Centennial Coal

Western Coal Services Project

Agricultural Assessment of Springvale Coal Services Site (CCC27-001A)

April 2013

Centennial Coal
Environment Matters

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1.0 INTRODUCTION

GSS Environmental (GSSE) was engaged by RPS Australia East Pty Ltd (RPS), on behalf of Springvale Coal Pty Limited (Centennial), to prepare an Agriculture Assessment for the proposed Western Coal Services Project – Blackmans Flat (the Project). This Agriculture Assessment is intended to accompany an Environmental Impact Statement (EIS), as a requirement of the Director-General's Requirements, in accordance with Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project Application Area (PAA) for the EIS comprises land within Consolidated Coal Lease (CCL) 733 and Mining Lease (ML) 1448 and is located approximately 18 km north of Lithgow in New South Wales (NSW). The largest land component of the PAA, the Springvale Coal Services site (the Site), is approximately 4 km north-west of the village of Lidsdale (**Figure 1**), and is the Study Area for this Agriculture Assessment.

The Springvale Coal Services site is an existing facility and consists of a coal handling and processing plant (CHPP), reject and tailings emplacement facilities and a network of conveyors which transfer coal from the existing Springvale Coal Mine to both the Wallerawang and Mt Piper Power Stations and to Lidsdale Siding for export.

The project has been developed by Centennial Coal as part of a long term strategy for its future operations in the Western Coalfield of NSW. The proposed project includes:

- Upgrading the existing washery at the Centennial Coal Services Site by constructing additional processing infrastructure adjacent to the existing facility which is capable of coal handling and processing of up to 7 Million tonnes per annum (Mtpa);
- Construction of additional conveyors and transfer points and other coal handling requirements to cater for the upgraded Washery facility;
- Construction of a private haul road linking the Centennial Coal Services site with the existing private haul road from Angus Place Colliery to Mount Piper Power Station. This private road will cross a section of the existing Pine Dale Mine operation and over the Castlereagh Highway;
- Integrate the existing approved transport and processing of coal at Springvale Mine and Angus Place Colliery into this consent;
- Include, the remaining rehabilitation, monitoring and reporting requirements associated with the Lamberts Gully Mine which occupies the Centennial Coal Services Site;
- The continued use of all existing approved infrastructure, facilities and activities associated with the transport and processing of coal from each mine gate and the point of delivery to either power station and the Lidsdale Siding including existing conveyors, private haul roads, services, access roads, carparking and buildings;
- Installation of additional pollution control infrastructure; and
- Provision for sufficient reject disposal capacity for a 25 year life;

The Project will have a life of 25 years. An overview of the Project inputs and outputs has been provided in **Figure 2** below.

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Springvale Coal Services
Regional Locality

FIGURE 1

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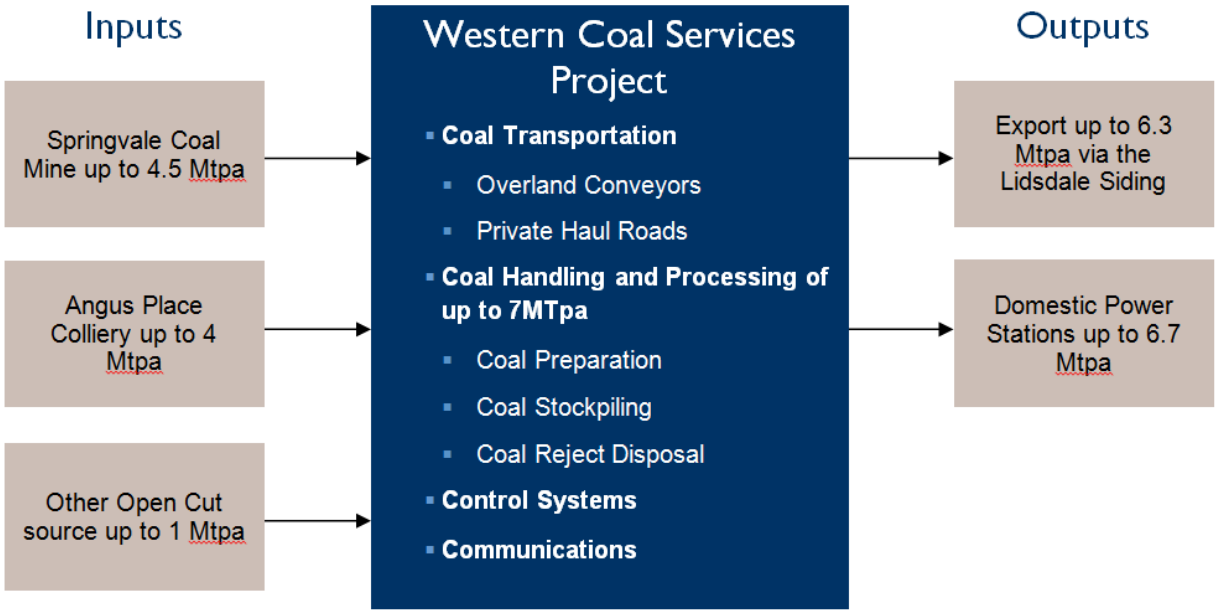
Figure 2 – Overview of the Western Coal Services Project



1.1 Purpose of this Report

This Agricultural Assessment was conducted in response to the release of the draft NSW Strategic Regional Land Use Policy (DP&I, 2012a). Under this policy all new mining related project applications are required to undertake agricultural productivity impact assessments as part of their environmental impact statement. Since then the NSW Strategic Regional Land Use Policy has been finalised (DP&I, 2012b) and two Strategic Regional Land Use Plans (SRLUPs) have been released: the Upper Hunter and New England North West. No SRLUP has been released for the Central Western Tablelands area. The SRLUPs define Strategic Agricultural Land as highly productive land that has both unique natural resource characteristics as well as socio-economic value.

Given that there is no SRLUP for the Study Area this assessment evaluated physical agricultural productivity via land capability and agricultural suitability assessment.

2.0 METHODOLOGY

2.1 Soil Assessment

A soil map was developed using the following resources and techniques:

- Aerial photographs and topographic maps

Aerial photo and topographic map interpretation was used as a remote sensing technique allowing analysis of the landscape and mapping of features expected to be related to the distribution of soils within the Study Area. Previous land resource mapping and a soil survey of the area was utilised to assist in defining boundaries of units and classes at a more intensive scale.

- Reference information

Source materials, including cadastral data, prior and current physiographic, geological, vegetation, and water resources studies were used to obtain correlations between pattern elements and soil properties that were observable in the field.

- Stratified observations

Exposed soil profiles throughout the proposed disturbance areas were visually assessed to verify soil types and delineate soil type boundaries.

2.2 Land Assessment

During the site assessment, information was collected for the Agricultural Assessment. Two assessments were used in this study to evaluate physical agricultural productivity: land capability and agricultural suitability assessment. The methodology for each follows in **Sections 2.2.1** and **2.2.2**.

2.2.1 Land Capability

The land capability classification of the Study Area was conducted in accordance with the Office of Environment & Heritage (OEH) (formerly the NSW Soil Conservation Service). The relevant guideline is called S*ystems Used to Classify Rural Lands in New South Wales* (Cunningham et al., 1988).

This system classifies the land on its potential for sustainable agricultural use if developed, rather than its current land use, and includes three types of land uses:

i. land capable of cultivation;

ii. land capable of grazing; and

iii. land not capable of rural production.

The system consists of eight classes, which classify the land based on the severity of long-term limitations. Limitations are the result of the interaction between physical resources and a specific land use. A range of factors are used to assess this interaction. These factors include climate, soils, geology, geomorphology, soil erosion, topography and the effects of past land uses. The principal limitation recognised by these capability classifications is the stability of the soil mantle and classes are ranked on their increasing soil erosion hazard and decreasing versatility of use.

Two supplementary classes, U and M, provide for areas that contain urban development and mining / quarrying areas, respectively.

A summary of the Rural Land Capability classification system is provided in **Table 1**.

Table 1 – Rural Land Capability Classes

Class	Land Use	Management Options
I	Regular Cultivation	No erosion control requirements
II	Regular Cultivation	Simple requirements such as crop rotation and minor strategic works
III	Regular Cultivation	Intensive soil conservation measures required such contour banks and waterways
IV	Grazing, occasional cultivation	Simple practices such as stock control and fertiliser application
V	Grazing, occasional cultivation	Intensive soil conservation measures required such contour ripping and banks
VI	Grazing only	Managed to ensure ground cover is maintained
VII	Unsuitable for rural production	Green timber maintained to control erosion
VIII	Unsuitable for rural production	Should not be cleared, logged or grazed
U	Urban areas	
M	Mining and quarrying areas	

Source: Cunningham et al. (1988)

2.2.2 Agricultural Suitability

The agricultural suitability classification of the Study Area was conducted in accordance with NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) guideline, the *Agricultural Suitability Maps – uses and limitations* (NSW Agricultural & Fisheries, 1990).

The system consists of five classes, providing a ranking of rural lands according to their productivity for a wide range of agricultural activities with the objective of determining the potential for crop growth within certain limits. Class 1 ranks the land as most suitable for agricultural activities and Class 5 the least suitable. Classes 1 to 3 are generally considered suitable for a wide variety of agricultural production, whereas Classes 4 and 5 are unsuitable for cropping, however are suitable for some grazing activities A summary of the agricultural suitability classification system is provided in **Table 2**.

The main soil properties and other landform characteristics considered significant for the land suitability assessment are topsoil texture, topsoil pH, solum depth, external and internal drainage, topsoil stone content and slope as well as bio-physical factors such as elevation, rainfall and temperature.

The overall suitability classification for each specific soil type is determined by the most severe limitation, or a combination of the varying limitations.

Table 2 – Agricultural Suitability Classes

Class	Land Use	Management Options
1	Highly productive land suited to both row and field crops.	Arable land suitable for intensive cultivation where constraints to sustained high levels of agricultural production are minor or absent.
2	Highly productive land suited to both row and field crops.	Arable land suitable for regular cultivation for crops but not suited to continuous cultivation.
3	Moderately productive lands suited to improved pasture and to cropping within a pasture rotation.	Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with pasture.
4	Marginal lands not suitable for cultivation and with a low to very low productivity for grazing.	Land suitable for grazing but not for cultivation. Agriculture is based on native or improved pastures established using minimum tillage.
5	Marginal lands not suitable for cultivation and with a low to very low productivity for grazing.	Land unsuitable for agriculture or at best suited only to light grazing.

Source: NSW Agriculture & Fisheries (1990)

3.0 RESULTS

3.1 Soil Assessment

The Study Area lies on the central western edge of the Sydney Basin within the Illawarra Coal Measures and the siltstone dominated Berry Formation, which overlies the Megalong Conglomerate to form the Shoalhaven Group (King, 1992).

Areas within the Illawarra Coal Measures consist of shale and sandstone in addition to conglomerate, limestone, dolomite, claystone, mudstone, coal and torbanite. Areas within the Berry Formation consist of grey siltstone with thin beds of limestone and sandstone.

Unconsolidated alluvium overlying the Illawarra Coal Measures in the drainage areas and their associated floodplains consist of shale, sandstone, conglomerate, limestone, dolomite, claystone, mudstone, coal and torbanite. The cliffs and rises of the upper landscape are composed of Narrabeen Group sandstones, which consist of quartz-lithic sandstones and quartz sandstones, inter-bedded with thin red, grey and green claystone shale and occasional conglomerate and ironstone lenses.

Soil Landscapes occurring in the Study Area are *Cullen Bullen* and *Lithgow* (refer **Table 3**; **Figure 3**).

The Cullen Bullen Soil Landscape topography is characterised by broad rolling low hills and rises, local relief less than 50 m and slopes are 10-25%. The landscape contains soils that are shallow to moderately deep (<100 centimetres (cm)) with Yellow Podzolic Soils (Dy2.41, Dy2.51) and Yellow Earths (Gn2.21, Gn3.71, Gn3.84) occurring on crests. Moderately deep (<100cm) Yellow Podzolic Soils (Dy5.21), Soloths (Dy3.31, Dy3.41) and Yellow Leached Earths (Gn2.34, Gn3.84) occur on the upper and mid-slope areas. Moderately deep to deep (50-150cm) Yellow Solodic Soils (Dy2.32, Dy2.42, Dy4.42, Dy5.42) and Yellow Podzolic Soils (Dy5.21) occur on the lower slopes near and along narrow (<20m) drainage lines. Shallow (<80cm) Yellow Earths (Gn2.21, Gn3.71) and Lithosols (Uc1.24) are associated with low scarps.

The Lithgow Soils Landscape topography is characterised by flat to gently inclined rises on broad valley floors, local relief less than 25 m and slopes less than 10%. The landscape soil contains moderately deep (<120cm) Red Podzolics (Dr3.41), Yellow Podzolics (D2.11, Dy3.11) and Yellow Leached Earths (Gn2.34) on the upper slopes and well-drained areas. Moderately deep to deep (>170cm) Solods / Yellow Solodic Soils (Dy.2.41, Dy3.41) occur on the lower slopes and in areas of poor drainage.

A significant amount of disturbed terrain from previous mining has also influenced soil distribution within the Study Area. Most of the original soil in these areas have been removed, buried or greatly disturbed.

3.2 Land Assessment

3.2.1 Land Capability

The Rural Land Capability classification of the Study Area is provided in **Table 4** and **Figure 4**.

The vast majority of the area is classified as Class M which is land disturbed by mining and quarrying. Some remnant forest areas occur within the Study Area (refer **Plate 1**). These areas are classified as Class VII. The land is unsuitable for rural production.

Plate 1: Class VII land occurring in the SE corner of the Study Area.

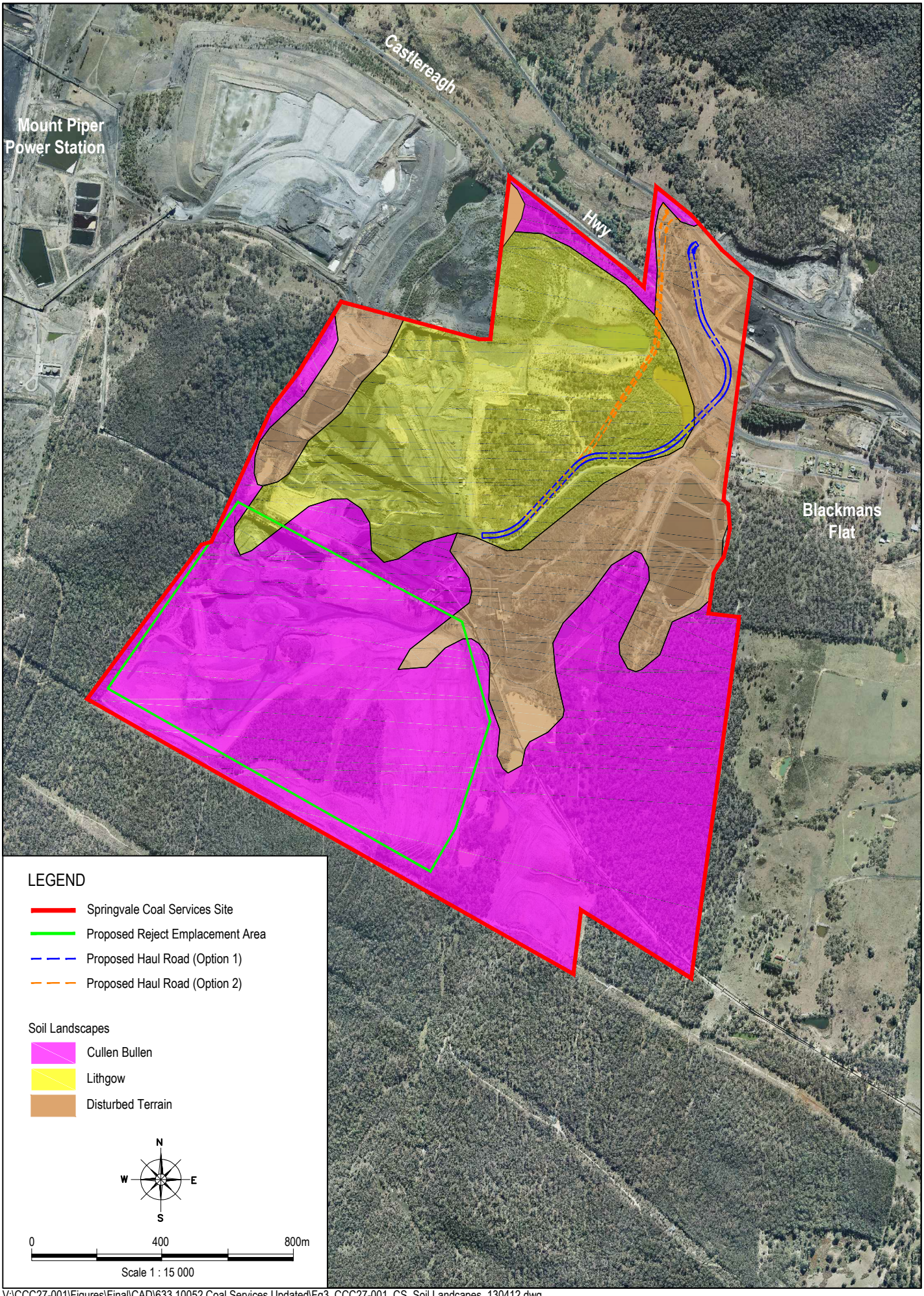
3.2.2 Agricultural Suitability

The agricultural suitability classification of the Study Area is Class 5. This class of land is marginal land not suitable for cultivation and has very low potential for grazing production.

3.3 Agricultural Assessment

The Study Area is characterised by mining related infrastructure, disturbed areas due to mining and remnant forested areas. The land capability classification of the area is dominated by Class M land with some pockets of Class VII forested land (**Plate 2**). Agricultural suitability classification is Class 5 land, not suitable for cultivation or grazing. There is currently no agricultural production or forestry within the Study Area and no Strategic Land in accordance with the NSW Strategic Land Use Policy.

Plate 2: Coal Services Study Area is heavily disturbed with pockets of remnant forest.



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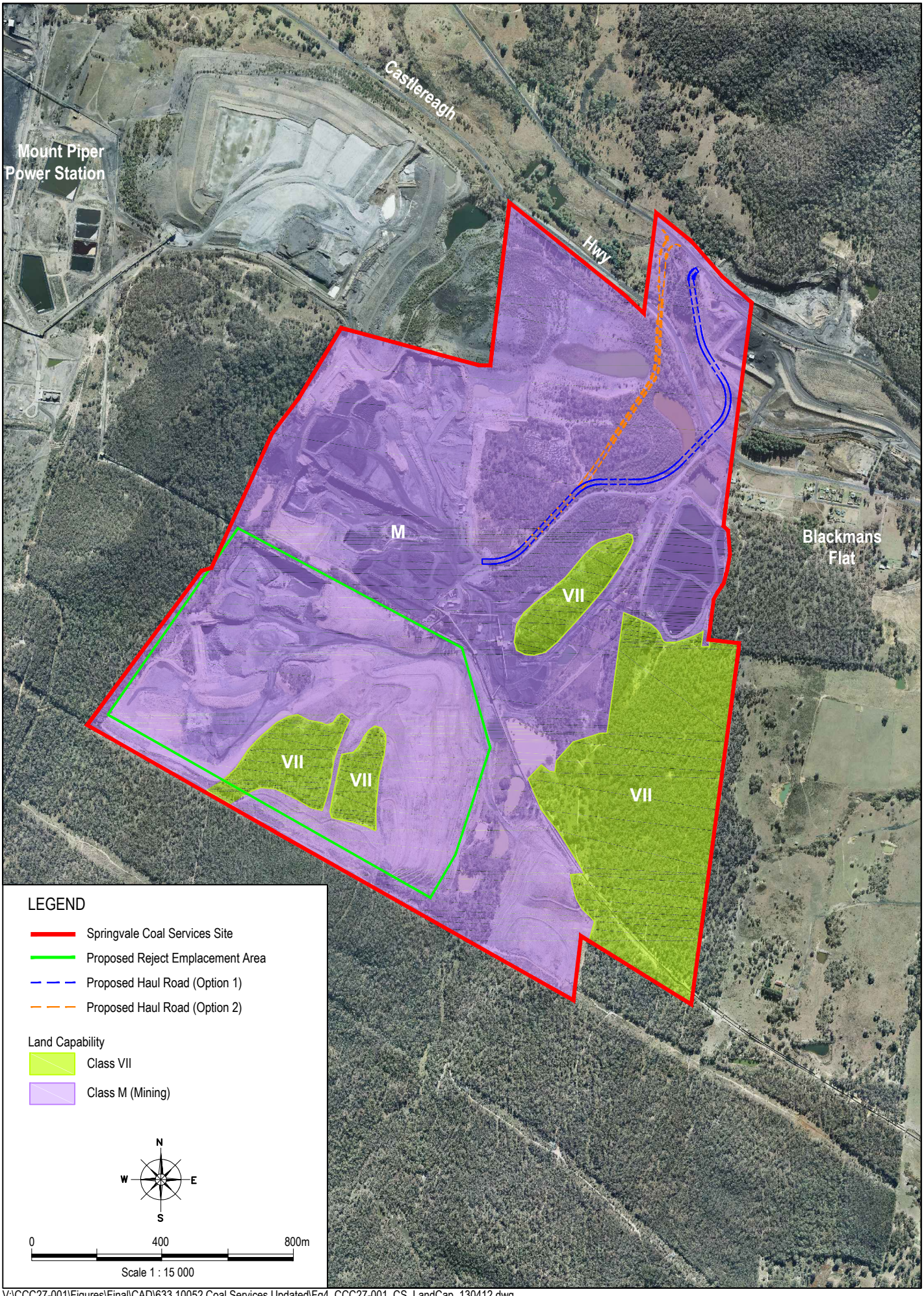
Springvale Coal Services
Soil Landscapes

FIGURE 3



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Springvale Coal Services
Rural Land Capability

FIGURE 4

4.0 IMPACT ASSESSMENT

The land capability and agricultural suitability assessment has classified the Study Area as Class VII, land is unsuitable for rural production and Class 5, land not suitable for cultivation or grazing. Therefore there are a no significant potential impacts on current land use or agriculture from the proposed Project.

The impact on soils and topography is considered negligible as the proposed development is surface infrastructure which can be removed and the land rehabilitated at closure as required.

5.0 REFERENCES

Cunningham, G.A, Emery, K.A and Morse, R.J (1988). *Systems Used to Classify Rural Lands in New South Wales.* NSW Soil Conservation Service, Sydney.

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