and sediment controls as well as minor works such as backfilled trenches associated with realignment of existing services. Notwithstanding, environmental features identified in the relevant technical assessments will be marked as avoidance zones so that activities in this area do not have an environmental impact.

Product coal will be transported by rail, primarily to Port Kembla terminal for export, and possibly to the domestic market depending on demand. Rail works and use are the subject of a separate EIS and State significant development application for the Berrima Rail Project.

1.3 Project benefits

The project will produce both metallurgical and thermal coal, extracting around 50 Mt over the life of the mine. The product split will be about 55% metallurgical coal and 45% thermal coal.

Hume Coal and its subsidiaries own approximately 1,795 hectares (ha) of land within and adjacent to the project area, making it one of the largest landholders in the area. For simplicity, land owned by Hume Coal and its subsidiaries is herein referred to as Hume Coal affiliated land. The company has licensed the properties to a pastoral company that is now running a productive farming business (principally beef cattle) on these properties and is currently investing in weed control and other initiatives to improve the land's agricultural productivity. In keeping with the current land use, it is anticipated that this land will continue to be used for farming during and following mining, and will be managed with a higher productivity than was employed prior to purchase by Hume Coal.

The net benefits to the state of the project amount to \$295 million in NPV terms (BAEconomics, 2016), consisting of incremental royalty payments, incremental company income tax payments, incremental disposable income payments, and other incremental benefits (ie personal income taxes and Medicare payments, payroll taxes, land taxes, levies and local government rate payments).

The direct benefits of the project for the local economy predominantly consist of the additional disposable income that accrues to the project workforce (300 long term, full time equivalent jobs).

The project would also generate the following flow-on impacts in the Southern Highlands SA3 Region: incremental disposable income flow-on benefits of \$34 million in NPV terms or \$3 million per annum; and incremental employment flow-on benefits, accounting for agricultural impacts, of 26 full-time equivalent jobs.

1.4 Project area and study area

The project area is shown in Figure 1.2. The Strategic Agricultural Land Use Policy: *Guideline for Agricultural Impact Statements* (NSW DPE 2015) (refer to Section 1.8) requires 'identification of the agricultural resources and current enterprises within the surrounding locality (region) of the project area'. Accordingly, the assessment considers the Wingecarribee LGA, which is shown on Figure 1.1.

1.5 General description of project area

The project area is approximately 100 km south-west of Sydney and 4.5 km west of Moss Vale town centre in the Wingecarribee LGA (refer to Figure 1.1 and Figure 1.2). The nearest area of surface disturbance will be associated with the surface infrastructure area, which will be 7.2 km north-west of Moss Vale town centre. It is in the Southern Highlands region of NSW and the Sydney Basin Biogeographic Region.

The project area is in a semi-rural setting, with the wider region characterised by grazing properties, small-scale farm businesses, natural areas, forestry, scattered rural residences, villages and towns, industrial activities such as the Berrima Cement work and Berrima Feedmill, and some extractive industry and major transport infrastructure such as the Hume Highway.

Surface infrastructure is proposed to be developed on predominately cleared land owned by Hume Coal or affiliated entities, or for which there are appropriate access agreements in place with the landowner. Over half of the remainder of the project area (principally land above the underground mining area) comprises cleared land that is, and will continue to be, used for livestock grazing and small-scale farm businesses. Belanglo State Forest covers the north-western portion of the project area and contains introduced pine forest plantations, areas of native vegetation and several creeks that flow through deep sandstone gorges. Native vegetation within the project area is largely restricted to parts of Belanglo State Forest and riparian corridors along some watercourses.

The project area is traversed by several drainage lines including Oldbury Creek, Medway Rivulet, Wells Creek, Wells Creek Tributary, Belanglo Creek and Longacre Creek, all of which ultimately discharge to the Wingecarribee River, at least 5 km downstream of the project area (Figure 1.2). The Wingecarribee River's catchment forms part of the broader Warragamba Dam and Hawkesbury-Nepean catchments. Medway Dam is also adjacent to the northern portion of the project area (Figure 1.2).

Most of the central and eastern parts of the project area have very low rolling hills with occasional elevated ridge lines. However, there are steeper slopes and deep gorges in the west in Belanglo State Forest.

Existing built features across the project area include scattered rural residences and farm improvements such as outbuildings, dams, access tracks, fences, yards and gardens, as well as infrastructure and utilities including roads, electricity lines, communications cables and water and gas pipelines. Key roads that traverse the project area are the Hume Highway and Golden Vale Road. The Illawarra Highway borders the south-east section of the project area.

Industrial and manufacturing facilities adjacent to the project area include the Berrima Cement Works and Berrima Feed Mill on the fringe of New Berrima. Berrima Colliery's mining lease (CCL 748) also adjoins the project area's northern boundary. Berrima colliery is currently not operating with production having ceased in 2013 after almost 100 years of operation. The mine is currently undergoing closure.

1.6 Assessment requirements

This assessment has been prepared in accordance with the relevant governmental assessment requirements, guideline and policy, and in consultation with the relevant government agencies.

The relevant guideline and policy considered were:

- Strategic Agricultural Land Use Policy: *Guideline for Agricultural Impact Statements* (NSW DPE 2015) (the AIS guidelines); and
- *Agricultural Impact Statement technical notes: A companion to the Agricultural Impact Statement guideline* (Department of Primary Industry (DPI) 2013) (the AIS technical notes).

Table 1.1 presents the relevant Secretary's Environmental Assessment Requirements (SEARs) that are addressed in this report including references to where these have been addressed.

Table 1.1 Agriculture related SEARs

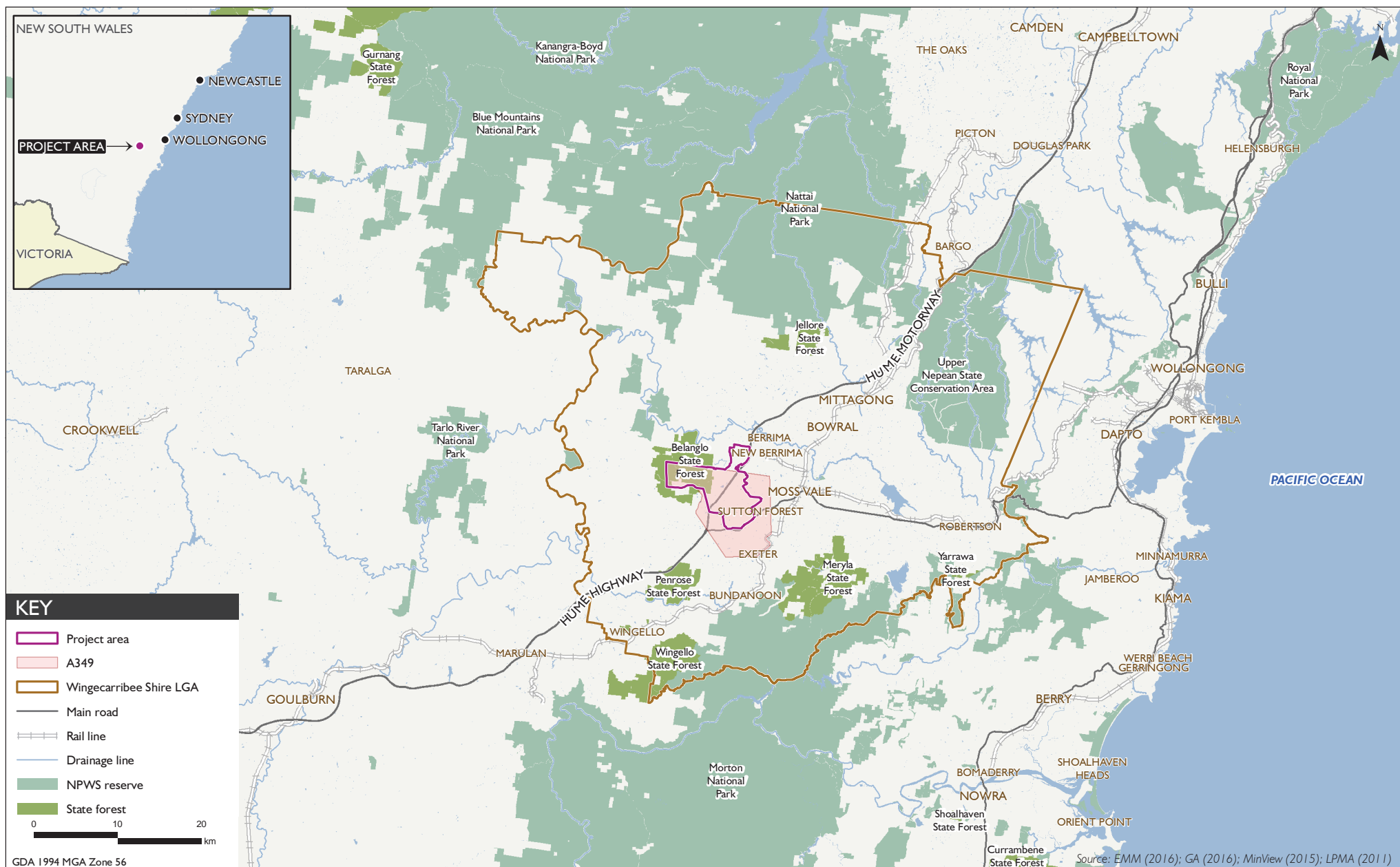
Requirement	Section addressed
<ul style="list-style-type: none">• An Agricultural Impact Statement, prepared in accordance with DPIs Agricultural Impact Statement: Technical Notes, to assess the likely impacts of the development on the soils and land capability of the site and surrounds, paying particular attention to any Biophysical Strategic Agricultural Land (BSAL) and having regards to DPIs requirements	This report; and BSAL is addressed in Section 3.5
<ul style="list-style-type: none">• An assessment of the likely agricultural impacts of the development	Sections 4 - 6
<ul style="list-style-type: none">• An assessment of the compatibility of the development with other land uses in the vicinity of the development in accordance with the requirements of Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, paying particular attention to the agricultural uses in the region and the Belanglo State Forest	Section 3.7.1; and impacts addressed in Sections 4-6

To inform preparation of the SEARs, Department of Planning and Environment (DP&E) invited other government agencies to recommend matters to be addressed in the EIS. These matters were taken into account by the Secretary for DP&E when preparing the SEARs. Copies of the government agencies' advice to DP&E was attached to the SEARs.

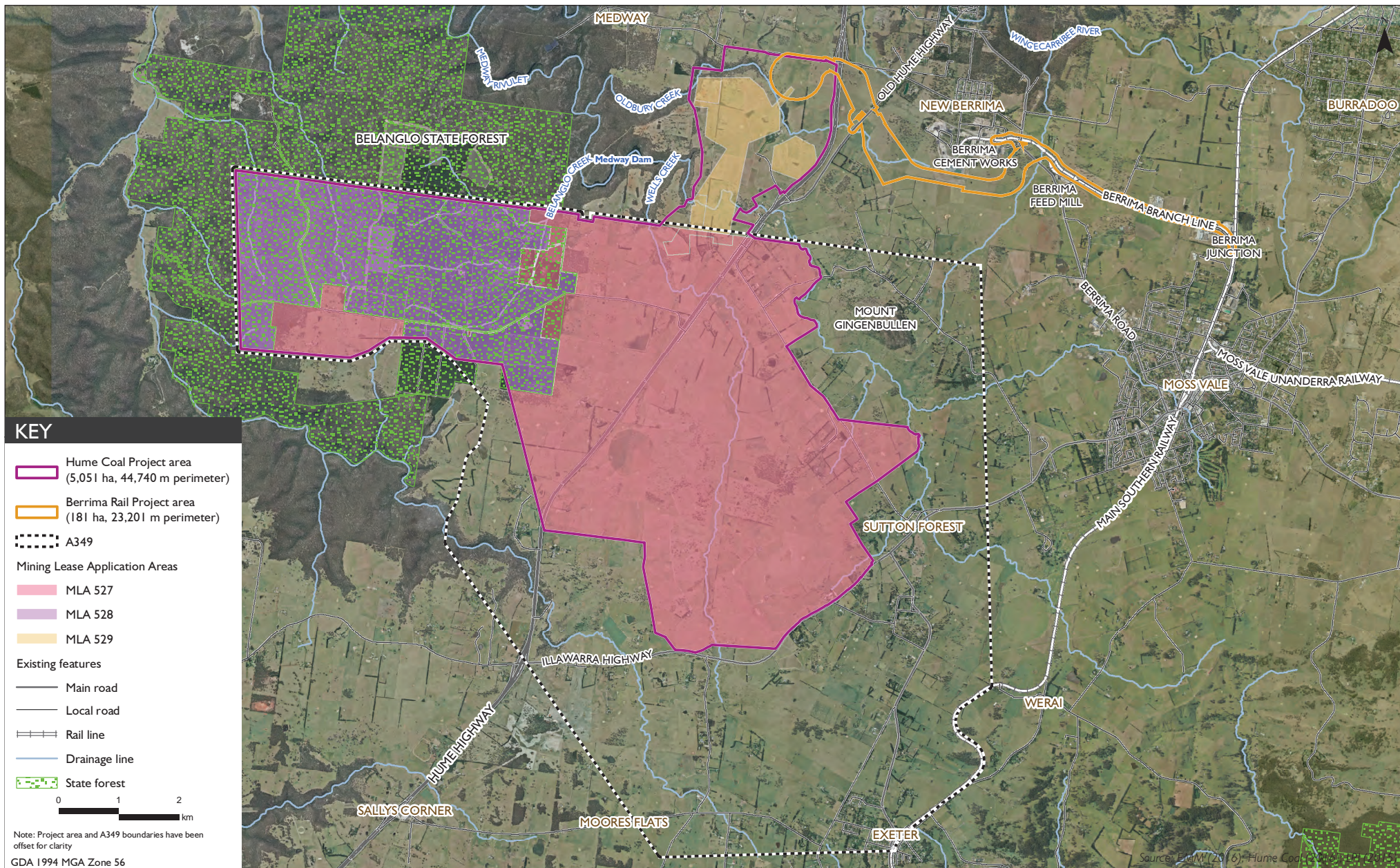
The Department of Industry, Resources and Energy (DRE) raised matters relevant to the AIS. The matters raised are listed in Table 1.2 and have been taken into account in preparing this report, as indicated in the table.

Table 1.2 **Department of Industry, Resources and Energy's comments: standard and project-specific assessment recommendations addressed in this AIS**

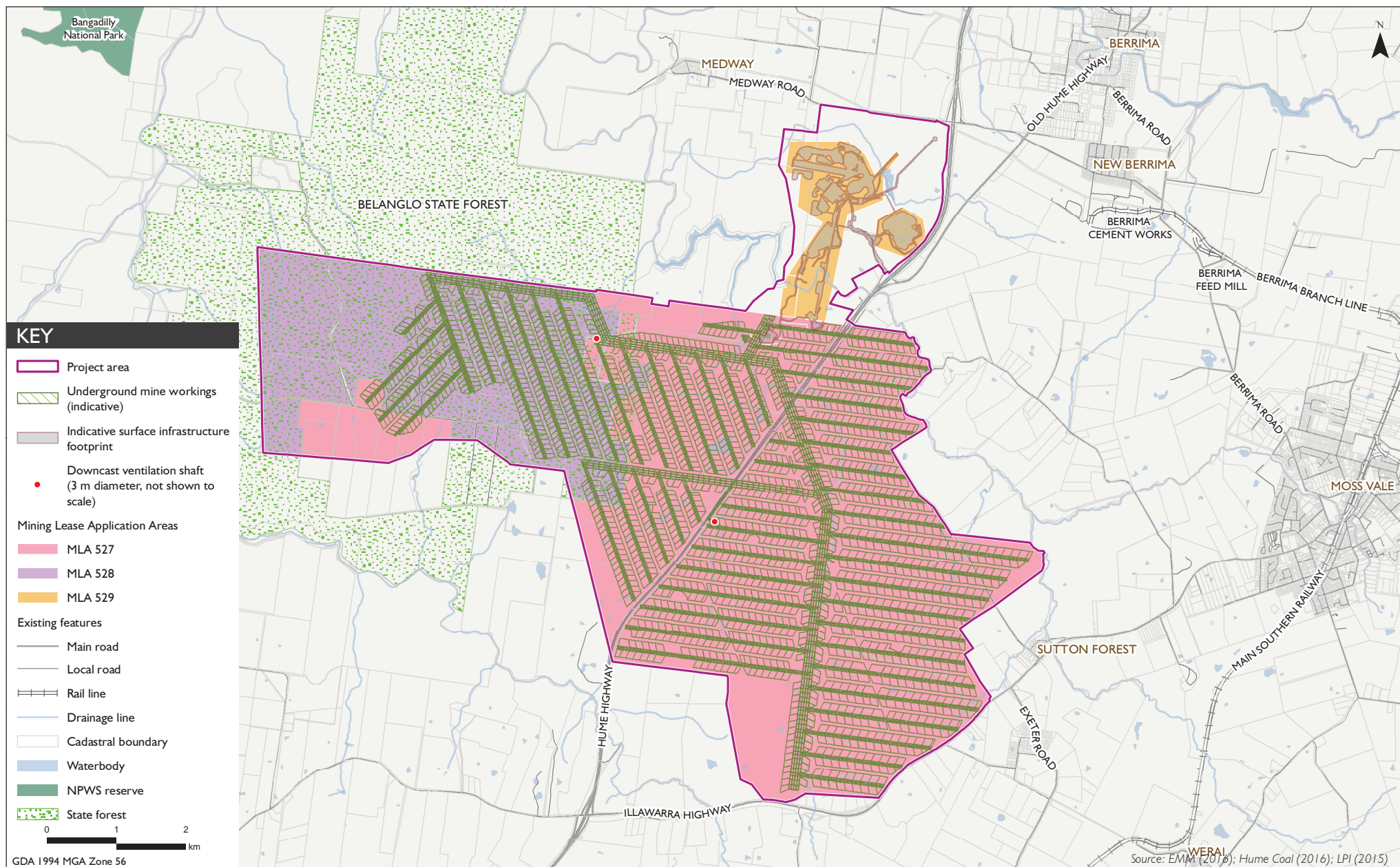
Recommendation	Section addressed
Where an agricultural land use is proposed, the EIS should:	
<ul style="list-style-type: none"> demonstrate how Agricultural Suitability Class in the rehabilitated landscape would be returned to the existing Class/es or better. 	Land and soil capability used – see Sections 3.1.3ii; Section 3.4; Section 4.1.3iii; Section 4.3.4; Section 7.6
<ul style="list-style-type: none"> where the intended land use is likely to be grazing, the existing capacity in terms of Dry Sheep Equivalent or similar must be calculated and a timeframe from vegetation establishment be given for the return to agricultural production to at least the existing stock capacity. 	Consequential productivity effects are described in Section 5.4.1; Rehabilitation is described in Section 7.6
<ul style="list-style-type: none"> provide information on how soils would be developed in order to achieve the proposed stock capacity. 	Management of soil to provide optimum post-mining outcomes is described in Section 4.1.3 and 7.2.5



Regional context
Hume Coal Project
Agricultural Impact Statement
Figure I.1



Local context
Hume Coal Project
Agricultural Impact Statement
Figure I.2



Indicative project layout
Hume Coal Project
Agricultural Impact Statement
Figure I.3



Indicative surface infrastructure layout

Hume Coal Project
Agricultural Impact Statement

Figure I.4

1.7 Adoption of leading practices

Hume Coal has adopted a number of leading practices to result in a mine design that avoids and minimises impacts on agricultural land. Extensive technical investigations have taken place over several years to develop and refine the project, and arrive at the current design.

The leading practices related to agriculture are summarised below.

- All coal reject material will be returned underground to partially backfill the mined-out void, rather than leaving them in large above ground emplacements or trucking them off-site for emplacement elsewhere. This minimises the surface disturbance footprint, thereby reducing the land to be rehabilitated at closure.
- To eliminate and/or minimise impacts on surface features and water resources, the mine will use a non-caving mining method based on proven geotechnical design principles, leaving coal pillars in place. These will provide long-term support to the overlying rock strata. Using only first workings, there will be no surface subsidence, so overlying aquifer and surface features will be protected.

Given the above, potential impacts on agriculture from the project are limited to the temporary disturbance of the surface infrastructure area, which will occur wholly on Hume Coal affiliated land (with the exception of a downcast shaft, which will be in Belanglo State Forest), and drawdown in bores accessing water for agriculture. As described in Section 5.2.1 and 5.5, Hume Coal will implement 'make good provisions' in accordance with the NSW Aquifer Interference Policy (NOW 2012) on a case by case basis involving consultation with the landholder.

1.8 Report scope and purpose

The AIS technical notes describe the requirements for the assessment of agricultural impacts associated with all state significant development applications. All information requirements as set out in the AIS guideline and AIS technical notes have been addressed in this report and are referenced in Table 1.3. The report structure generally follows the headings in the AIS technical notes.

The purpose of this report is to assess potential impacts of the project on agricultural resources and/or industries within and surrounding the project area. The AIS technical notes define an 'agricultural resource' as land on which agriculture is dependent, and the associated water resources (quality and quantity) that are linked to that land.

Table 1.3 AIS requirements

Information which must be included in an AIS	Section addressed
<i>Details of the site and region</i>	1 and 2
<ul style="list-style-type: none">• overview of the project, and a description of the area within an agricultural context	1.2
<ul style="list-style-type: none">• why this is a project which will benefit the community and the state.	1.3

Table 1.3 AIS requirements

Information which must be included in an AIS	Section addressed
<i>Detailed assessment of the agricultural resources and agricultural production of the project area</i>	3 and 4
This section should include detailed information (including maps) on:	
• the soils, slope, land characteristics, water characteristics (availability, quality);	3.1-3.4
• BSAL needs to be verified for all land in a project including surrounding buffer zones and offset areas;	3.5
• relevant history of the agricultural enterprises from within the project area and the development's buffer and/or offset zone;	3.7
• location of areas of land to be temporarily removed from agriculture;	4.1 - 4.2
• location of areas of land to be returned to agricultural use post project;	4.3
• location of area of land that will not be returned to agriculture, including areas to be used in environmental plantings or biodiversity offsets; and	4.4
• agricultural enterprises to be undertaken on any buffer and/or offset zone lands for the life of the project.	4.5
<i>Identification of the agricultural resources and current enterprises within the surrounding locality (region) of the project area</i>	2
• Agricultural resources within the project area	2.3
o Soil characteristics – including soil types and depth	2.3.2
o Topography	Figure 2.2
o Key agricultural support infrastructure	2.3.1
o Water resources and extraction locations	3.1.2 and 3.6
o Location and type of agricultural industries	2.3.3
o Vegetation	2.2.2
o Climate conditions	2.2.1
• Current agricultural enterprises within the region	2.4
<i>Assessment of impacts</i>	5 and 6
• Identification and assessment of the impacts of the project on agricultural resources or industries	5.2-5.3
• Effects on agricultural resources	5.2
• Consequential productivity effects on agricultural enterprises	5.4
• Uncertainty associated with the predicted impacts and mitigation measures	7.5
• Further risks (ie weeds, wind and water erosion, subsidence, dust, noise, vibration, traffic)	5.2.6-5.2.11
• Account for any physical movement of water away from agriculture	5.5
• Assessment of socio-economic impacts	
• Agricultural support services and processing and other value-adding industries	6.1
• Local and regional employment impacts	6.3
• Visual amenity, landscape values and tourism infrastructure	6.2

Table 1.3 AIS requirements

Information which must be included in an AIS	Section addressed
<i>Mitigation measures</i>	
• Project alternatives	7.1
• Monitoring programs to assess predicted versus actual impacts as the project progresses	7.3
• Trigger response plans and trigger points at which operations will cease or be modified or remedial actions will occur to address impacts including a process to respond to unforeseen impacts	7.4
○ The proposed remedial actions to be taken in response to a trigger event	7.2
○ The basis for assumptions made about the extent to which remedial actions will address and respond to impacts	
• Demonstrated capacity for the rehabilitation of disturbed lands to achieve the final land use and restore natural resources	7.6
• Demonstrated planning for progressive rehabilitation that minimises the extent of disturbance	7.6.6
<i>Consultation</i>	8
• Detail the engagement strategy	

1.9 Methods

To enable all requirements as set out in the SEARs related to agriculture, assessment recommendations from the DRE, and AIS guideline and AIS technical notes to be addressed, a comprehensive methodology was applied to the AIS. Relevant aspects from various studies were considered in the assessment including soils, water, rehabilitation and economics. The methodology included:

- detailed database searches and mapping review, such as ABS Agricultural Census Data, and DP&E, Office of Environment and Heritage (OEH) and NSW Agriculture mapping;
- review of publically available information including tourism and agricultural industry publications, and real estate advertising;
- reference to the *Hume Coal Project - Biophysical Strategic Agricultural Land Verification Assessment*;
- consultation with water engineers, soil scientists, geochemists, land management specialists, rehabilitation and closure specialists and agro-economists and, ultimately, the Soil and Land Assessment, Water Assessment, Hydrogeochemical Assessment, Rehabilitation and Closure Report and Economic Impact Assessment that form part of this EIS; and
- review of other relevant assessments such as the Berrima Rail Project EIS and assessments forming part of this EIS including Traffic and Transport Assessment, Biodiversity Assessment, Visual Amenity Assessment and Social Assessment.

