



# **Longwalls 428-432**

## **Built Features Management Plan**

**Springvale Mine**

**June 2022**

**DOCUMENT CONTROL / TITLE BLOCK**

| <b>SUBMISSIONS REPORT DETAILS</b> | <b>Title:</b>        | Longwalls 428-432 Built Features Management Plan |
|-----------------------------------|----------------------|--------------------------------------------------|
|                                   | <b>Applicant:</b>    | Springvale Coal Pty Limited                      |
|                                   | <b>Revision No.:</b> | 1.2                                              |

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## **ABBREVIATIONS**

|                                                                           |                       |
|---------------------------------------------------------------------------|-----------------------|
| Development Application                                                   | DA                    |
| Biodiversity Conservation Division                                        | BCD                   |
| Centennial Springvale Pty Limited                                         | Centennial Springvale |
| Centennial Coal Company                                                   | Centennial            |
| Department of Agriculture, Water and the Environment                      | DAWE                  |
| Department of Planning, Industry and Environment                          | DPIE                  |
| Department of Regional NSW – Resources Regulator                          | RR                    |
| Extended Monitoring and Management Area                                   | EMMA                  |
| <i>Environmental Protection and Biodiversity Conservation Act 1999</i>    | EPBC Act              |
| Environmental Impact Statement                                            | EIS                   |
| <i>Environmental Planning and Assessment Act 1979</i>                     | EP&A Act              |
| Forestry Corporation of NSW                                               | FCNSW                 |
| Independent Monitoring Panel                                              | IMP                   |
| Mining Lease                                                              | ML                    |
| Modification                                                              | Mod                   |
| New South Wales                                                           | NSW                   |
| Persons conducting a business or undertaking                              | PCBUs                 |
| State Significant Development                                             | SSD                   |
| Temperate Highland Peat Swamps on Sandstone                               | THPSS                 |
| Trigger Action Response Plan                                              | TARP                  |
| Trigger Investigation Area                                                | TIA                   |
| <i>Work Health and Safety Act 2011</i>                                    | WHS Act               |
| <i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i>        | WHSMP Act             |
| <i>Work Health and Safety (Mines and Petroleum Sites) Regulation 2014</i> | WHSMP Regulation      |

## 1 INTRODUCTION

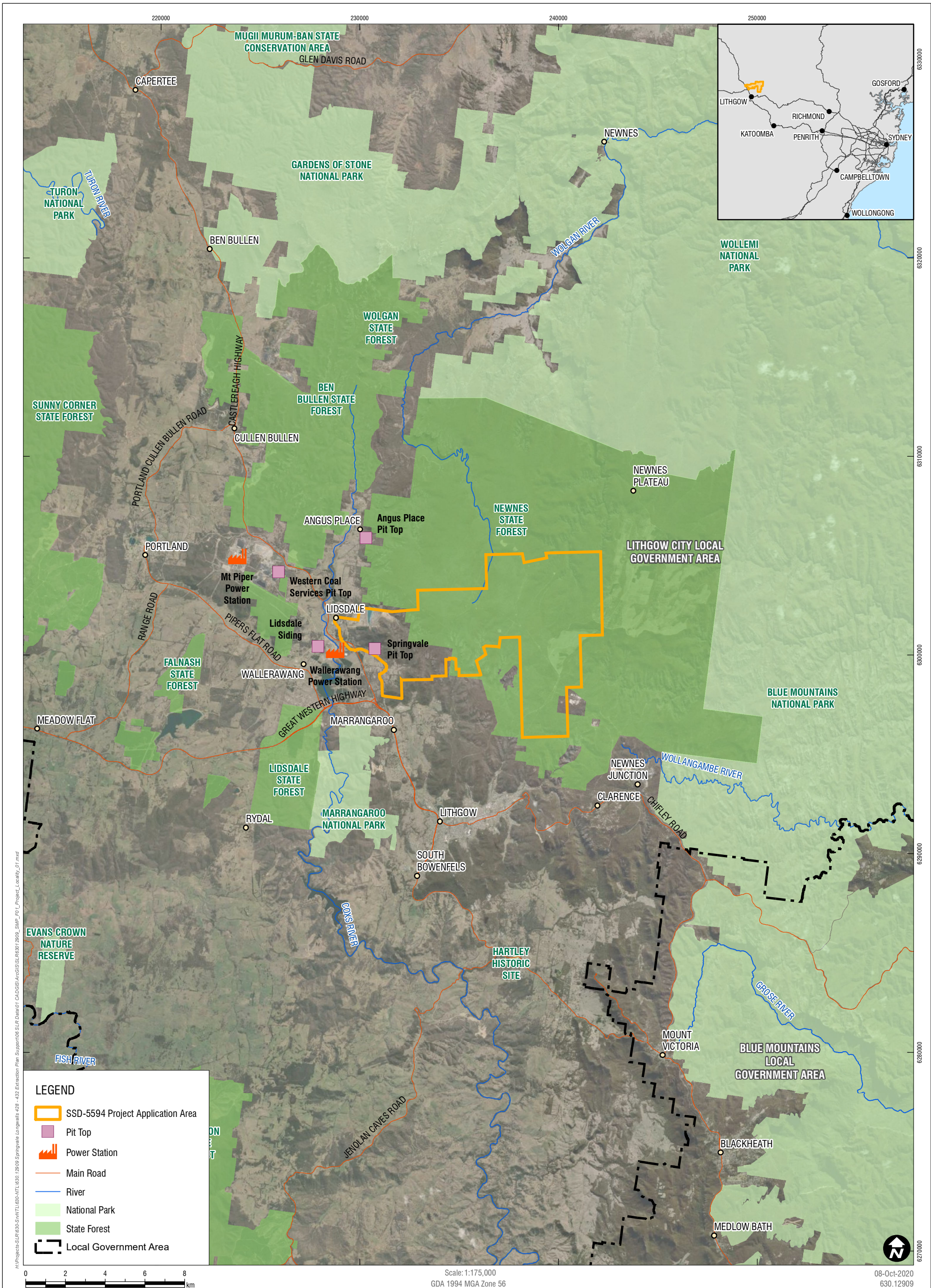
Springvale Mine (Springvale) is an existing underground coal mine producing thermal coal which is supplied to both domestic and international markets. It is located 15 kilometres (km) to the northwest of the regional city of Lithgow and 120 km west-northwest of Sydney in New South Wales (NSW). Springvale is bordered by Angus Place to the north and Clarence Colliery to the south-east. The regional locality of Springvale is shown on **Figure 1.1**. Springvale utilise the longwall retreat method of mining to extract coal from the Lithgow Seam.

Underground coal mining commenced at Springvale in 1995 following the granting of Development Consent (DA 11/92) on 27 July 1992 by the then Minister for Planning, pursuant to Section 101 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Development Consent DA 11/92 was modified on four occasions.

On 7 April 2014, Springvale submitted the Environmental Impact Statement (EIS) titled *Springvale Mine Extension Project – State Significant Development 5594* (Golder Associates, 2014) to support an application seeking development consent under Part 4, Division 4.1 of the EP&A Act to allow continuation of mining operations and upgrades to existing ancillary mine infrastructure. Centennial Coal subsequently submitted the *Response to Submissions Springvale Mine Extension Project* (2014) and the *Angus Place and Springvale Mine Extension Projects Response to Response to Submissions* (Centennial Coal, 2014) prior to Development Consent SSD 5594 being granted by the Department of Planning, Industry and Environment (DPIE) on 21 September 2015. SSD 5594 has since been modified on three occasions, relating to a production increase (Mod 1), deferral of salinity reduction (Mod 2) and new Aboriginal culture heritage site (Mod3).

This Built Features Management Plan has been prepared to support an Extraction Plan for secondary extraction of Longwalls 428-432. This Plan has been prepared in accordance with Schedule 3, Condition 10 (h)(ii) of Development Consent SSD 5594, the *Draft Guidelines for the Preparation of Extraction Plans V5* (DPIE, 2015), *Managing Risks of Subsidence* (RR, 2017), and the *Extraction Plans Standard* (Centennial Coal, 2019).







## 2 PURPOSE

The purpose of this Built Features Management Plan is to outline the management measures, controls and monitoring program to be implemented for management of potential subsidence impacts to built features affected by the secondary extraction of Longwalls 428-432. Required actions and responsibilities are defined to ensure detection of any potential damage from mining induced subsidence.

DPIE approval of the Longwalls 428 - 432 Extraction Plan was received on 15 March 2022. In accordance with condition 4 this Plan has been revised to reflect the approved limits of Longwalls 430 – 432.

## 3 SCOPE

This Built Features Management Plan applies to the management of landscape features located within the Longwalls 428-432 Extraction Plan Area. In accordance with the requirements of the *Draft Guidelines for the Preparation of Extraction Plans V5* (DPIE, 2015), *Managing Risks of Subsidence* (RR, 2017) and Centennial Coal's *Extraction Plans Standard* (2019), this Extraction Plan Area has been calculated by combining the areas bound by the following limits:

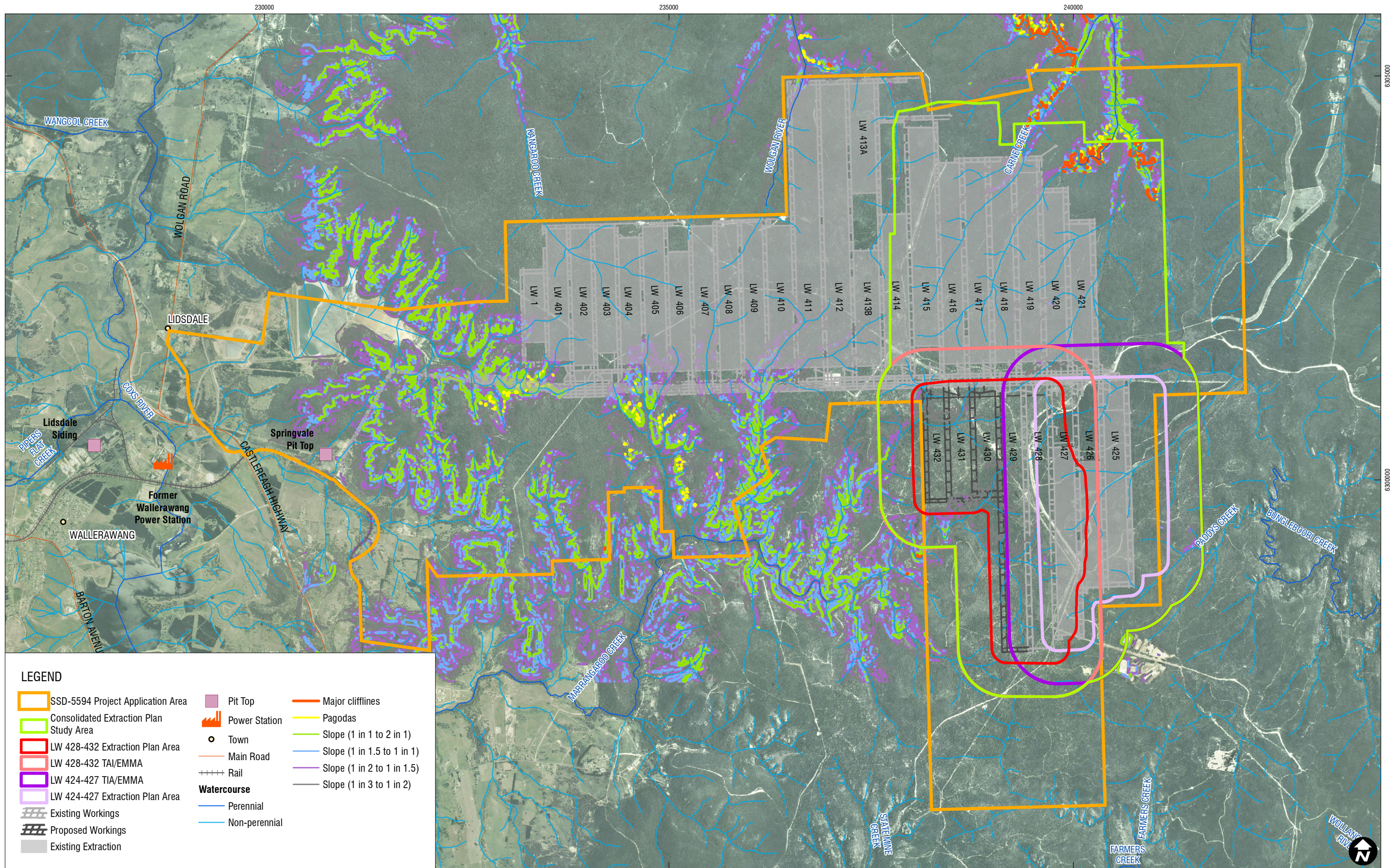
- A 26.5° angle of draw line from the limit of proposed extraction; and
- The predicted limit of vertical subsidence, taken as the 20 mm subsidence contour resulting from the extraction of the Longwalls 428-432.

An Extended Monitoring and Management Area (EMMA) extends 600 m from extraction. Relevant features within the EMMA could be susceptible to far-field or valley related movements. Such features within the EMMA have been assessed by MSEC (2022) and within this Built Features Management Plan.

The Extraction Plan Area and the EMMA are shown on **Figure 3.1**.



H:\Projects\SLR\630-Sr\NTL\630-NTL\630-30371-00000 Springvale Longwalls 428-432 Extraction\06 SLR Data\01 CAD\GIS\GIS\SLR\630\030371\_BMP\_F03\_Consolidated\_Extraction\_Plan\_Study\_Area\_01.mxd



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## 4 REGULATORY REQUIREMENTS

### 4.1 Development Consent

Development consent conditions from SSD 5594 that relate specifically to the preparation of this Plan have been summarised in **Table 4.1**. This table also outlines the sections where these conditions have been addressed within this document.

**Table 4.1: Relevant Development Consent Conditions**

| Condition Number                                                                                                                                            | Development Consent Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Section Addressed |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Schedule 2, Condition 13                                                                                                                                    | <p><b>Protection of Public Infrastructure</b></p> <p>Unless the Applicant and the applicable authority agree otherwise, the Applicant shall:</p> <p>a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and</p> <p>b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.</p> <p><i>Note: This condition does not apply to any damage to roads caused as a result of general road usage.</i></p>                                                                                                                                                                                                        | Section 8.1       |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
| Schedule 3, Condition 7                                                                                                                                     | <p><b>Performance Measures – Built Features</b></p> <p>The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 2, to the satisfaction of the Secretary.</p> <p><b>Table 2: Subsidence Impact Performance Measures</b></p> <table><tr><th colspan="2">Built Features</th></tr><tr><td>Power transmission lines and associated towers, unsealed roads and road culverts, fire trails, other public infrastructure, fences and other built features</td><td>Always safe.<br/>Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.<br/>Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.</td></tr></table> | Built Features    |  | Power transmission lines and associated towers, unsealed roads and road culverts, fire trails, other public infrastructure, fences and other built features | Always safe.<br>Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.<br>Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated. | <p>Powerlines addressed in <i>Longwalls 428-432 Powerline Management Plan</i></p> <p>Roads, culverts and other built features addressed in Section 8.1</p> |
| Built Features                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
| Power transmission lines and associated towers, unsealed roads and road culverts, fire trails, other public infrastructure, fences and other built features | Always safe.<br>Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.<br>Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
| Schedule 3, Condition 10                                                                                                                                    | <p><b>Extraction Plan</b></p> <p>The Applicant shall prepare and implement an Extraction Plan for second workings within each longwall mining domain to the satisfaction of the Secretary. Each Extraction Plan must:</p> <p>e) provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since this consent;</p>                                                                                                                                                                                                                                                                                                                | Section 7.2       |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <p>g) describe in detail the performance indicators that would be implemented to ensure compliance with the performance measures in Tables 1 and 2, and manage or remediate any impacts and/or environmental consequences to meet the rehabilitation objectives in Condition 30 of Schedule 4;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Section 8.2       |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <p>h) (ii) include a Built Features Management Plan, which has been prepared in consultation with the Department, to manage the potential subsidence impacts and/or environmental consequences of the proposed underground workings, and which:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This document     |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <ul style="list-style-type: none"><li>has been prepared in consultation with the owner/s of potentially affected feature/s;</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Section 11        |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <ul style="list-style-type: none"><li>addresses in appropriate detail all items of key public infrastructure and other public infrastructure and all classes of other built features;</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Section 7.1       |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <ul style="list-style-type: none"><li>recommends appropriate pre-mining mitigation measures to reduce subsidence impacts; and</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Section 9         |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |
|                                                                                                                                                             | <ul style="list-style-type: none"><li>recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate predicted impacts on potentially affected built features in a timely manner;</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section 9         |  |                                                                                                                                                             |                                                                                                                                                                                                                                   |                                                                                                                                                            |

| Condition Number                            | Development Consent Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Section Addressed |           |                                             |                                                                                                                                                                                                                                                                                                                |           |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Schedule 3, Condition 10                    | h) (ix) TARPs addressing all features in Tables 1 and 2, which contain: <ul style="list-style-type: none"><li>• appropriate triggers to warn of increased risk of exceedance of any performance measure; and</li><li>• specific actions to respond to high risk of exceedance of any performance measure to ensure that the measure is not exceeded;</li><li>• an assessment of remediation measures that may be required if exceedances occur and the capacity to implement the measures;</li></ul>                                                                                                                                                                                                                                                                                        | Section 13        |           |                                             |                                                                                                                                                                                                                                                                                                                |           |
|                                             | h) (x) Contingency plan that expressly provides for: <ul style="list-style-type: none"><li>• adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 1 and 2, or where any such exceedance appears likely; and</li><li>• an assessment of remediation measures that may be required if exceedances occur and the capacity to implement those measures;</li></ul>                                                                                                                                                                                                                                                                                                                                                              | Section 12 and 13 |           |                                             |                                                                                                                                                                                                                                                                                                                |           |
|                                             | h) (xii) includes a program to collect sufficient baseline data for future Extraction Plans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Section 6         |           |                                             |                                                                                                                                                                                                                                                                                                                |           |
| Schedule 4, Condition 30                    | <p><b>Rehabilitation Objectives</b></p> <p>The Applicant shall rehabilitate the site to the satisfaction of the Department. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EIS, and comply with the objectives in Table 7.</p> <p><b>Table 7: Rehabilitation Objectives</b></p> <table><tr><th>Feature</th><th>Objective</th></tr><tr><td>Built features damaged by mining operations</td><td><ul style="list-style-type: none"><li>• Repair to pre-mining condition or equivalent unless the:<ul style="list-style-type: none"><li>- owner agrees otherwise; or</li><li>- damage is fully restored, repaired or compensated for under the <i>Mine Subsidence Compensation Act 1961</i>.</li></ul></li></ul></td></tr></table> | Feature           | Objective | Built features damaged by mining operations | <ul style="list-style-type: none"><li>• Repair to pre-mining condition or equivalent unless the:<ul style="list-style-type: none"><li>- owner agrees otherwise; or</li><li>- damage is fully restored, repaired or compensated for under the <i>Mine Subsidence Compensation Act 1961</i>.</li></ul></li></ul> | Section 8 |
| Feature                                     | Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |           |                                             |                                                                                                                                                                                                                                                                                                                |           |
| Built features damaged by mining operations | <ul style="list-style-type: none"><li>• Repair to pre-mining condition or equivalent unless the:<ul style="list-style-type: none"><li>- owner agrees otherwise; or</li><li>- damage is fully restored, repaired or compensated for under the <i>Mine Subsidence Compensation Act 1961</i>.</li></ul></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |           |                                             |                                                                                                                                                                                                                                                                                                                |           |

## 4.2 EPBC Approvals

Springvale operates in accordance with two federal approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) granted by the Department of Agriculture, Water and the Environment (DAWE). Approval EPBC 2011/5949 was granted on 14 March 2012 and allows Springvale to extract coal from Longwalls 415-418. EPBC 2013/6881 was granted on 15 October 2015 to expand underground mining proposed under SSD 5594.

The EPBC approvals included requirements to minimise and compensate for potential subsidence related impacts upon the federally listed Temperate Highland Peat Swamps on Sandstone (THPSS) systems, which include the Newnes Plateau Shrub Swamps (NPSS) (listed under the *Biodiversity Conservation Act 2016*) and Newnes Plateau Hanging Swamps (NPHS) communities.

Any subsidence monitoring and management in relation to swamps is addressed in the *Longwalls 415-432 Swamp Monitoring Program* (Jacobs and RPS, 2022) and not considered further in this document.

### 4.3 Mining Leases

The Extraction Plan Area and EMMA are associated with Mining Lease (ML) 1326, ML 1588 and ML 1727 (refer **Figure 3.1**). Conditions relevant to the preparation of this Built Features Management Plan have been provided in **Table 4.2**.

**Table 4.2: Relevant Mining Lease Conditions**

| Mining Lease              | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Section Addressed                                                       |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| ML 1326, ML 1588, ML 1727 | Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | This is addressed in the Extraction Plan Main Document                  |
| ML 1326, ML 1588, ML 1727 | The lease holder must not undertake any underground mining operations that may cause subsidence except in accordance with an approved Extraction Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | This document                                                           |
| ML 1326, ML 1588, ML 1727 | The lease holder must ensure that the approved Extraction Plan provides for the effective management of risks associated with any subsidence resulting from mining operations carried out under this lease.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | This is addressed in the Extraction Plan Main Document                  |
| ML 1326, ML 1588, ML 1727 | The lease holder must notify the Secretary within 48 hours of any: <ul style="list-style-type: none"> <li>i. incident caused by subsidence which has a potential to expose any person to health and safety risks;</li> <li>ii. significant deviation from the predicted nature, magnitude, distribution, timing and duration of subsidence effects, and of the potential impacts and consequences of those deviations on land and the health and safety of any person; or</li> <li>iii. significant failure or malfunction of a monitoring device or risk control measure set out in the approved Extraction Plan addressing: <ul style="list-style-type: none"> <li>A. Built Features;</li> <li>B. Public safety; or</li> <li>C. Subsidence monitoring.</li> </ul> </li> </ul> | Section 15                                                              |
| ML 1326 and ML 1588       | <b>Transmission Lines, Communication Lines and Pipelines</b><br>Operations must not interfere with or impair the stability or efficiency of any transmission line, communication line, pipeline or any other utility on the area without the prior written approval of the Director General and subject to any conditions he may stipulate.                                                                                                                                                                                                                                                                                                                                                                                                                                     | This is addressed in <i>Longwalls 428-432 Powerline Management Plan</i> |
| ML 1326 and ML 1588       | <b>Roads and Tracks</b><br>Operations must not affect any road unless in accordance with an accepted Mining Operations Plan or with the prior written approval of the Director-General and subject to any conditions he may stipulate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Section 9                                                               |



#### 4.4 Extraction Plan Guidelines

The *Draft Guidelines for the Preparation of Extraction Plans V5* (DPIE, 2015) identifies requirements for Extraction Plan Sub-Plans. The relevant requirements from the Guideline are presented in **Table 4.3**.

**Table 4.3: Extraction Plan Guideline Requirements**

| Extraction Plan Guideline Requirement (Sub-Plans)                                                                                                                                                                                                                                                                                                                                                                                                     | Section Addressed   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| An overview of all landscape features, heritage sites, environmental values, built features or other values to be managed under the component plan;                                                                                                                                                                                                                                                                                                   | Section 7.1         |
| Setting out all performance measures included in the development consent relevant to the features or values to be managed under the component plan;                                                                                                                                                                                                                                                                                                   | Section 8.1         |
| Setting out clear objectives to ensure the delivery of the performance measures and all other relevant statutory requirements (including relevant safety legislation);                                                                                                                                                                                                                                                                                | Section 8 and 9     |
| Proposing performance indicators to establish compliance with these performance measures and statutory requirements;                                                                                                                                                                                                                                                                                                                                  | Section 8.2         |
| Describe the landscape features, heritage sites and environmental values to be managed under the component plan, and their significance. It should be noted that a full description of such features, sites and values would commonly have been provided and considered in a recent environmental impact assessment. Consequently, this section can be relatively brief, and focus on the presentation of appropriate figures and/or graphical plans; | Section 7.1         |
| Describe all currently-predicted subsidence impacts and environmental consequences relevant to the features, sites and values to be managed under the component plan;                                                                                                                                                                                                                                                                                 | Section 7.2 and 7.3 |
| Describe all measures planned to remediate these impacts and/or consequences, including any measures proposed to ensure that impacts and/or consequences comply with performance measures and/or the Applicant's commitments;                                                                                                                                                                                                                         | Section 9 and 13    |
| Describe the existing baseline monitoring network and the current baseline monitoring results, including pre-subsidence photographic surveys of key landscape features and key heritage sites which may be subject to significant subsidence impacts (such as significant watercourses, swamps and Aboriginal heritage sites);                                                                                                                        | Section 6           |
| Fully describing the proposed monitoring of subsidence impacts and environmental consequences;                                                                                                                                                                                                                                                                                                                                                        | Section 10.1-10.5   |
| Describe the proposed monitoring of the success of remediation measures following implementation;                                                                                                                                                                                                                                                                                                                                                     | Section 10.6        |
| Describe adaptive management proposed to avoid repetition of unpredicted subsidence impacts and/or environmental consequences;                                                                                                                                                                                                                                                                                                                        | Section 12          |
| Describe contingency plans proposed to prevent, mitigate or remediate subsidence impacts and/or environmental consequences which substantially exceed predictions or which exceed performance measures;                                                                                                                                                                                                                                               | Section 13          |
| Listing responsibilities for implementation of the plan; and                                                                                                                                                                                                                                                                                                                                                                                          | Section 14          |
| An attached Trigger, Action, Response Plan (effectively a tabular summary of most of the above).                                                                                                                                                                                                                                                                                                                                                      | Section 13          |

## 4.5 Key Legislation

This Built Features Management Plan has also been prepared to address the requirements of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* (WHSMP Regulation) and the *Work Health and Safety Act 2011* (WHS Act).

In relation to public safety, Section 19 of the WHS Act requires that all persons conducting a business or undertaking (PCBUs), including mine operators (under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* (WHSMP Act)), must ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking.

The WHSMP Regulation, under the WHS Act requires the mine operator of an underground coal mine to ensure that:

- Monitoring of subsidence is conducted, including monitoring of its effects on relevant surface and subsurface features (Clause 67(2)(b) of the WHSMP Regulation); and
- All subsidence monitoring data is provided to the regulator in the manner and form and at the times required by the regulator (Clause 67(2) (d) of the WHSMP Regulation).

Subsidence monitoring and reporting is undertaken in accordance with the WHS Act as detailed in **Section 10** and **Section 15**, respectively.

To assist mine operators in complying with their obligations under the WHS laws in relation to subsidence, in 2017 the Department of Regional NSW – Resources Regulator (RR) released the document *Managing Risks of Subsidence* (RR, 2017). This Built Features Management Plan has been prepared in accordance with the requirements of this Guideline.

Section 2.2.2 of the Guideline lists the surface and subsurface features which could give rise to risks to health and safety, if the features are affected by subsidence. The surface and subsurface features relevant to this Plan include:

1. Public utilities (e.g. highways, railways, tunnels, bridges, air strips, electrical transmission infrastructure or pressurised gas pipelines);
2. Public amenities (e.g. shopping centres, hospitals, churches, sport facilities, childcare centres or schools); and
3. Built features other than public utilities and amenities (e.g. dwellings, factories, workshops, privately owned gas storages or surface mining voids or facilities).

The relevant built features have been described in **Section 7**, and the management and monitoring of subsidence impacts on these features has been addressed in **Section 9** and **Section 10**, respectively.

Further details regarding compliance with the relevant requirements of the WHSMP Regulation and *Managing Risks of Subsidence* (RR, 2017) are provided in **Appendix 1**.



## 5 MINE DESIGN TO AVOID AND MITIGATE POTENTIAL IMPACTS

The longwall layout at Springvale has been designed to consider environmental issues whilst using commercially sound principles that enable mining to continue into the future.

There are two management strategies for avoiding or minimising the impacts to sensitive surface features as a result of mining. These are:

1. Avoid mining under the sensitive surface feature; or
2. Mine design under the sensitive surface feature has a sub-critical void width.

A summary of the hierarchy of subsidence risk management controls implemented at Springvale for previous, current and proposed longwalls is provided in **Table 5.1**.

**Table 5.1: Hierarchy of Subsidence Management Controls**

| Management Strategy                                                                                         | Sensitive Surface Feature |                               |                                                        |                     |
|-------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|--------------------------------------------------------|---------------------|
|                                                                                                             | Cliffs and Pagodas        | Swamps and other Biodiversity | Perennial Watercourses 4 <sup>th</sup> order and Above | Aboriginal Heritage |
| <b>Elimination</b>                                                                                          |                           |                               |                                                        |                     |
| Extraction directly underneath                                                                              | No                        | Yes                           | No                                                     | Yes                 |
| <b>Substitution</b>                                                                                         |                           |                               |                                                        |                     |
| Sub-critical void width (<260 m) with double abutment chain pillars at least 58 m wide (Longwalls 416-432)* | Yes                       | Yes                           | Yes                                                    | Yes                 |
| Offset strategy for residual impacts                                                                        | NA                        | Yes                           | NA                                                     | NA                  |
| <b>Engineering</b>                                                                                          |                           |                               |                                                        |                     |
| Rehabilitation                                                                                              | NA                        | Yes                           | NA                                                     | NA                  |
| Restoration                                                                                                 | NA                        | NA                            | NA                                                     | NA                  |
| <b>Management and Monitoring</b>                                                                            |                           |                               |                                                        |                     |
| Strata management plan and database                                                                         | Yes                       | Yes                           | Yes                                                    | Yes                 |
| TARP                                                                                                        | Yes                       | Yes                           | Yes                                                    | Yes                 |

\* Overall void width including first workings for Longwall 432 is 216 m, all other longwalls are 259.9 m.

### 5.1 Previous Mine Design Changes

Key design features from previously extracted longwalls include:

- Longwalls 422-423 were removed from the design; and
- Longwalls 424-427 were all shortened from the EIS design with the commencing (i.e. southern) ends shortened by approximately 475 m, 215 m, 164 m and 155 m, respectively.

The Longwalls 424-427 Extraction Plan was approved by DPIE on 26 July 2018. This approval allowed secondary extraction of Longwalls 425-427, but does not approve extraction within Longwall 424.

The Longwalls 428-432 Extraction Plan was approved by DPIE on 15 March 2022. Following approval, the Extraction Plan and associated sub-plans have been revised to reflect the shortening of the southern ends of Longwall 430 by 905 m, Longwall 431 by 595 m and Longwall 432 by 405 m.

## **5.2 Considerations for Mine Design**

Consideration has been given to a range of broader alternative mine layouts, as described within the EIS. These are further described below.

### **Further Reduction in Longwall Width and Increase in Pillar Size**

The modifications to the mine design in the EIS Project Application Area were the result of a thorough review of historical subsidence and environmental monitoring data. Subsidence modelling was conducted using industry databases and methodologies. The re-design was intended to ensure that the proposed panel and pillar width combination would ensure sub-critical subsidence behaviour of the overburden. After the transition from critical panel width to sub-critical panel width, further reductions in panel width cause relatively little incremental reduction in measured subsidence. Springvale has modified the dimensions of its longwalls to the greatest extent possible without compromising the viability of the business.

It is not possible for Springvale to further reduce the longwall block width or increase the chain pillar width due to the prohibitive cost of additional roadway development to achieve the same longwall production rate and significant interruption to mining continuity (i.e. the longwall would be forced to "stand down" and wait for development of the next longwall block to be completed due to the increased ratio of roadway development to longwall production).

### **Changing Distribution of Longwalls to Avoid Undermining THPSS**

Consideration was given to changing the orientation and distribution of longwalls to avoid mining beneath THPSS. Longwall mining is an inherently inflexible mining method in terms of changes to mining block geometry and orientation. The orientation of the blocks in each mining area is dictated by the orientation of the first set of gateroads driven and the dual use of each set of gateroads means that each subsequent longwall panel is immediately adjacent to the previous one (separated by the chain pillars between the roadways). The decision regarding orientation of mining blocks was determined at the start of mine life and was dictated by the shape of the mining lease granted and extent of the mineable resource within the mining lease.

At Springvale, development rates are not sufficient, and the costs of development are too great to allow the use of pairs of gateroads to service individual mining blocks and maintain a viable business. In addition, the distribution and orientation of shrub swamps is too variable to allow avoidance of undermining of THPSS. There is no mining orientation which would allow viable longwall extraction with complete avoidance of undermining of THPSS.

### **"Splitting" Longwall Mining Blocks to Avoid Undermining THPSS**

To retain longwalls at the same width and orientation and extract blocks which avoid undermining THPSS would involve "splitting" the longwall block into smaller blocks. Each "split" stops production for at least five weeks and reduces production to almost zero for a further two weeks resulting in very significant cost to the business. Due to the orientation of the swamps, avoidance by "splitting" would sterilise a very significant portion of the resource within each mining block. The viability of the business would be compromised with one step around in each block, let alone two. Springvale is not able to "split" longwall blocks to avoid THPSS due to the prohibitive costs and the major impact on continuity of operations.



## **6 BASELINE DATA**

Baseline monitoring of the land within the Extraction Plan Area and relevant features within the EMMA, will be undertaken prior to the commencement of secondary extraction within Longwalls 428-432. Baseline data will be obtained by Springvale using a combination of:

- Installation of subsidence monitoring lines to monitor subsidence, tilt, strain and angle of draw. These lines will be surveyed prior to secondary extraction in Longwall 428 to establish pre-mining data; and
- A visual inspection program will be undertaken by Springvale that includes the use of photographic monitoring points prior to the commencement of secondary extraction in Longwall 428 to establish the pre-mining condition of significant features within the Extraction Plan Area and for key/relevant features within the EMMA.

## 7 RELEVANT FEATURES, SUBSIDENCE PREDICTIONS AND POTENTIAL IMPACTS

### 7.1 Relevant Features

The majority of the land overlying the Extraction Plan Area and EMMA is within the Newnes State Forest, which at the time of preparing the Longwalls 428-432 Extraction Plan was subject to logging and is open to recreational use by the public. These non-mining related land uses can result in disturbance to ecosystems. The former Newnes State Forest has now been designated at the Gardens of Stone State Conservation Area (SCA). A small area of cleared land within the EMMA is owned by Boral and associated with a quarry, with an area of land also owned by Lithgow City Council.

Built features and impacts considered within the Extraction Plan Area/EMMA include:

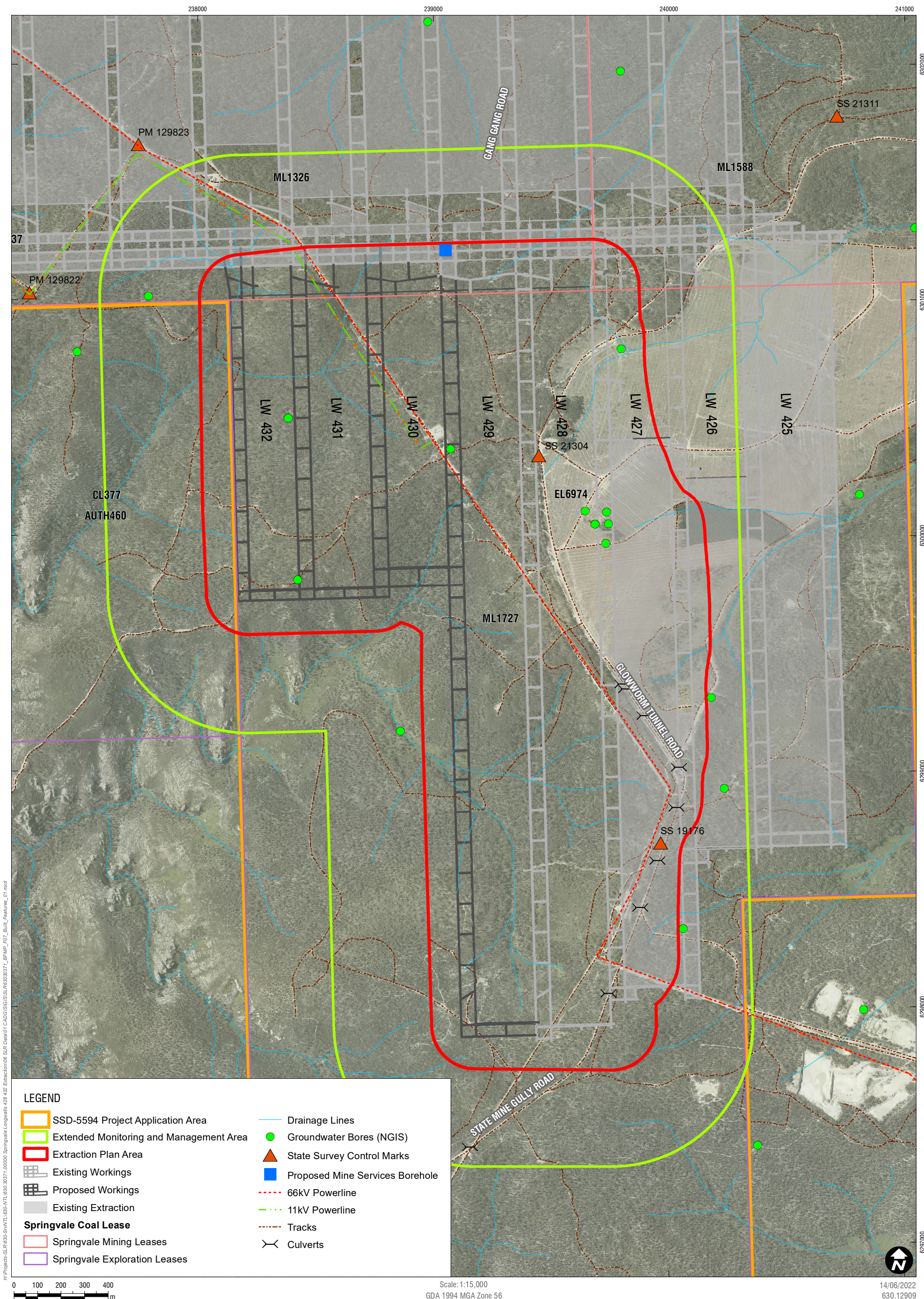
- Unsealed roads and culverts;
- Groundwater bores, with locations obtained from the National Groundwater Information System;
- Two permanent survey control marks (SS 19176 and SS 21304); and
- Mine related exploration boreholes (noting these are not shown on figures).

The location of built features is shown in **Figure 7.1** and the potential subsidence related impacts upon these features have been assessed in **Section 7.3**.

It is noted that there are 66 kV and 11 kV electricity transmission lines as well as a mine-owned substation are located within the Extraction Plan Area and EMMA, however they will be addressed in the *Longwalls 428-432 Powerline Management Plan* (SLR, 2022), *Review of Mine Subsidence Impact of Longwalls 428-432 on Endeavour Energy's 66kV Feeder 811/2 – Springvale Colliery-Clarence Colliery* (Energy Serve, 2020), *Review of Mine Subsidence Impact of Longwalls 428-432 on Centennial Coal's 11kV Overhead Line – Springvale Colliery* (Energy Serve, 2020) and *Springvale 66/11kV Substation Assessment* (PBE, 2020).

Additionally, SSD 5594 stipulates that there can be no impact to the Lithgow Water Supply Dam as a result of mine subsidence. Lithgow Water Supply Dam is located approximately 3 km from the Extraction Plan Area and is therefore not predicted to experience subsidence effects from the extraction of Longwalls 428-432. It has not been considered further in this Plan.







## 7.2 Subsidence Predictions

The report titled *Springvale Colliery – LW428 to LW432 Subsidence Predictions and Impact Assessments for the Natural and Built Features due to the Mining of the Proposed LW428 to LW432 in Support of the Extraction Plan Application* (MSEC, 2022) has been prepared to support the Longwalls 428-432 Extraction Plan. The report provides:

- Subsidence predictions for proposed extraction of Longwalls 428-432;
- Details of natural and built features within the Extraction Plan Area and EMMA;
- Subsidence predictions for each of the relevant natural and built features; and
- Impact assessments, in conjunction with other specialist consultants, for each of the natural and built features.

To satisfy Schedule 3, Condition 10(e) of SSD 5594, MSEC (2022) also completed a review of the subsidence predictions from *Springvale Colliery Mine Extension Project Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Environmental Impact Statement for the Proposed Longwalls 416 to 432 and 501 to 503 in the Lithgow Seam* (MSEC, 2013). The review incorporated relevant information obtained since SSD 5594 was issued including: subsidence monitoring data, lineament data, observed subsidence effects, and changes to mining layout and sequence.

A comparison of the maximum predicted subsidence parameters for proposed Longwalls 428-432, based on the EIS Layout (MSEC, 2013) and the Extraction Plan Layout (MSEC, 2022) is provided in **Table 7.1**. The values are the maximum predicted movements anywhere within the Extraction Plan Area for Longwalls 428-432.

**Table 7.1: Comparison of the Maximum Predicted Total Subsidence Parameters**

| Layout                      | Maximum predicted total vertical subsidence (mm) | Maximum predicted total tilt (mm/m) | Maximum predicted total hogging curvature (km <sup>-1</sup> ) | Maximum predicted total sagging curvature (km <sup>-1</sup> ) |
|-----------------------------|--------------------------------------------------|-------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| EIS Layout (MSEC594)        | 1650                                             | 13                                  | 0.20                                                          | 0.35                                                          |
| Modified Layout (MSEC 1255) | 1350                                             | 10                                  | 0.14                                                          | 0.20                                                          |

**Table 7.1** shows that MSEC (2022) has not predicted any additional subsidence impacts to those predicted by the EIS.

## 7.3 Predicted Impacts

### 7.3.1 Unsealed Roads and Culverts

There are unsealed roads located across the Extraction Plan Area and EMMA which are used for recreational and forestry activities (noting change to State Conservation Area) (refer **Figure 7.1**). These roads are publicly accessible and managed by the landowner. There are circular concrete drainage culverts in some locations where the unsealed roads cross the drainage lines within the Extraction Plan Area and EMMA as shown in **Figure 7.1**.

MSEC (2022) found that the unsealed roads located across the Extraction Plan Area could experience subsidence effects up to the maximum predicted values described in **Table 7.1**. Surface cracking and heaving of the unsealed road and track surfaces are expected to occur where they are directly mined beneath. It is expected that the unsealed roads and tracks can be maintained in safe and serviceable conditions throughout the mining period using normal road maintenance techniques.

Impacts to drainage culverts located along Glowworm Tunnel Road and State Mine Gully Road have been previously considered by MSEC (2018) and previously addressed and approved under the Longwalls 424-427 Extraction Plan.

### 7.3.2 Mining Infrastructure

Mine-owned exploration drill holes and groundwater bores are located within the Extraction Plan Area and could experience subsidence movements up to the maximum described in **Table 7.1**. MSEC (2022) determined that it is likely, therefore, that fracturing and shearing would occur in the drill holes and groundwater bores as the result of mining.

### 7.3.3 State Survey Marks

Two state survey control marks (SS 19176 and SS 21304) are located within the Extraction Plan Area. There are additional survey control marks located to the north-west of the Study Area, above the previously extracted longwalls, including SS 21305, SS 21306, SS 24519, SS 35254, SS 35255, SS 35256 and SS 35257. The location of these survey marks is shown in **Figure 7.1**.

Survey control marks SS 19176 and SS 21304 are located directly above the existing Longwall427 and the proposed Longwall428, respectively. These marks could experience subsidence effects up to the maximum predicted values described in **Table 7.1**.

SS 19176 was assessed under the Longwalls 424-427 Extraction Plan. The removal of SS 19176 was granted by NSW Spatial Services in March 2019 and removal of SS 21304 approved in October 2020. The survey control marks will be re-established after subsidence has ceased. MSEC (2021) also notes that any survey marks within 3 km from the proposed longwalls could also experience far field horizontal movements.



## 8 PERFORMANCE MEASURES AND INDICATORS

### 8.1 Performance Measures

The relevant performance measures outlined in Schedule 3, Condition 7 of SSD 5594 (refer **Section 4.1**) which relate specifically to the management of built features include:

- Power transmission lines and associated towers, unsealed roads and road culverts, fire trails, other public infrastructure, fences and other built features are to be always safe, serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated; and
- Built features damaged by mining operations are to be repaired to pre-mining condition or equivalent unless the owner agrees otherwise or the damage is fully restored, repaired or compensated for under the *Mine Subsidence Compensation Act 1961*.

As noted in **Section 7.1**, impacts to the 66 kV and 11 kV electricity transmission lines are being assessed in separate reports: *Longwalls 428-432 Powerline Management Plan* (SLR, 2022), *Review of Mine Subsidence Impact of Longwalls 428-432 on Endeavour Energy's 66kV Feeder 811/2 – Springvale Colliery-Clarence Colliery* (Energy Serve, 2020) and *Review of Mine Subsidence Impact of Longwalls 428-432 on Centennial Coal's 11kV Overhead Line – Springvale Colliery* (Energy Serve, 2020).

### 8.2 Performance Indicators

To establish compliance with the performance measures as outlined in **Section 8.1**, Springvale has developed a monitoring program. This monitoring program (refer **Section 10**) will be used to demonstrate that performance satisfies the performance indicators including:

- Visual inspections, Light Detection and Ranging (LIDAR), and photographic monitoring of relevant features identify that subsidence related impacts are consistent with predicted impacts outlined in **Section 7.3**;
- Visual inspections identify that built features relevant to this Plan are safe and serviceable within the Extraction Plan Area; and
- Survey monitoring identifies that subsidence parameters (subsidence, tilt and strain) are within the limits of the prediction model.

## 9 MANAGEMENT MEASURES

The management and mitigation measures outlined in **Sections 9.1 to 9.3** will be implemented by Springvale during secondary extraction of Longwalls 428-432.

### 9.1 Unsealed Roads and Culverts

As mentioned in **Section 7.3.1**, there are unsealed roads and circular concrete drainage culverts located within the Extraction Plan Area and EMMA. MSEC (2022) noted that it is expected that the unsealed roads can be maintained in a safe and serviceable condition using normal road maintenance techniques. The following management measures will be implemented by Springvale to manage potential subsidence related impacts upon unsealed roads and culverts within the Extraction Plan Area and EMMA, during the secondary extraction of Longwalls 428-432:

- Inspections of built features such as unsealed roads and culverts undertaken in accordance with **Section 10.2**;
- Photographic monitoring of unsealed roads and culverts undertaken in accordance with **Section 10.3**;
- LIDAR monitoring of unsealed roads undertaken in accordance with **Section 10.4**;
- If impacts are observed and considered to be a public safety risk, Springvale will install danger tape in the immediate area and initiate actions in accordance with the TARP outlined in **Section 13**;
- If repair or replacement of the culverts is required, this will be undertaken in consultation with the landowner; and
- If rehabilitation of surface cracks on roads is required, this will be undertaken in accordance with the methodology specified in the approved *Springvale Mining Operations Plan 2018 – 2025 Amendment B* (Centennial Coal, 2018) (or subsequent amendments) in consultation with the landowner.

### 9.2 Mining Infrastructure

As stated in **Section 7.3.2**, fracturing and shearing could occur in the exploration drill holes and groundwater bores located within the Extraction Plan Area and EMMA as the result of mining. As per the *Exploration Code of Practice: Rehabilitation* (Department of Planning and Environment - Division of Resources and Geoscience, 2015), Springvale will ensure that exploration boreholes are grouted and capped in accordance with relevant requirements prior to secondary extraction within the relevant longwall panels. There are no management or mitigation measures proposed for the groundwater bores.

Longwalls 428-432 are all proposed panels and as such are not associated with any abandoned shafts/excavations. The State Mine Shaft 4 is 125 m from the edge of Longwall 432 which is abandoned.

### 9.3 State Survey Marks

The following management measures will be implemented by Springvale to manage potential subsidence related impacts to state survey control marks within the Extraction Plan Area following the secondary extraction of Longwalls 428-432:

- Consultation between Springvale and NSW Land Registry Services has been undertaken with a formal approval received to disturb both survey marks; and
- On the completion of subsidence from Longwalls 428-432 (i.e. when the ground has stabilised), Springvale will re-establish SS 19176 and SS 21304 survey control marks.



## 10 MONITORING PROGRAM

### 10.1 Monitoring Subsidence Impacts

Significant features within the Extraction Plan Area and key/relevant features within the EMMA will be monitored pre and post-mining for evidence of any subsidence related impacts, such as surface cracking or damage to infrastructure. **Table 10.1** provides a summary of the subsidence monitoring program that will be undertaken to manage these features. Additional detail pertaining to the subsidence monitoring methodology relevant to the Extraction Plan Area and EMMA can be found in the *Longwalls 428-432 Subsidence Monitoring Program*.

**Table 10.1: Subsidence Monitoring Program**

| Monitoring Method                                                                                                                                              | Parameter                                                        | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Visual Inspections (along survey lines)                                                                                                                        | Presence or absence of damage                                    | <ul style="list-style-type: none"> <li>Within Extraction Plan Area – in conjunction with subsidence surveys; and</li> <li>Within EMMA – in conjunction with subsidence surveys (for features within 600 m of operating longwall panel).</li> </ul>                                                                                                                                                                                                                        |
| Inspection of built features (roads, culverts) within the Extraction Plan Area and key/relevant features of the EMMA (e.g. culverts) (Photographic monitoring) | Presence or absence of damage                                    | <p>Within Extraction Plan Area:</p> <ul style="list-style-type: none"> <li>Baseline monitoring undertaken at least 4 months prior to extraction commencing;</li> <li>Quarterly during longwall extraction;</li> <li>At End of Panel; and</li> <li>Post-mining (one annual survey).</li> </ul> <p>Within EMMA where public safety risk identified e.g. culvert impacts:</p> <ul style="list-style-type: none"> <li>Pre and post-mining in relevant longwall(s).</li> </ul> |
| LIDAR within Extraction Plan Area and EMMA (unsealed tracks)                                                                                                   | Discrepancies in surface features (compared to pre-mining LIDAR) | At the completion of mining each panel.                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 10.2 Visual Inspection Program

Visual inspections will be carried out concurrently with subsidence line monitoring as detailed in the *Longwalls 428-432 Subsidence Monitoring Program*. Subsidence line monitoring is undertaken prior to longwall extraction commencing and at set longwall chainages during active mining. Monitoring of selected subsidence lines typically occurs twice during active longwall extraction.

Inspections of land within the EMMA will be undertaken where there is a potential public safety risk for relevant features within 600m of operating longwall panel (e.g. access roads). Subsidence monitoring lines are installed across areas of subsidence interest. For consistency and impact identification, inspections along subsidence lines are preferred as impacts are most likely to occur in these areas and comparative changes are more readily identifiable. Inspections will note and document the occurrence of any of the following observations:

- The presence and width of any cracking on unsealed roads and culverts or in other areas;
- Any potential subsidence effects that may affect the safety and serviceability of unsealed roads, culverts or infrastructure; and
- Any potential subsidence effects that may affect natural surface features such as rock outcrops, steep slopes or drainage lines.

### 10.3 Photographic Monitoring Programs

Photographic inspections are conducted prior to, during and post-mining of each longwall panel. Inspections target surface features which may include rock outcrops, steep slopes, drainage lines, unsealed roads and culverts. Comparisons of baseline and re-survey inspections are used in combination with other monitoring methodologies to assist in identification and interpretation of changes.

Photographic monitoring of surface features within the Extraction Plan Area and relevant to each longwall is generally conducted as follows:

- Baseline monitoring undertaken at least 4 months prior to extraction commencing;
- Quarterly during longwall extraction;
- At end of panel; and
- Post-mining (one annual survey).

For relevant features (e.g. culverts) within the EMMA, photographic monitoring will be undertaken. If none are identified, then no further monitoring beyond Extraction Plan Area would be needed.

Details regarding the photographic monitoring locations will be included in the Environmental and Rehabilitation Monitoring Program. Comparisons of baseline inspections to the latest re-survey inspection will be presented in the Environmental Monitoring Reports and Annual Review.

### 10.4 LIDAR

LIDAR monitoring of the Extraction Plan Area and EMMA will be undertaken at the completion of mining each longwall panel. The LIDAR will be compared to the pre-mining data to identify any discrepancies in surface features (such as unsealed tracks).

### 10.5 Monitoring Environmental Consequences

Springvale will implement the monitoring program as specified in **Sections 10.1 to 10.4** of this Plan to monitor the development of predicted subsidence related environmental impacts. A contingency plan has been developed as a component of this Built Features Management Plan to outline management measures that will be implemented in the event that predicted environmental consequences are exceeded (refer **Section 13**).

### 10.6 Success of Remediation Measures

In the event that remediation of built features is required, Springvale will undertake rehabilitation in accordance with the Extraction Plan and relevant component plans, as well as the methodology specified in the approved Rehabilitation Management Plan (approved as part of the *Springvale Mining Operations Plan 2018 – 2025*) and in consultation with relevant NSW Government Agencies and the landowner. During consultation and prior to implementation of any remedial measures, Springvale will determine the ongoing monitoring requirements.



## 11 CONSULTATION

As required by Schedule 3, Condition 10(h)(ii) of SSD 5594, this Built Features Management Plan has been prepared in consultation with DPIE.

Additional consultation was undertaken with RR and NSW Land Registry Services. A summary of stakeholder consultation has been provided as **Appendix 2**.

## 12 ADAPTIVE MANAGEMENT

Springvale has developed an adaptive management approach that is designed to avoid repetition of any unpredicted subsidence impacts and/or environmental consequences. This approach will include the monitoring and periodic evaluation of environmental consequences against the performance indicators defined in **Section 8.2**; the implementation of the contingency plan (**Section 13**) in the event that a performance indicator is exceeded; and the review of this Built Features Management Plan, as necessary (**Section 16**).

## 13 CONTINGENCY PLAN

A Trigger Action Response Plan (TARP) has been developed using the performance indicators for built features management. In the event that subsidence monitoring and/or visual inspections identify that a performance indicator has been exceeded, Springvale will implement the contingency measures as detailed in the TARP (refer **Table 13.1**).

Table 13.1: Trigger Action Response Plan

| Aspect/<br>Category | Key<br>Element           | Trigger<br>Response | Condition Green                                                                                                                                                                                                              | Condition Amber                                                                                                                                                                                                  | Condition Red                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Built<br>Features   | Subsidence<br>Monitoring | Trigger             | Survey monitoring within the Extraction Plan Area / EMMA identifies that: the maximum subsidence parameters are less than the maximum predicted; and that there has been no unpredicted irregular development of subsidence. | Survey monitoring within the Extraction Plan Area / EMMA identifies that: the maximum subsidence parameters exceed the maximum predicted; but there has been no unpredicted irregular development of subsidence. | Survey monitoring within the Extraction Plan Area / EMMA identifies that: significant unpredicted and/or higher-than-predicted subsidence and/or abnormalities in the development of subsidence.                                                                                                                                                                                                                                                                                     |
|                     |                          | Response            | No response required. Continue monitoring program.                                                                                                                                                                           | No response required. Continue monitoring program.<br>Investigate exceedance and review the subsidence prediction model at the completion of the longwall.                                                       | Notify the DPIE and RR of exceedance of subsidence predictions.<br>Notify of the exceedance and discuss implications with regard to potential future forestry activities within the Extraction Plan Area / EMMA.<br>Investigate exceedance and review the subsidence prediction model.<br>Identify and implement remedial actions in consultation with relevant stakeholders (including the landowner), if necessary (e.g. undertake review of this Built Features Management Plan). |

| Aspect/<br>Category | Key<br>Element                                | Trigger<br>Response | Condition Green                                                                                                                                            | Condition Amber                                                                                                                                                                                                                                                                                                                                                     | Condition Red                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-----------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | Surface<br>Cracking on<br>Roads and<br>Tracks | Trigger             | Surface cracking < 5 cm wide.                                                                                                                              | Surface cracking 5-10 cm wide.                                                                                                                                                                                                                                                                                                                                      | Surface cracking >10 cm wide.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                     |                                               | Response            | Continue monitoring program to confirm that cracks are adequately repaired naturally through sedimentation and infilling of vegetation and surface debris. | Notification of the landowner.<br>In response to observed impact, erect danger tape in the immediate area if considered a public danger.<br>Repair by grading after subsidence is complete, if required.<br>Repairs to the landowner roads/tracks to be completed in consultation with the landowner<br>Continue to monitor cracks and repairs over next 12 months. | Prompt notification of FCNSW.<br>In response to observed impact, danger tape in the immediate area if considered a public danger.<br>Repair cracks >20 cm in width with excavation and re-compaction.<br>A field inspection will be carried out by the Environment and Community Coordinator (for the landowner roads/tracks). Springvale will provide the landowner with an invitation to attend relevant inspections.<br>Repairs to roads/tracks to be completed in consultation with the landowner.<br>Continue to monitor cracks and repairs over next 12 months. |
|                     | Subsidence<br>impacts to<br>culverts          | Trigger             | Visual inspections identify that there have been no impacts to the safety and serviceability of the culverts                                               | Visual inspections identify that the safety or serviceability of the culverts have been compromised                                                                                                                                                                                                                                                                 | Visual inspections identify that the culverts are no longer safe or serviceable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                     |                                               | Response            | Continue monitoring program to confirm that culverts remain safe and serviceable.                                                                          | Notification of the landowner.<br>In response to observed impact, erect danger tape in the immediate area if considered a public danger.<br>Repair or replace culverts after subsidence is complete, if required.<br>Repairs to culverts to be completed in consultation with the landowner.                                                                        | Prompt notification of the landowner.<br>In response to observed impact, erect danger tape in the immediate area if considered a public danger.<br>Repair or replace culverts after subsidence is complete as required.<br>A field inspection will be carried out by the Environment and Community Coordinator. Springvale will provide the landowner with an invitation to attend relevant inspections.<br>Repairs to culverts to be completed in consultation with the landowner.                                                                                   |



## 14 ROLES AND RESPONSIBILITIES

The roles and responsibilities for this Built Features Management Plan are outlined in **Table 14.1**.

**Table 14.1: Key Personnel and Responsibilities**

| Position                              | Responsibility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mine Manager                          | <ul style="list-style-type: none"> <li>Ensuring that sufficient resources are available to implement and execute the requirements of this Plan.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Environment and Community Coordinator | <p>Implementation, monitoring and review of this Plan, including:</p> <ul style="list-style-type: none"> <li>Co-ordination of subsidence impact inspections with the landowner (if triggered);</li> <li>Reporting triggers/non-conformances internally to the Mine Manager, as appropriate;</li> <li>Consultation during the review process with relevant stakeholders and distributing this Plan;</li> <li>Coordinate and manage any remediation works undertaken by a third party as required with the landowner;</li> <li>Coordinate and manage environmental monitoring undertaken by a third party in accordance with this Plan;</li> <li>Coordinating the generation and submission of formal reporting requirements outlined in this Plan (e.g. Annual Review and Quarterly Environmental Monitoring Report);</li> <li>Reviewing this Plan; and</li> <li>Reporting triggers/non-conformances to external stakeholders.</li> </ul> |
| Mine Surveyor                         | <ul style="list-style-type: none"> <li>Coordinate and manage survey monitoring undertaken by a third party in accordance with this Plan;</li> <li>Review subsidence monitoring data;</li> <li>Providing subsidence monitoring data to the relevant agencies;</li> <li>Analysing survey data and compare against predictions;</li> <li>Reporting any exceedances to the Mine Manager, Technical Services Manager, Group Technical Services Manager, Mine Surveyor, and Environment and Community Coordinator;</li> <li>Investigating any subsidence exceedances;</li> <li>Reviewing the Subsidence Monitoring Program; and</li> <li>Maintain subsidence lines.</li> </ul>                                                                                                                                                                                                                                                                 |

## **15 REPORTING**

### **15.1 Environmental and Incident Reporting**

In accordance with the requirements of the *Draft Guidelines for the Preparation of Extraction Plans V5* (DPIE, 2015), Springvale will submit the following reports to the DPIE and RR as required:

- Incident reporting;
- Subsidence Impact Reports – these reports will be submitted bimonthly following the inspections if any new subsidence impacts are identified;
- Quarterly Environmental Monitoring Report (noting six-monthly reporting superseded by Longwalls 428-432 Extraction Plan Approval Condition 5) – this report will include:
  - A comprehensive summary of all impacts, including a revised characterisation according to the relevant TARP and any proposed actions resulting from the relevant TARP (refer **Section 13**);
  - An assessment of compliance with relevant performance indicators (refer **Section 8.2**); and
  - A comprehensive summary of all quantitative and qualitative environmental monitoring results.

Four reports will be submitted by 30 September, 31 December, and 30 June, and by the 31 March in the form of an Annual Review. The Annual Review will be made available on the Centennial Coal website and will include subsidence monitoring results, performance against subsidence predictions and identification of any subsidence related environmental impacts identified during the reporting period.

Springvale will notify the DPIE and the landowner as soon as practicable after becoming aware of any built features management related incident, and RR within 48 hours of the incident, resulting from the extraction of Longwalls 428-432. Within seven days of the incident, the Springvale will provide the DPIE, RR and/or the landowner with a detailed report on the incident.

### **15.2 WHS Incident Reporting**

Springvale has a duty to notify RR of high potential incidents, and notifiable incidents such as serious injury and illness and dangerous incidents as listed in the WHSMP 2014 Regulation. These are defined in Clause 128, 178 and 179.

In particular Dangerous incidents listed in Clause 179 (a)(i)(xv) that relate to this Built Features Management Plan include:

*(xv) – damage to any plant or structure.*

In accordance with Section 39 of the WHS Act, the scene of a notifiable incident will be preserved appropriately.

Reporting will be undertaken in accordance with Clause 128, 178 and 179 of the WHSMP Regulation, and Section 6 of Managing Risks of Subsidence Guide (RR, 2017):

- All reasonable steps must be undertaken to ensure that the regulator is notified after becoming aware of an incident.
- Notifications in accordance with the *Guide Notification of Incident and Injury* (RR, 2020) as per 'Other Incident' category, including:
  - Incidents should be reported to the RR 24-hour centralised notifications hotline on 1300 814 609;
  - Notification via the RR regulator portal for high potential incidents as soon as possible but no later than seven days of becoming aware of the incident (whichever is earlier) and for further information as required after initial phone notification of serious injury and dangerous incidents.
- Notify key stakeholders including the landowner as soon as practicable of the above.

## 16 REVIEW

### 16.1 General Review

This Built Features Management Plan will be reviewed every three years, or in the event that:

- Stakeholders raise issues that necessitate a review;
- There are changes to the management requirements (e.g. changes to related approvals);
- Where unpredicted impacts or consequences have required implementation of contingency actions under this plan; or
- Monitoring, incident, or audit processes demonstrate that a review is warranted.

Any amendments to this Built Features Management Plan will be undertaken in consultation with the DPIE.

Prior to completing revisions, Springvale will liaise with DPIE to confirm the requirements for submission and consultation (in accordance with Schedule 6, Condition 7 of SSD 5594). Following amendments, a copy of the revised Plan will be provided to the DPIE for approval.

### 16.2 Review Triggered by WHS Legislation Requirements

In addition to planning development consent requirements, Springvale must review and as necessary revise the risk control measures implemented for subsidence in accordance with Clause 10 of the WHSMP Regulation. Whilst this is primarily related to public safety under the Public Safety Management Plan, it is relevant to this Built Features Management Plan due to the built features that pose a potential risk to public safety (including public roads). The following describes the review process undertaken for the Public Safety Management Plan. Monitoring and review processes will provide essential feedback for:

- Detecting changes;
- Verifying the risk assessments previously conducted;
- Ensuring the effectiveness and reliability of risk control measures; and
- Supporting continual improvement and change management.

Springvale must ensure that any interpretation of subsidence information (e.g. reviewing the risk control measures for subsidence) is carried out only by a competent person.

In accordance with the *Guide to Managing Risks of Subsidence* (RR, 2017), the risk controls for subsidence should be reviewed and revised as necessary when:

**(1) a significant change from the assumptions used or the results of risk assessments is detected;**

*Note: A change (from the assumptions used or the results of risk assessments) is significant if the implemented risk controls may become less effective or ineffective as a result of this change.*

**(2) a significant change in the site-specific conditions is identified,**

*Note: A change in the site-specific conditions is significant if the implemented risk controls may become less effective or ineffective as a result of this change (e.g., identification of geological structures that may cause abnormal subsidence).*

**(3) there are early warnings of abnormal subsidence where significant surface or subsurface features exist,**

*Note: In the context of subsidence risk management, the significance of surface or subsurface features is determined by the severity of the potential health and safety consequences if these features are adversely affected by subsidence*

**(4) the control measure does not control the risk it was implemented to control so far as is reasonably practicable,**



- (5) a new relevant hazard or risk is identified,*
- (6) the results of consultation indicate that a review is necessary,*
- (7) an incident or notifiable incident has occurred, or*
- (8) the results of an audit indicate that a review is necessary.*

## 17 REFERENCES

- Centennial Coal. (2014). *Angus Place and Springvale Mine Extension Projects Response to Response to Submissions*.
- Centennial Coal. (2014). *Response to Submissions Springvale Mine Extension Project*.
- Centennial Coal. (2018). *Springvale Mining Operations Plan 2018 – 2025*.
- Centennial Coal. (2019). *Extraction Plans Standard*.
- Department of Planning and Environment - Division of Resources and Geoscience. (2015). *Exploration Code of Practice: Rehabilitation*.
- DPIE. (2015). *Draft Guidelines for the Preparation of Extraction Plans V5*.
- Energy Serve. (2020). *Review of Mine Subsidence Impact of Longwalls 428 - 432 on Endeavour Energy's 66kV Feeder 811/2 – Springvale Colliery-Clarence Colliery*.
- Energy Serve. (2020). *Review of Mine Subsidence Impact of Longwalls 428-432 on Centennial Coal's 11kV Overhead Line – Springvale Colliery*.
- Golder Associates. (2014). *Springvale Mine Extension Project – State Significant Development 5594*.
- Jacobs and RPS. (2022). *Longwalls 415-432 Swamp Monitoring Program*.
- MSEC. (2013). *Springvale Colliery Mine Extension Project Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Environmental Impact Statement for the Proposed Longwalls 416 to 432 and 501 to 503 in the Lithgow Seam*.
- MSEC. (2018). *Springvale Colliery Extraction Plan for LW424 to LW427. Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan for Longwalls 424 to 427 in the Lithgow Seam*.
- MSEC. (2022). *Springvale Colliery – LW428 to LW432 Subsidence Predictions and Impact Assessments for the Natural and Built Features due to the Mining of the Proposed LW428 to LW432 in Support of the Extraction Plan Application*.
- PBE. (2020). *Springvale 66/11kV Substation Assessment*.
- RR. (2017). *Managing Risks of Subsidence*.
- RR. (2020). *Guide Notification of Incident and Injury*.
- SLR. (2021). *Longwalls 428-432 Powerline Management Plan*.

## **APPENDIX 1: RELEVANT REGULATORY REQUIREMENTS**



# Relevant Regulatory Requirements

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## A1.1 Development Consent Conditions, EIS and Statement of Commitments

In addition to the key specific conditions of Development Consent SSD 5594 for the preparation of Extraction Plans and supporting Sub-Plans, **Tables A1.1.1** and **A1.1.2** below describe other relevant requirements of the consent and EIS documentation. These include the Springvale Mine Extension Project EIS (Golder Associates 2014), and the Response to Submissions (Centennial 2014a). There were no relevant commitments for inclusion from the Response to the Response to Submissions (Centennial 2014b).

**Table A1.1.1: Other Relevant Conditions of Development Consent SSD 5594**

| Condition                                                                           | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Section Addressed                                                                                                                                          |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SCHEDULE 2</b>                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                            |
| Condition 1<br>( <i>Obligation to minimise harm to the environment</i> )            | In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Extraction Plan and all supporting Sub-Plans.                                                                                                              |
| Condition 2                                                                         | The Applicant must carry out the development:<br>(a) Generally in accordance with the EIS;<br>(b) In accordance with the Development Layout Plan and the Statement of Commitments; and<br>(c) In accordance with the conditions of this consent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Tables A1.1.1, A1.1.2 (see below).<br>Extraction Plan, all supporting Sub-Plans.                                                                           |
| <b>SCHEDULE 3</b>                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                            |
| Condition 1<br>( <i>Performance Measures – Natural and Heritage Features etc.</i> ) | The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 1, to the satisfaction of the Secretary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Extraction Plan and all supporting Sub-Plans.                                                                                                              |
| Condition 2                                                                         | The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the performance measures in Table 1. Any exceedance of these performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation, notwithstanding actions taken pursuant to paragraphs (a)-(c) or condition 4 below. Where any exceedance of these performance measures has occurred, the Applicant must, at the earliest opportunity:<br>(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;<br>(b) consider all reasonable and feasible options for remediation and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and<br>(c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary. | Risk Assessment.<br>Relevant sections of Extraction Plan supporting Sub-Plans (Section 12 Adaptive Measurement, and Section 13 Contingency Plan and TARP). |



| Condition                                                 | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Section Addressed                                                                                                |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Condition 5<br>(Swamp Offsets for all other Shrub Swamps) | <p>Prior to the commencement of mining operations under an approved Extraction Plan which are predicted to cause greater than negligible environmental consequences to either Gang Gang South West, Gang Gang East, Pine, Pine Upper, Paddys, Marangaroo Creek or Marrangaroo Creek Upper Swamp, the Applicant shall demonstrate that it can satisfy the maximum predicted offset liability for the total area of swamp(s) predicted to be impacted under that Extraction Plan.</p> <p>If, after 12 months of completion of all mining under this consent within 400 metres of any of these shrub swamps, monitoring demonstrates that no greater than 'negligible environmental consequences' have resulted to the swamp from mining under this consent, to the satisfaction of the Secretary, then the Applicant will not be required to secure the offset or retire the credits relating to that swamp.</p> <p>If monitoring demonstrates that greater than 'negligible environmental consequences' have resulted to any of these shrub swamps from mining under this consent, and that these consequences have stabilised for a period of at least 12 months, then the Applicant must offset the environmental consequences to that swamp to the satisfaction of the Secretary within any period specified by the Secretary.</p> <p>The offset liability will be set by the Secretary in consultation with OEH, following consideration of:</p> <ul style="list-style-type: none"> <li>(a) the estimated liability using the Framework for Biodiversity Assessment in accordance with the NSW Biodiversity Offsets Policy for Major Projects; and</li> <li>(b) advice from the Independent Monitoring Panel that will be established by the Secretary for the development.</li> </ul> | Monitoring, management and offsets outlined in the Swamp Monitoring Program.                                     |
| Condition 6<br>(Swamp Offsets for all other Shrub Swamps) | <p>As part of each Extraction Plan for mining within 400 metres of the swamps subject to condition 5 above, the Applicant must:</p> <ul style="list-style-type: none"> <li>(a) calculate the maximum predicted offset liability for any environmental consequences on these swamps that may result from the proposed mining using the Framework for Biodiversity Assessment in accordance with the NSW Biodiversity Offsets Policy for Major Projects; and</li> <li>(b) demonstrate that it has suitable arrangements in place to deal with these liabilities quickly in the event that offsets are required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Swamp Monitoring Program.                                                                                        |
| Condition 7<br>(Performance Measures – Built Features)    | The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 2, to the satisfaction of the Secretary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Extraction Plan and all supporting Sub-Plans (Section 8 Performance Measures and Section 9 Management Measures). |
| Condition 9<br>(First Workings)                           | Subject to condition 10 below, the Applicant may carry out first workings within the underground mining area, other than in accordance with an approved Extraction Plan, provided that the Department is satisfied that the first workings are designed to remain stable and non-subsiding in the long-term, except insofar as they may be impacted by approved second workings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | First workings are designed to be long-term stable.                                                              |

| Condition                         | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Section Addressed                                                                                                                              |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition 10<br>(Extraction Plan) | The Applicant shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Secretary. Each Extraction Plan must:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Extraction Plan and all supporting Sub-Plans.<br>Extraction Plan Main Document Section 2.4 (team endorsed by DPIE in letter dated 12/05/2020). |
|                                   | (a) be prepared in consultation with the Department and by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                |
|                                   | (b) be approved by the Secretary before the Applicant carries out any of the second workings covered by the plan;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Extraction Plan Main Document Section 2.4.                                                                                                     |
|                                   | (c) include detailed plans of existing and proposed first and second workings and overlying surface features, including any applicable adaptive management measures;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Extraction Plan A0 Plans.<br>Extraction Plan supporting Sub-Plans Section 9 (Management Measures).                                             |
|                                   | (d) include adequate consideration of mine roof and floor conditions, pillar width to height ratio, final pillar design dimensions and the long-term stability of pillars which has been undertaken in consultation with the Department;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Extraction Plan Main Document Section 3.1.                                                                                                     |
|                                   | (e) provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed mining covered by the Extraction Plan, incorporating any relevant information obtained since this consent;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Extraction Plan Main Document Sections 3 and Sub-Plans Section 7.2, MSEC 2020.                                                                 |
|                                   | (f) provide revised predictions for potential environmental consequences on affected shrub swamps and the social and economic costs of avoiding these consequences;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Swamp Monitoring Program, MSEC 2020.                                                                                                           |
|                                   | (g) describe in detail the performance indicators that would be implemented to ensure compliance with the performance measures in Tables 1 and 2, and manage or remediate any impacts and/or environmental consequences to meet the rehabilitation objectives in condition 30 of Schedule 4;                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Extraction Plan Main Document Section 3.5.2 and all supporting Sub-Plans Section 8 (Performance Measures and Indicators).                      |
|                                   | (h) include a:<br>i. Subsidence Monitoring Program which has been prepared in consultation with the Department to:<br>• describe the ongoing conventional and non-conventional subsidence monitoring program;<br>• provide data to assist with the management of risks associated with conventional and non-conventional subsidence;<br>• validate the conventional and non-conventional subsidence predictions;<br>• analyse the relationship between the predicted and resulting conventional and non-conventional subsidence effects and predicted and resulting impacts under the plan and any ensuring environmental consequences; and<br>• inform the contingency plan and adaptive management process in paragraphs (ix) and (x) below; | Subsidence Monitoring Program (SMP).                                                                                                           |

| Condition | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Section Addressed                                                                           |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|           | <p>ii. Built Features Management Plan which has been prepared in consultation with the Department, to manage the potential subsidence impacts of the proposed underground workings on built features, and which:</p> <ul style="list-style-type: none"> <li>• has been prepared in consultation with the owner/s of potentially affected feature/s;</li> <li>• addresses in appropriate detail all items of key public infrastructure and other public infrastructure and all classes of other built features;</li> <li>• recommends appropriate pre-mining mitigation measures to reduce subsidence impacts; and</li> <li>• recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate predicted impacts on potentially affected built features in a timely manner;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Built Features Management Plan (BFMP), Powerline Management Plan, Property Management Plan. |
|           | <p>iii. Water Management Plan which has been prepared in consultation with DPI-Water, WaterNSW and the Independent Monitoring Panel (required by condition 11), which provides for the management of potential impacts and/or environmental consequences of the proposed underground workings on watercourses and aquifers, including:</p> <ul style="list-style-type: none"> <li>• detailed baseline data on: <ul style="list-style-type: none"> <li>– surface water flows and quality in water bodies that could be affected by subsidence, including Wolgan River, Carne Creek, Marangaroo Creek, Coxs River and all major associated tributaries;</li> <li>– groundwater levels, yield and quality in the region;</li> </ul> </li> <li>• surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality;</li> <li>• a surface water monitoring program to monitor and report on: <ul style="list-style-type: none"> <li>– stream flows and quality;</li> <li>– stream and riparian vegetation health;</li> <li>– channel and bank stability;</li> </ul> </li> <li>• a groundwater monitoring program to monitor and report on: <ul style="list-style-type: none"> <li>– springs, their discharge quantity and quality, as well as associated groundwater dependent ecosystems;</li> <li>– groundwater inflows to the underground mining operations;</li> <li>– the height of groundwater depressurization;</li> <li>– background changes in groundwater yield/quality against mine-induced changes, in particular, on groundwater bore users in the vicinity of the site;</li> <li>– permeability, hydraulic gradient, flow direction and connectivity of the deep and shallow groundwater aquifers;</li> <li>– impacts of the development on upland swamps (refer to condition 10 below) and other groundwater dependent ecosystems;</li> </ul> </li> <li>• a description of any adaptive management practices implemented to guide future mining activities in the event of greater than predicted impacts on aquatic habitat;</li> <li>• a program to validate the surface water and groundwater models for the development, and compare monitoring results with modelled predictions; and</li> <li>• a plan to respond to any exceedances of the surface water and groundwater assessment criteria;</li> </ul> | Water Management Plan.                                                                      |

| Condition | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section Addressed                                  |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
|           | iv. Biodiversity Management Plan which has been prepared in consultation with OEH and the Independent Monitoring Panel, which provides for the management of potential impacts and/or environmental consequences of the proposed second workings on aquatic and terrestrial flora and fauna, with a specific focus on threatened species, populations and their habitats and EECs, including a management and research program for the Blue Mountains Water Skink ( <i>Eulamprus leuraensis</i> );                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | BMP                                                |
|           | v. Swamp Monitoring Program which has been prepared in consultation with OEH, DPI-Water, WaterNSW and the Independent Monitoring Panel, and which includes (as a minimum): <ul style="list-style-type: none"> <li>• further consideration of the location of existing piezometers and the installation of upslope and downslope piezometers in all shrub swamps, in order to better understand the down-slope movement of shallow groundwater;</li> <li>• installation of flow monitoring points in all shrub swamps;</li> <li>• measures to record the nature and condition of terrestrial and aquatic flora and fauna within all shrub swamps and selected hanging swamps;</li> <li>• measures to characterise soils or peat layers within the swamps to determine: <ul style="list-style-type: none"> <li>– porosity;</li> <li>– a basis for relating water levels to rainfall and evapotranspiration; and</li> <li>– the presence, or absence, of clay materials at the interface with the underlying bedrock;</li> </ul> </li> <li>• a program for monthly review of the water balance of all monitored swamps based on recorded rainfall, estimated evapotranspiration and recorded surface and shallow groundwater levels and outflow measurements;</li> <li>• detailed performance indicators for the relevant performance measures in Table 1, including performance indicators relating to surface and shallow groundwater levels and outflow measurements;</li> <li>• assessment of any post-mining impacts on the incision feature in Sunnyside East Swamp;</li> <li>• specific consideration of subsidence impacts on and environmental consequences to hanging swamps;</li> <li>• consideration of a minimum of 2 years of baseline data for swamp hydrology and swamp vegetation;</li> <li>• hydrological and vegetative monitoring which fully satisfies Before After Control Impact (BACI) design principles;</li> <li>• provision of raw piezometer and other monitoring data to the Department, OEH and the Independent Monitoring Panel, if requested; and</li> <li>• incorporation of any relevant findings from swamp research projects into the swamp monitoring program;</li> </ul> | Swamp Monitoring Program.                          |
|           | vi. Land Management Plan which has been prepared in consultation with OEH and any other affected public authorities, which provides for the management of potential impacts and/or environmental consequences of the proposed underground workings on land in general, with a specific focus on cliffs, minor cliffs, pagoda formations, steep slopes and gorges;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Land Management Plan (LMP).                        |
|           | vii. Heritage Management Plan which has been prepared in consultation with OEH and relevant stakeholders for both Aboriginal and non-Aboriginal heritage, which provides for the management of potential environmental consequences of the proposed second workings on Aboriginal and non-Aboriginal heritage and includes all requirements under condition 24 of Schedule 4;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Heritage management has been addressed in the LMP. |
|           | viii. Public Safety Management Plan which has been prepared in consultation with the Department and OEH, which ensures public safety and manages access on the site;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Public Safety Management Plan (PSMP).              |



| Condition                                             | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section Addressed                                                                                           |
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|                                                       | ix. TARPs addressing all features in Tables 1 and 2, which contain: <ul style="list-style-type: none"> <li>appropriate triggers to warn of increased risk of exceedance of any performance measure; and</li> <li>specific actions to respond to high risk of exceedance of any performance measure to ensure that the measure is not exceeded;</li> <li>an assessment of remediation measures that may be required if exceedances occur and the capacity to implement the measures;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Extraction Plan Main Document Section 5.1 and all supporting Sub-Plans Section 13 (Contingency Plan).       |
|                                                       | x. Contingency Plan that expressly provides for: <ul style="list-style-type: none"> <li>adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 1 and 2, or where any such exceedance appears likely; and</li> <li>an assessment of remediation measures that may be required if exceedances occur and the capacity to implement those measures;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Extraction Plan Main Document Section 5.2 and all supporting Sub-Plans Section 13 (Contingency Plan).       |
|                                                       | xi. proposes appropriate revisions to the Rehabilitation Management Plan required under condition 32 in Schedule 4; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The Rehabilitation Management Plan/MOP will be revised to reflect relevant aspects of this Extraction Plan. |
|                                                       | xii. includes a program to collect sufficient baseline data for future Extraction Plans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Extraction Plan and all supporting Sub-Plans Section 6 (Baseline Data).                                     |
| Condition 11<br><i>(Independent Monitoring Panel)</i> | <p>An Independent Monitoring Panel for the development will be established by the Secretary, and be comprised of suitably qualified experts in the fields of mining subsidence, upland swamps and landforms of the western Blue Mountains. The role of the Panel is to provide timely, accurate and focussed advice to the Applicant and the Secretary regarding the:</p> <ul style="list-style-type: none"> <li>(a) collection of relevant data to predict and monitor the potential subsidence impacts and environmental consequences of second workings;</li> <li>(b) achievement of performance measures in Table 1 in respect of Swamps, Land and Biodiversity, including relevant performance indicators, including avoidance of impacts where reasonable and feasible, rather than relying on remediation and offsets;</li> <li>(c) preparation, revision and implementation of Extraction Plans, particularly the Swamp Monitoring Program, Biodiversity Management Plan and Land Management Plan components;</li> <li>(d) undertaking iterative risk assessment in Extraction Plans, including consideration of all options for avoiding or minimising damage to swamps and all possible adaptive management measures;</li> <li>(e) appropriate implementation of the swamp and groundwater monitoring programs and adaptive management regime throughout the life of the project; and</li> <li>(f) calculation of swamp offset liability and verification of calculated swamp offset liability under conditions 4 and 5 of Schedule 3.</li> </ul> | Swamp Monitoring Program, BMP, and LMP prepared in consultation with the IMP.                               |

| Condition                                                         | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section Addressed                                                                                                                                                                                                                                                                                                                                              |
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| <b>SCHEDULE 6</b>                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                |
| Condition 6<br><i>(Revision of Strategies, Plans or Programs)</i> | <p>Within 3 months of:</p> <ul style="list-style-type: none"> <li>(a) The submission of an incident report under Condition 10 (Sch6);</li> <li>(b) The submission of an annual review under Condition 12 (Sch6)</li> <li>(c) The submission of an audit under Condition 13 (sch6); or</li> <li>(d) Any modification to the conditions of this consent (unless the conditions require otherwise),</li> </ul> <p>the Applicant must review the strategies, plans or programs required under this consent, to the satisfaction of the secretary. Where this leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.</p> <p><i>Note: this is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve the environmental performance of the development</i></p> | <p>Extraction Plan Section 5.5 and Sub-Plans Section 16 (Review).</p> <p>Prior to completing revisions, Springvale will liaise with DPIE to confirm the requirements for submission and consultation (in accordance with Schedule 6, Condition 7 of SSD 5594). Following amendments, a copy of the revised Plan will be provided to the DPIE for approval.</p> |
| Condition 8<br><i>(Adaptive Management)</i>                       | <p>The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the performance measures and/or criteria in Schedules 3 and 4.</p> <p>.... Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:</p> <ul style="list-style-type: none"> <li>(a) Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;</li> <li>(b) Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and</li> <li>(c) Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.</li> </ul>                                                                                   | <p>Extraction Plan Section 2.2 (Risk Assessments), Extraction Plan Sub-Plans Section 9 (Management Measures) and Section 12 (Adaptive Management).</p>                                                                                                                                                                                                         |
| Condition 10<br><i>(Incident Reporting)</i>                       | <p>The applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident the applicant must provide the secretary and any relevant agencies with a detailed report on the incident and such further reports as may be requested.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Extraction Plan Sub-Plans Section 15.1 (Incident Reporting).</p>                                                                                                                                                                                                                                                                                            |
| Condition 11<br><i>(Regular Reporting)</i>                        | <p>The applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Extraction Plan Sub-Plans Section 15 (Reporting).</p>                                                                                                                                                                                                                                                                                                       |

| Condition                               | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Section Addressed                                   |
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| Condition 15<br>(Access to Information) | <p>Within 3 months from the date of this consent, the Applicant shall:</p> <ul style="list-style-type: none"> <li>(a) make copies of the following publicly available on its website: <ul style="list-style-type: none"> <li>• the EIS;</li> <li>• all current statutory approvals for the development;</li> <li>• approved strategies, plans and programs required under the conditions of this consent;</li> <li>• a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent;</li> <li>• a complaints register, which is to be updated on a monthly basis;</li> <li>• minutes of CCC meetings;</li> <li>• the last five annual reviews;</li> <li>• information provided to and recommendations made by the Independent Monitoring Panel;</li> <li>• any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;</li> <li>• any other matter required by the Secretary; and</li> </ul> </li> <li>(b) keep this information up-to-date,</li> </ul> <p>to the satisfaction of the Secretary.</p> | Extraction Plan Sub-Plans<br>Section 15 (Reporting) |

Table A1.1.2: Relevant Requirements of the Revised Statements of Commitments submitted with the Response to Submissions (Centennial, 2014a)

| Relevant Section                                                                                           | Requirement / Commitment Details                                                                                                                                                                                                                                                                                                                                 | Section Addressed                                                                          |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| STATEMENT OF COMMITMENTS                                                                                   |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |
| 1. General                                                                                                 | <ul style="list-style-type: none"> <li>Operations will be undertaken in accordance with the description provided in this EIS.</li> <li><i>Centennial Springvale will develop Trigger Action Response Plans as part of the development of the certain management plans which will detail the response to be taken if mining induced impacts occur.</i></li> </ul> | Extraction Plan Main Document Sections 5 Sub-Plans Sections 13 (Contingency plan and TARP) |
| 5. Surface Water, Groundwater, Geomorphology and Aquatic                                                   | <ul style="list-style-type: none"> <li>Within six (6) months of development consent, a Water Management Plan will be developed that includes the monitoring requirements identified in Section 10.2.5 of the EIS.</li> </ul>                                                                                                                                     | Western Region Water Management Plan, Water Management Plan                                |
|                                                                                                            | <ul style="list-style-type: none"> <li>The Water Management Plan will be developed in consultation with the NSW Office of Water.</li> </ul>                                                                                                                                                                                                                      |                                                                                            |
|                                                                                                            | <ul style="list-style-type: none"> <li>Springvale Coal will commit to notify NSW Fisheries if any monitoring detects significant impacts to third order drainage lines as a result of subsidence.</li> </ul>                                                                                                                                                     | Land Management Plan and Water Management Plan                                             |
| 6. Terrestrial and Aquatic Ecology                                                                         | <ul style="list-style-type: none"> <li>Within two (2) years of development consent, a Biodiversity Management Plan will be developed and implemented. The Plan will be developed in consultation with DPIE, OEH, DoE, Forestry Corporation of NSW, NPWS and will include the outcomes of the Research Strategy.</li> </ul>                                       | Western Region Biodiversity Management Plan                                                |
| 7. Aboriginal Heritage Management                                                                          | <ul style="list-style-type: none"> <li>Aboriginal Heritage will be monitored and managed in accordance with Table 8.2 of this EIS.</li> <li>Within 6 months of the date of approval, the Cultural Heritage Management Plan will be updated.</li> </ul>                                                                                                           | Western Region Cultural Heritage Management Plan, LMP                                      |
| <i>Note: Statement of Commitments above included revised SOC presented in the RTS. Changes in italics.</i> |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |



## A1.2 WHS (Mines and Petroleum) Legislation

**Table 2.2.1** below summarises key requirements of relevant Regulations under Work Health and Safety legislation applicable to mines and where these are addressed in the **Public Safety Management Plan** (PSMP) which forms the *Principal Hazard Management Plan* for subsidence in relation to WHS requirements for the Extraction Plan Area. It is noted that related *Guide to Managing Risks of Subsidence (WHS Mines and Petroleum Legislation)* (Resources Regulator, 2017) are addressed separately below in **Section A1.6**.

**Table A1.2.1: Summary of Additional WHS Regulations Relating to Mine Subsidence**

| Clause                           | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Where Addressed in PSMP                                                                                  |
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| WHS Regulation 2017<br>Clause 34 | <b>Duty to identify hazards</b><br>A duty holder, in managing risks to health and safety, must identify reasonably foreseeable hazards that could give rise to risks to health and safety.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section 7.3 (Predicted Impacts)<br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment     |
| WHS Regulation 2017<br>Clause 35 | <b>Managing risks to health and safety</b><br>A duty holder, in managing risks to health and safety, must:<br>(a) eliminate risks to health and safety so far as is reasonably practicable, and<br>(b) if it is not reasonably practicable to eliminate risks to health and safety, minimise those risks so far as is reasonably practicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Section 9 (Management Measures)                                                                          |
| WHS Regulation 2017<br>Clause 36 | <b>Hierarchy of control measures</b><br>(1) This clause applies if it is not reasonably practicable for a duty holder to eliminate risks to health and safety.<br>(2) A duty holder, in minimising risks to health and safety, must implement risk control measures in accordance with this clause.<br>(3) The duty holder must minimise risks, so far as is reasonably practicable, by doing 1 or more of the following:<br>(a) substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk,<br>(b) isolating the hazard from any person exposed to it,<br>(c) implementing engineering controls.<br>(4) If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls.<br>(5) If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by ensuring the provision and use of suitable personal protective equipment.<br><b>Note.</b> A combination of the controls set out in this clause may be used to minimise risks, so far as is reasonably practicable, if a single control is not sufficient for the purpose. | Section 9 (Management Measures)<br><br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |

| Clause                           | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Where Addressed in PSMP                                                                                       |
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| WHS Regulation 2017<br>Clause 37 | <b>Maintenance of control measures</b><br>A duty holder who implements a control measure to eliminate or minimise risks to health and safety must ensure that the control measure is, and is maintained so that it remains, effective, including by ensuring that the control measure is and remains: <ul style="list-style-type: none"> <li>(a) fit for purpose, and</li> <li>(b) suitable for the nature and duration of the work, and</li> <li>(c) installed, set up and used correctly.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Sections 9 (Management Measures), 10 (Monitoring Program), 12 (Adaptive Management) and 13 (Contingency Plan) |
| WHS Regulation 2017<br>Clause 38 | <b>Review of control measures</b><br>(1) A duty holder must review and as necessary revise control measures implemented under this Regulation so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety.<br>(2) Without limiting subclause (1), the duty holder must review and as necessary revise a control measure in the following circumstances: <ul style="list-style-type: none"> <li>(a) the control measure does not control the risk it was implemented to control so far as is reasonably practicable,</li> <li>(b) before a change at the workplace that is likely to give rise to a new or different risk to health or safety that the measure may not effectively control,</li> <li>(c) a new relevant hazard or risk is identified,</li> <li>(d) the results of consultation by the duty holder under the Act or this Regulation indicate that a review is necessary,</li> <li>(e) a health and safety representative requests a review under subclause (4).</li> </ul> (3) Without limiting subclause (2) (b), a change at the workplace includes: <ul style="list-style-type: none"> <li>(a) a change to the workplace itself or any aspect of the work environment, or</li> <li>(b) a change to a system of work, a process or a procedure.</li> </ul> (4) A health and safety representative for workers at a workplace may request a review of a control measure if the representative reasonably believes that: <ul style="list-style-type: none"> <li>(a) a circumstance referred to in subclause (2) (a), (b), (c) or (d) affects or may affect the health and safety of a member of the work group represented by the health and safety representative, and</li> <li>(b) the duty holder has not adequately reviewed the control measure in response to the circumstance.</li> </ul> | Section 16 (Review)<br><br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                  |

| Clause                                                      | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Where Addressed in PSMP                                                                                                                                                                                   |
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| WHS Regulation (Mines and Petroleum Sites) 2014<br>Clause 9 | <p><b>Management of risks to health and safety</b> (cl 617 model WHS Regs)</p> <p>(1) A person conducting a business or undertaking at a mine must manage risks to health and safety associated with mining operations at the mine in accordance with Part 3.1 of the WHS Regulations.</p> <p>(2) A person conducting a business or undertaking at a mine must ensure that a risk assessment is conducted in accordance with this clause by a person who is competent to conduct the particular risk assessment having regard to the nature of the hazard.</p> <p>(3) In conducting a risk assessment, the person must have regard to:</p> <ul style="list-style-type: none"> <li>(a) the nature of the hazard, and</li> <li>(b) the likelihood of the hazard affecting the health or safety of a person, and</li> <li>(c) the severity of the potential health and safety consequences.</li> </ul> <p>(4) Nothing in subclause (3) limits the operation of any other requirement to conduct a risk assessment under this Regulation.</p> <p>(5) A person conducting a business or undertaking at a mine (who is the mine operator of the mine or who is a contractor) must keep a record of the following:</p> <ul style="list-style-type: none"> <li>(a) each risk assessment conducted under this clause and the name and competency of the person who conducted the risk assessment,</li> <li>(b) the control measures implemented to eliminate or minimise any risk that was identified through any such risk assessment.</li> </ul> <p>(6) A person conducting a business or undertaking at a mine is not required to keep a record of a risk assessment if:</p> <ul style="list-style-type: none"> <li>(a) the risk assessment is one that an individual worker is required to carry out before commencing a particular task, and</li> <li>(b) the person keeps a record of risk assessments that addresses the overall activity being undertaken (of which the task forms a part) such as risk assessments carried out in relation to the development of the safety management system for the mine or for a principal mining hazard management plan.</li> </ul> <p>(7) The record kept under subclause (5):</p> <ul style="list-style-type: none"> <li>(a) if kept by a mine operator—forms part of the safety management system of the mine and the records of the mine, or</li> <li>(b) if kept by a contractor who has prepared a contractor health and safety management plan—forms part of the plan.</li> </ul> | <p>Section 9 (management Measures) and Section 10 (Monitoring Program)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> <p>Springvale Mine Safety Management System (SMS)</p> |

| Clause                                                                                                                   | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Where Addressed in PSMP                                                                                                                                                                                                           |
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| WHS Regulation (Mines and Petroleum Sites)<br>Clause 10                                                                  | <p><b>Review of control measures</b> (cl 618 model WHS Regs)</p> <p>(1) A person conducting a business or undertaking at a mine must review and as necessary revise control measures implemented under clause 9 in the following circumstances:</p> <ul style="list-style-type: none"> <li>(a) an audit of the effectiveness of the safety management system for the mine indicates a deficiency in a control measure,</li> <li>(b) a worker is moved from a hazard or assigned to different work in response to a recommendation contained in a health monitoring report provided under Part 3,</li> <li>(c) an incident referred to in clause 128 occurs,</li> <li>(d) any other incident occurs that is required to be notified to the regulator under the WHS laws.</li> </ul> <p>(2) The mine operator of a mine must ensure that a control measure that is the subject of a request by a health and safety representative under clause 38 (4) of the WHS Regulations is reviewed and as necessary revised, whether the request is made to the mine operator or notified to the mine operator under subclause (3) by another person conducting a business or undertaking at the mine.</p> <p>(3) A person conducting a business or undertaking at the mine who is not the mine operator of the mine must immediately notify the mine operator of a request made to the person under clause 38 (4) of the WHS Regulations.</p> <p>(4) A health and safety representative for workers at the mine may request a review of a control measure under clause 38 (4) of the WHS Regulations as if the circumstances referred to in subclause (1) were included as a circumstance in clause 38 (4) (a) of the WHS Regulations.</p> | <p>Sections 15 (Reporting),<br/>Section 16 (Review)</p> <p>Appendix 2 of Extraction Plan<br/>Main Document – WHS Risk<br/>Assessment</p>                                                                                          |
| WHS Regulation (Mines and Petroleum Sites)<br>Clause 23<br><br>Identification of principal mining hazard management plan | <p>(1) The mine operator of a mine must identify all principal mining hazards associated with mining operations at the mine.</p> <p>(2) The mine operator must conduct, in relation to each principal mining hazard identified, a risk assessment that involves a comprehensive and systematic investigation and analysis of all aspects of risk to health and safety associated with the principal mining hazard.</p> <p>(3) The mine operator, in conducting a risk assessment under subclause (2), must:</p> <ul style="list-style-type: none"> <li>(a) use investigation and analysis methods that are appropriate to the principal mining hazard being considered, and</li> <li>(b) consider the principal mining hazard individually and also cumulatively with other hazards at the mine.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Section 4.5.1 (Subsidence as a Principal Hazard)</p> <p>Appendix 2 of Extraction Plan<br/>Main Document – WHS Risk<br/>Assessment</p> <p>Centennial Risk Management<br/>System – consistent with<br/>AS/NZS ISO 31000:2009</p> |



| Clause                                                                                                                        | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Where Addressed in PSMP                                                                                                                                                                                                                                                              |
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| <p>WHS Regulation (Mines and Petroleum Sites)<br/>Clause 24</p> <p>Preparation of principal mining hazard management plan</p> | <p>(1) The mine operator of a mine must consider the following when preparing a principal mining hazard management plan for a principal mining hazard at the mine in accordance with this clause and Schedule 1.</p> <p>(2) A principal mining hazard management plan must:</p> <ul style="list-style-type: none"> <li>(a) provide for the management of all aspects of risk control in relation to the principal mining hazard, and</li> <li>(b) so far as is reasonably practicable, be set out and expressed in a way that is readily understandable by persons who use it.</li> </ul> <p>(3) A principal mining hazard management plan must:</p> <ul style="list-style-type: none"> <li>(a) describe the nature of the principal mining hazard to which the plan relates, and</li> <li>(b) describe how the principal mining hazard relates to other hazards associated with mining operations at the mine, and</li> <li>(c) describe the analysis methods used in identifying the principal mining hazard to which the plan relates, and</li> <li>(d) include a record of the most recent risk assessment conducted in relation to the principal mining hazard, and</li> <li>(e) describe the investigation and analysis methods used in determining the control measures to be implemented, and</li> <li>(f) describe all control measures to be implemented to manage risks to health and safety associated with the principal mining hazard, and</li> <li>(g) describe the arrangements in place for providing the information, training and instruction required by clause 39 of the WHS Regulations in relation to the principal mining hazard, and</li> <li>(h) refer to any design principles, engineering standards and technical standards relied on for control measures for the principal mining hazard, and</li> <li>(i) set out the reasons for adopting or rejecting each control measure considered.</li> </ul> <p>(4) The mine operator of a mine must consider the following when preparing a principal mining hazard management plan for a principal mining hazard at the mine:</p> <ul style="list-style-type: none"> <li>(a) the matters set out in Schedule 1 in respect of the principal mining hazard, and</li> <li>(b) any other matter relevant to managing the risks associated with the principal mining hazard at the mine.</li> </ul> | <p>Section 7.1 (Relevant Features), 7.2 (Subsidence Predictions), Section 9 (Management Measures)</p> <p>Other hazards, training, addressed in site SMS</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> <p>Supported by MSEC (2013) and MSEC (2020)</p> |
| <p>WHS Regulation (Mines and Petroleum Sites)<br/>Clause 67</p> <p>Subsidence</p>                                             | <p>(1) In complying with clause 9, the mine operator of an underground coal mine must manage risks to health and safety associated with subsidence at the mine.</p> <p>(2) Without limiting subclause (1), the mine operator must ensure that:</p> <ul style="list-style-type: none"> <li>(a) so far as is reasonably practicable, the rate, method, layout, schedule and sequence of mining operations do not put the health and safety of any person at risk from subsidence, and</li> <li>(b) monitoring of subsidence is conducted, including monitoring of its effects on relevant surface and subsurface features, and</li> <li>(c) any investigation of subsidence and any interpretation of subsidence information is carried out only by a competent person, and</li> <li>(d) all subsidence monitoring data is provided to the regulator in the form and at the times required by the regulator, and</li> <li>(e) so far as is reasonably practicable, procedures are implemented for the effective consultation, co-operation and co-ordination of action with respect to subsidence between the mine operator and relevant persons conducting any business or undertaking that is, or is likely to be, affected by subsidence</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Springvale SMS</p> <p>Sections 9 (Management Measures), Section 10 (Monitoring Program), Section 11 (Consultation), Section 13 (Contingency Plan), Section 15 (Reporting)</p>                                                                                                     |

| Clause                                                                                                                                                                       | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Where Addressed in PSMP                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <p>WHS Regulation (Mines and Petroleum Sites)<br/>Clause 128</p> <p>Duty to notify regulator of certain incidents</p>                                                        | <p>(1) The operator of a mine or petroleum site must take all reasonable steps to ensure that the regulator is notified in accordance with this clause after becoming aware of an incident (other than a notifiable incident) arising out of the carrying out of mining operations or petroleum operations at the mine or petroleum site, but only if the incident:</p> <ul style="list-style-type: none"> <li>(a) results in illness or injury that requires medical treatment within the meaning of clause 13 of Schedule 9, or</li> <li>(b) is a high potential incident.</li> </ul> <p>(5) In this clause:<br/><i>high potential incident</i> means any of the following:</p> <ul style="list-style-type: none"> <li>(m) any indication from monitoring data of the development of subsidence which may result in any incident referred to in clause 179 (a) (xvi) - a failure of ground, or of slope stability control measures, or</li> <li>179 (a) (xvii) - rock falls, instability of cliffs, steep slopes or natural dams, occurrence of sinkholes, development of surface cracking or deformations or release of gas at the surface, due to subsidence.</li> </ul> | <p>Section 15 (Reporting)</p> <p>Springvale SMS</p>                                                                        |
| <p>WHS Regulation (Mines and Petroleum Sites)<br/>Schedule 1<br/>Subsidence<br/>Clause 3C</p> <p>Principal hazard management plans – additional matters to be considered</p> | <p><b>Subsidence</b></p> <p>The following matters must be considered in developing the control measures to manage the risks of subsidence:</p> <ul style="list-style-type: none"> <li>(a) the characteristics of all relevant surface and subsurface features,</li> <li>(b) the characteristics of all relevant geological, hydrogeological, hydrological, geotechnical, topographic and climatic conditions, including any conditions that may cause elevated or abnormal subsidence or the formation of sinkholes,</li> <li>(c) the characteristics of any previously excavated or abandoned workings that may interact with any proposed or existing mine workings,</li> <li>(d) the existence, distribution, geometry and stability of significant voids, standing pillars or remnants within any old pillar workings that may interact with any proposed or existing mine workings,</li> <li>(e) the predicted and actual nature, magnitude, distribution, timing and duration of subsidence,</li> <li>(f) the rate, method, layout, schedule and sequence of mining operations.</li> </ul>                                                                             | <p>Section 7 (Relevant Features), Section 7.2 (Subsidence Predictions)</p> <p>Supported by MSEC (2013) and MSEC (2020)</p> |

| Clause                                                                                              | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Where Addressed in PSMP                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>WHS Regulation (Mines and Petroleum Sites) Schedule 3<br/>Clause 16<br/>High Risk Activities</p> | <p><b>Secondary extraction or pillar extraction, splitting or reduction</b></p> <p>(1) The following are identified as high risk activities:</p> <ul style="list-style-type: none"> <li>(a) <b>secondary extraction by longwall mining</b>, shortwall mining or miniwall mining,</li> <li>(b) pillar extraction,</li> <li>(c) pillar splitting,</li> <li>(d) pillar reduction.</li> </ul> <p>(2) The waiting period for any such activity is 3 months.</p> <p>(3) The information and documents that must be provided in relation to any such activity are as follows:</p> <ul style="list-style-type: none"> <li>(a) details of the authoritative sources used in determining that the proposed method of work can be done safely,</li> <li>(b) engineering plans showing the manner and sequence of extraction, endorsed by the individual nominated to exercise the statutory function of mining engineering manager at the mine,</li> <li>(c) information about the land above or in the vicinity of the proposed activity including land use and details of who owns or occupies any land that may be affected by subsidence,</li> <li>(d) in the case of a pillar extraction, details of the procedures for the recovery of buried and immobile mining plant in or around a goaf,</li> <li>(e) details of how the risks to the health and safety of workers and other persons from subsidence caused by the activity will be managed.</li> </ul> | <p>1(b) relevant as the mine undertakes secondary extraction by longwall mining. Extraction Plan Supporting A0 Plans, Section 7.1 (Relevant Features) and Section 9 (Management Measures)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> <p>Supported by MSEC (2013) and MSEC (2020)</p> |
| <p>WHS Regulation (Mines) 2014<br/>Schedule 3<br/>Clause 17<br/>High Risk Activities</p>            | <p><b>Shallow depth of cover mining</b></p> <p>(1) Mining operations in locations where the <u>depth of cover is less than 50 metres</u> is identified as a high risk activity.</p> <p>(2) The waiting period for the activity is 3 months.</p> <p>(3) The information and documents that must be provided in relation to the activity are as follows:</p> <ul style="list-style-type: none"> <li>(a) an engineering drawing of the activity, endorsed by the individual nominated to exercise the statutory function of mining engineering manager at the mine,</li> <li>(b) survey plans certified by an individual nominated to exercise the statutory function of mining surveyor at the mine,</li> <li>(c) a geotechnical report on the activity,</li> <li>(d) information on how the risks to the health and safety of workers and other persons from the potential formation of sinkholes will be managed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><i>Not Applicable to current EP Area (DOC&gt;300m)</i></p>                                                                                                                                                                                                                                                          |

## A1.3 Mining Leases

Approved mining authorities granted under the *Mining Act 1992* held for Springvale Mine and relevant to this Extraction Plan include Mining Lease (ML) 1727, ML 1588 and ML 1326. Relevant Conditions are provided in **Table A1.3.1** below.

**Table A1.3.1: Conditions of mining leases relevant to this Extraction Plan**

| Mining Lease           | Requirement/Condition Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section Addressed                                                                                                                                                                                                           |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ML1727, ML1326, ML1588 | <b>Rehabilitation</b><br>Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Mining Operations Plan, Extraction Plan Main Document Section 5.3 and Sub-Plans Section 9 (Management Measures)                                                                                                             |
| ML1727, ML1326, ML1588 | <b>Extraction Plan</b><br>(a) In this condition:<br>(i) approved Extraction Plan means a plan, being:<br>A. an Extraction Plan or subsidence management plan approved in accordance with the conditions of a relevant development consent and provided to the Secretary; or<br>B. a subsidence management plan relating to the mining operations subject to this lease:<br>I. submitted to the Secretary on or before 31 December 2014; and<br>II. approved by the Secretary.<br>(ii) relevant development consent means a development consent or project approval issued under the Environmental Planning & Assessment Act 1979 relating to the mining operations subject to this lease.<br>(b) The lease holder must not undertake any underground mining operations that may cause subsidence except in accordance with an approved Extraction Plan.<br>(c) The lease holder must ensure that the approved Extraction Plan provides for the effective management of risks associated with any subsidence resulting from mining operations carried out under this lease.<br>(d) The lease holder must notify the Secretary within 48 hours of any:<br>(i) incident caused by subsidence which has a potential to expose any person to health and safety risks;<br>(ii) significant deviation from the predicted nature, magnitude, distribution, timing and duration of subsidence effects, and of the potential impacts and consequences of those deviations on built features and the health and safety of any person; or<br>(iii) significant failure or malfunction of a monitoring device or risk control measure set out in the approved Extraction Plan addressing:<br>A. built features;<br>B. public safety; or<br>C. subsidence monitoring. | Extraction Plan and Sub-Plans<br><br>Extraction Plan Main Document Section 2.2 and 5<br><br>Sub-Plans Section 9 (Management Measures)<br><br>Extraction Plan Main Document Section 5.4 and Sub-Plans Section 15 (Reporting) |



| Mining Lease        | Requirement/Condition Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section Addressed                                                       |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| ML 1588 and ML 1326 | <b>Safety</b><br>Operations must be carried out in a manner that ensures the safety of persons or stock in the vicinity of the operations. All drill holes shafts and excavations must be appropriately protected, to the satisfaction of the Director-General, to ensure that access to them by persons and stock is restricted. Abandoned shafts and excavations opened up or used by the lease holder must be filled in or otherwise rendered safe to a standard acceptable to the Director-General.                                                                                                                                                        | PSMP Section 9 (Management Measures)                                    |
| ML 1588 and ML 1326 | <b>Prevention of Soil Erosion and Pollution</b><br>Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan. For the purpose of this condition, water shall be taken to include any watercourse, waterbody or groundwaters. The lease holder must observe and perform any instructions given by the Director-General in this regard.                                                                                               | LMP Section 9 (Management Measures) and Section 10 (Monitoring Program) |
| ML 1588 and ML 1326 | <b>Transmission Lines, Communication Lines and Pipelines</b><br>Operations must not interfere with or impair the stability or efficiency of any transmission line, communication line, pipeline or any other utility on the area without the prior written approval of the Director General and subject to any conditions he may stipulate.                                                                                                                                                                                                                                                                                                                    | Powerlines addressed in Powerline Management Plan                       |
| ML 1588 and ML 1326 | <b>Roads and Tracks</b><br>(a) Operations must not affect any road unless in accordance with an accepted Mining Operations Plan or with the prior written approval of the Director-General and subject to any conditions he may stipulate.<br>(b) The lease holder must pay to the designated authority in control of the road (generally the local council or the Roads and Traffic Authority) the cost incurred in fixing any damage to roads caused by operations carried out under the lease, less any amount paid or payable from the Mine Subsidence Compensation Fund.                                                                                  | BFMP, LMP and PSMP Section 9 (Management Measures)                      |
| ML 1326             | <b>Catchment Areas</b><br>The lease holder shall provide and maintain to the satisfaction of the Minister efficient means to prevent the contamination, pollution, erosion or siltation of any stream or watercourse or Outer Catchment Area and shall observe any instruction given or which may be given by the Minister with a view to preventing or minimising the contamination, pollution or siltation of any stream watercourse or Outer Catchment Area.<br>The lease holder shall:<br>Complete work in relation to rehabilitation within the Warragamba Outer Catchment Area before termination of the authority to the satisfaction of the Authority. | Water Management Plan                                                   |

## A1.4 Environment Protection Licence

Springvale Mine operates under Environment Protection Licence (EPL) 3607 issued under the *Protection of the Environment Operations Act (POEO Act) 1997*. There are no conditions of EPL 3607 specifically related to mine subsidence and Extraction Plans, however general and specific environment requirements as relevant to this management plan are listed in **Table A1.4.1**.

**Table A1.4.1: Conditions of EPL 3607 relevant to this management plan**

| EPL 3607 Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Section Addressed                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <p><b>R2 Notification of environmental harm</b></p> <p>Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.</p> <p>R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.</p> <p>R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.</p> | Extraction Plan Sub-Plans Section 15 (Reporting) |

## A1.5 Extraction Plan Guidelines

The *Draft Guidelines for the Preparation of Extraction Plans V5* (Department of Planning and Environment, 2015) identifies typical requirements for the Extraction Plan and supporting management plans. The requirements from the Guideline are presented in **Table A1.5.1** below.

**Table A1.5.1: Extraction Plan Guideline Requirements**

| Extraction Plan Guideline Content Requirements for All Sub-Plans                                                                                                                                                                                                                                                                                                                                                                                      | Section Addressed                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| An overview of all landscape features, heritage sites, environmental values, built features or other values to be managed under the component plan                                                                                                                                                                                                                                                                                                    | Section 7.1 (Relevant Features) of Sub-Plans                                        |
| Setting out all performance measures included in the development consent relevant to the features or values to be managed under the component plan                                                                                                                                                                                                                                                                                                    | Section 8.1 (Performance Measures) of Sub-Plans                                     |
| Setting out clear objectives to ensure the delivery of the performance measures and all other relevant statutory requirements (including relevant safety legislation)                                                                                                                                                                                                                                                                                 | Section 8.1 (Performance Measures) and Section 9 (Management Measures) of Sub-Plans |
| Proposing performance indicators to establish compliance with these performance measures and statutory requirements;                                                                                                                                                                                                                                                                                                                                  | Section 8.2 (Performance Indicators) of Sub-Plans                                   |
| Describe the landscape features, heritage sites and environmental values to be managed under the component plan, and their significance. It should be noted that a full description of such features, sites and values would commonly have been provided and considered in a recent environmental impact assessment. Consequently, this section can be relatively brief, and focus on the presentation of appropriate figures and/or graphical plans; | Springvale MEP EIS (2014)<br>Section 7.1 (Relevant Features) of Sub-Plans           |
| Describe all currently-predicted subsidence impacts and environmental consequences relevant to the features, sites and values to be managed under the component plan;                                                                                                                                                                                                                                                                                 | Section 7.2 (Subsidence Predictions) and 7.3 (Predicted Impacts) of Sub-Plans       |
| Describe all measures planned to remediate these impacts and/or consequences, including any measures proposed to ensure that impacts and/or consequences comply with performance measures and/or the Applicant's commitments;                                                                                                                                                                                                                         | Section 9 (Management Measures) and 13 (Contingency Plan) of Sub-Plans              |
| Describe the existing baseline monitoring network and the current baseline monitoring results, including pre-subsidence photographic surveys of key landscape features and key heritage sites which may be subject to significant subsidence impacts (such as significant watercourses, swamps and Aboriginal heritage sites);                                                                                                                        | Section 6 (Baseline Monitoring) of Sub-Plans                                        |
| Fully describing the proposed monitoring of subsidence impacts and environmental consequences;                                                                                                                                                                                                                                                                                                                                                        | Section 10 (Monitoring Program) of Sub-Plans                                        |
| Describe the proposed monitoring of the success of remediation measures following implementation;                                                                                                                                                                                                                                                                                                                                                     | Section 10 (Success of Remediation Measures) of Sub-Plans                           |
| Describe adaptive management proposed to avoid repetition of unpredicted subsidence impacts and/or environmental consequences;                                                                                                                                                                                                                                                                                                                        | Section 12 (Adaptive Management) of Sub-Plans                                       |
| Describe contingency plans proposed to prevent, mitigate or remediate subsidence impacts and/or environmental consequences which substantially exceed predictions or which exceed performance measures;                                                                                                                                                                                                                                               | Section 13 (Contingency Plan) of Sub-Plans                                          |
| Listing responsibilities for implementation of the plan; and                                                                                                                                                                                                                                                                                                                                                                                          | Section 14 (Roles and Responsibilities) of Sub-Plans                                |
| An attached Trigger, Action, Response Plan (effectively a tabular summary of most of the above).                                                                                                                                                                                                                                                                                                                                                      | Section 13 (Contingency Plan) of Sub-Plans                                          |

## A1.6 Other Related Approvals and Guidelines

Preparation of the Extraction Plan and supporting management plans is also directed by compliance with other related approvals and guidelines in accordance with Condition 2 of Schedule 6 of SSD 5594 as outlined below.

### A1.6.1 EPBC Approval 2013/6881

Conditional approval of referral 2013/6881 was granted by the Commonwealth Department of Environment and Energy for the Springvale Mine Extension Project on 13 October 2015 under sections 130(1) and 133 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Aspects of the approval which are considered relevant to this management plan for the Extraction Plan are listed in **Table A1.6.1** below.

**Table A1.6.1: EPBC Approval Requirements Relevant to the Extraction Plan and Supporting Plans**

| Condition   | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section Addressed                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Condition 1 | <p>To minimise and compensate for impacts to listed threatened species and communities, the approval holder must comply with the following conditions of the New South Wales development consent:</p> <ul style="list-style-type: none"> <li>Schedule 3 Condition 1 general performance measures</li> <li>Schedule 4 Condition 15 biodiversity offset strategy</li> <li>Schedule 4 Condition 16 long-term security of offsets</li> <li>Schedule 4 Condition 18 biodiversity management plan</li> <li>Schedule 4 Conditions 30, 31 and 32 rehabilitation</li> <li>Schedule 5 all conditions - notification of landowners and independent review</li> </ul>                                                                                                                    | <p>Table A1.1, BMP and SMP</p> <p>Sub-Plans Section 15 (Reporting) and Section 16 (Review)</p>                 |
| Condition 2 | <p>To minimise and compensate for impacts on Temperate Highland Peat Swamps, the approval holder must comply with the following conditions on the New South Wales development consent:</p> <ul style="list-style-type: none"> <li>Schedule 3 Conditions 1 and 2 - general performance measures and risk management and assessment</li> <li>Schedule 3 Condition 3 offsets for breach of performance measures</li> <li>Schedule 3 Condition 4 offsets for first undermined swamps</li> <li>Schedule 3 Condition 5 and 6 offsets for other undermined swamps</li> <li>Schedule 3 Condition 10 Extraction Plans</li> <li>Schedule 3 Condition 11 Independent Monitoring Panel</li> <li>Schedule 5 all conditions - notification of landowners and independent review</li> </ul> | <p>Table A1.1 and Swamp Monitoring Program</p> <p>Sub-Plans Section 15 (Reporting) and Section 16 (Review)</p> |



| Condition   | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Section Addressed                                                                                           |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Condition 3 | <p>To minimise impacts on water resources, the approval holder must comply with the following conditions on the New South Wales development consent:</p> <ul style="list-style-type: none"> <li>• Schedule 3 Condition 1 general performance measures</li> <li>• Schedule 3 Condition 10(h)(iii) water management plan</li> <li>• Schedule 4 Condition 9 water supply</li> <li>• Schedule 4 Condition 10 water pollution</li> <li>• Schedule 4 Condition 12 water management performance measures</li> <li>• Schedule 4 Condition 14 water management plan</li> <li>• Schedule 5 all conditions - notification of landowners and independent review</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Table A1.1 and Water Management Plan</p> <p>Sub-Plans Section 15 (Reporting) and Section 16 (Review)</p> |
| Condition 4 | <p>To minimise impacts on Temperate Highland Peat Swamps, in addition to Condition 1 (Schedule 3) on the New South Wales development consent, the approval holder must ensure that the action does not have greater than negligible environmental consequences on any Temperate Highland Peat Swamps within the project area, including in relation to their size, ecological functionality and species composition or distribution, unless those consequences are addressed through Condition 5.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Swamp Monitoring Program                                                                                    |
| Condition 5 | <p>To minimise impacts on Temperate Highland Peat Swamps, in addition to Conditions 4, 5 and 6 (Schedule 3) on the New South Wales development consent:</p> <p>a. Greater than negligible environmental consequences on Temperate Highland Peat Swamps, and therefore offset liabilities, must be initially determined based on changes to the shallow groundwater aquifer as measured using piezometers in accordance with Conditions 6 to 10.</p> <p>b. Where monitoring identifies a change to the shallow groundwater aquifer below an undermined Temperate Highland Peat Swamp and that change cannot be reasonably attributed to other specific factors to the satisfaction of the Minister, the swamp will be considered to have experienced a greater than negligible environmental consequence of the action.</p> <p>c. 90 per cent (by area) of offset liabilities for Temperate Highland Peat Swamps must be met with direct offsets, within the meaning of the Commonwealth offsets policy.</p> <p>d. If after five (5) years, the approval holder can demonstrate to the satisfaction of the Minister that a greater than negligible environmental consequence on Temperate Highland Peat Swamps identified under Condition 5a has been reversed, has not eventuated or has only partially eventuated, whether due to active remediation or passive (natural) equilibration, any offsets already provided in relation to that identified consequence may be held by the approval holder and used to offset future liabilities.</p> <p>e. Except in relation to Sunnyside East and Carne West Swamps, the approval holder must not commence longwall mining before the corresponding maximum predicted offset liability has been determined in accordance with Conditions 4 and 5 (Schedule 3) on the New South Wales development consent and approved in writing by the Minister.</p> | Swamp Monitoring Program                                                                                    |

| Condition   | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Section Addressed        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Condition 6 | <p>This condition applies to all longwalls except LW418 and LW419.</p> <p>To minimise impacts on Temperate Highland Peat Swamps, in addition to Condition 1 O(h)(v) (Schedule 3) on the New South Wales development consent, swamp monitoring programs (or similar documents) must:</p> <ul style="list-style-type: none"> <li>a. be capable of detecting any greater than negligible environmental consequence on any Temperate Highland Peat Swamps within the project area</li> <li>b. include at least three (3) control swamps for each swamp to which the program applies, matched in terms of vegetation, geomorphology, hydrology and size, which must be monitored according to the same standards and protocols (a swamp may serve as a control for any number of suitably matched swamps to which the program applies)</li> <li>c. have installed for each swamp to which the program applies and for each control swamp: <ul style="list-style-type: none"> <li>i. a configuration of at least two (2) intersecting piezometer transects, the first along a line from the highest area of the swamp to the swamp outflow point and the second perpendicular to the first, located directly above a long wall panel, with each transect comprising at least three (3) piezometers (piezometers should not be installed immediately above longwall pillars); and</li> <li>ii. piezometers (at least one (1)) installed at the deepest point in the swamp's sediments and any other significant deep points to better understand potential mine-induced drainage; and</li> </ul> </li> <li>d. establish for each swamp proposed for undermining a monitoring regime that includes daily data collection from each swamp with data review at least weekly during undermining operations and at least monthly at all other times</li> </ul> <p>The approval holder must not commence longwall mining before the corresponding swamp monitoring program has been approved in writing by the Minister. Each approved swamp monitoring program must be implemented for no less than five (5) years from the approval of the program.</p> | Swamp Monitoring Program |
| Condition 9 | <p>This condition applies to all longwalls except LW418.</p> <p>To minimise impacts on Temperate Highland Peat Swamps, in addition to Condition 10(h)(ix) (Schedule 3) on the New South Wales development consent, trigger action response plans (or similar documents) must:</p> <ul style="list-style-type: none"> <li>a. define specific triggers (exceedance thresholds), with reference to baseline data and control swamps, which will apply to each Temperate Highland Peat Swamp within the project area</li> <li>b. define specific cease-work triggers, with reference to baseline data and control swamps, to respond to cases of sudden, unexpected or persistent exceedances, after which work may not recommence until the impact has been explained or offset to the satisfaction of the Minister</li> <li>c. define protocols for investigation and appropriate treatment of early warning and cease work triggers in a timely fashion</li> <li>d. establish a protocol for reporting exceedances promptly to the Department; and</li> <li>e. explain how the measures described in the trigger action response plan will protect Temperate Highland Peat Swamps.</li> </ul> <p>The approval holder must not commence longwall mining before the corresponding trigger action response plan has been approved in writing by the Minister. The approved trigger action response plan must be implemented.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Swamp Monitoring Program |

| Condition    | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section Addressed                                                             |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Condition 12 | <p>This condition applies to all longwalls except LW418.</p> <p>To minimise impacts on listed threatened species and communities, in addition to Condition 18 (Schedule 4) on the New South Wales development consent, the biodiversity management plan (or similar document) must:</p> <ol style="list-style-type: none"> <li>include measures to avoid and / or mitigate impacts on listed threatened species and communities that may occupy landform habitats including cliffs, minor cliffs, pagodas and gorges- these measures must include pre-mining surveys and translocation and / or cease work protocols if any sites with potential as nursery caves for Large eared Pied Bat are identified</li> <li>include measures to control the spread of pathogens including chytrid fungus and Phytophthora cinnamomi</li> <li>explain how the mitigation and management measures described will protect specific listed threatened species and communities; and</li> <li>specify clear timeframes for all management and mitigation measures described.</li> </ol> <p>The approval holder must not commence the action before the biodiversity management plan has been approved in writing by the Minister. The approved biodiversity management plan must be implemented.</p> | BMP                                                                           |
| Condition 14 | <p>The approval holder must provide the Department with details of each offset area secured in accordance with Conditions 3 to 5 (Schedule 3) or Conditions 15 and 16 (Schedule 4), on the New South Wales development consent, within twenty (20) business days of securing each offset. Details to be provided must include but are not necessarily limited to:</p> <ul style="list-style-type: none"> <li>• textual descriptions and maps to clearly define the location and boundaries of the offset areas</li> <li>• written evidence of legal protection</li> <li>• management plans</li> <li>• offset attributes and shapefiles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Swamp Monitoring Program                                                      |
| Condition 16 | <p>The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of this approval, including measures taken to implement management documents required by this approval, and make them available on request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of this approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Extraction Plan Sub-Plans Section 15 (Reporting)                              |
| Condition 17 | <p>The approval holder must report potential non-compliance with any of the conditions of this approval to the Department within two (2) business days of becoming aware of the noncompliance.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Extraction Plan Sub-Plans Section 15 (Reporting)                              |
| Condition 18 | <p>Before 31 March each year, the approval holder must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management documents as specified in the conditions during the previous calendar year. Documentary evidence of the date of publication of the compliance report, as well as details of any reported potential non-compliance, must be provided to the Department at the same time as the compliance report is published.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Extraction Plan Sub-Plans Section 15.1 (Environmental and Incident Reporting) |
| Condition 19 | <p>Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of this approval is conducted and a report submitted to the Minister. The audit must not commence until the independent auditor and audit criteria have been approved by the Minister. The audit report must address the criteria to the satisfaction of the Minister.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Swamp Monitoring Program Section 17 (Review)                                  |

| Condition    | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Section Addressed                                |
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| Condition 20 | <p>The approval holder may choose to revise a management document approved by the Minister under Conditions 6, 7, 9 12 or 13 without submitting it for approval under Section 143A of the EPBC Act, if the taking of the action in accordance with the revised management document would not be likely to have a new or increased impact on a matter protected under the conditions of this approval. If the approval holder makes this choice, it must:</p> <ul style="list-style-type: none"> <li>a. notify the Department in writing that the approved management document has been revised and provide the Department with an electronic copy of the revised management document</li> <li>b. implement the revised management document from the date that it is submitted to the Department; and</li> <li>c. for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised management document would not be likely to have a new or increased impact on a matter protected under the conditions of this approval.</li> </ul> | Extraction Plan Sub-Plans Section 16 (Review)    |
| Condition 26 | <p>Unless otherwise agreed to in writing by the Minister, the approval holder must publish all management documents on their website. Each management document must be published on the website within one (1) month of being approved by the Minister or being submitted under Condition 20.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Extraction Plan Sub-Plans Section 15 (Reporting) |

## A1.6.2 Subsidence Risk Management Guidelines (WHS Legislation)

**NSW Department of Industry – Resources Regulator (Mine Safety) Guide to Managing Risks of Subsidence (WHS Mines and Petroleum Legislation) 2017.**

This publication provides a summary of key provisions under the *Work Health and Safety Act 2011 (WHS Act)*, *Work Health and Safety Regulation 2017 (WHS Regulation)*, *Work Health and Safety (Mines and Petroleum Sites) Act 2013 (WHSMP Act)* and the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 (WHSMP Regulation)* as interpreted by the Department of Industry – Resources Regulator (Mine Safety) (2017).

The **Public Safety Management Plan (PSMP)** has been prepared in general accordance with the risk management principles outlined in the Guideline as described in **Table A1.6.2.**

**Table A1.6.2: Requirements of the Guide to Managing Risks of Subsidence (WHS Mines and Petroleum Legislation) (Resource Regulator 2017).**

| Referenced Section                                                                                                  | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Where Addressed in PSMP                                                                                  |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Primary Duty of Care to 'Other Persons'</b> (s1.2, s2.1)                                                         | Under Section 19 of the <i>Work Health and Safety Act 2011 (WHS Act)</i> all persons conducting a business or undertaking (PCBUs), including mine operators, must ensure, so far as is reasonably practicable, the health and safety of <b>workers they engage or cause to be engaged, or whose work activities they influence or direct</b> .                                                                                                                                                                                                                                                                                       | Safety of workers covered in the Springvale SMS                                                          |
|                                                                                                                     | PCBUs must also ensure, so far as reasonably practicable, that the health and safety of <b>other persons</b> is not put at risk from work carried out as part of the conduct of the business or undertaking.                                                                                                                                                                                                                                                                                                                                                                                                                         | Safety of "others" covered in the PSMP                                                                   |
| S1.3 Subsidence                                                                                                     | The <i>Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 (WHSMP Regulation)</i> , defines subsidence as meaning " <i>the deformation or displacement of any part of the ground surface or subsurface strata caused by the extraction of minerals</i> ". Such <b>deformation or displacement has potential to cause hazardous conditions, which must be controlled to ensure, so far as is reasonably practicable, that the health and safety of workers and other persons is not put at risk from subsidence.</b>                                                                                                   | Workers – Springvale SMS<br>Other persons – PSMP Section 9 (Management Measures)                         |
| s2.1 Managing Risks of Subsidence (Overview); and<br><br>Scope of Subsidence Risk Management (s2.2)                 | Under clause 67(1) of the <i>WHSMP Regulation (2014)</i> , the operator of an underground coal mine must..... manage risks to health and safety associated with subsidence at the mine. Clause 67(2) sets out specific requirements in relation to subsidence.                                                                                                                                                                                                                                                                                                                                                                       | Section 9 (Management Measures)<br><br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |
| <b>s2.2 Scope of Subsidence Risk Management</b><br><br>Mining Operations Where Risk Management Is Required (s2.2.1) | The mine operator of an underground coal mine must manage risks of subsidence due to:<br>(1) <b>secondary extraction by longwall mining</b> , shortwall mining or miniwall mining<br>(2) pillar extraction, pillar splitting or pillar reduction;<br>(3) shallow depth of cover mining where the depth of cover is less than 50m, irrespective of first or secondary workings;<br>(4) highwall mining; and<br>(5) any other circumstances where underground coal mining may lead to subsidence, for example, subsidence observed above first workings as a result of excessive settlement of pillars on weak claystone floor strata. | Section 9 (Management Measures)                                                                          |



| Referenced Section                                                         | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Where Addressed in PSMP                                                                                       |
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| Surface and subsurface features where risk management is required (s2.2.2) | <p>The surface and subsurface features refer to features which could give rise to risks to health and safety, <b>if the features are affected by subsidence</b>.</p> <p>The surface and subsurface features include:</p> <ul style="list-style-type: none"> <li>(1) <b>public utilities</b> (e.g. highways, railways, tunnels, bridges, air strips, <b>electrical transmission infrastructure</b> or pressurised gas pipelines),</li> <li>(2) public amenities (e.g. shopping centres, hospitals, churches, sport facilities, child care centres or schools),</li> <li>(3) <b>built features other than public utilities and amenities</b> (e.g. dwellings, factories, workshops, privately owned gas storages or surface mining voids or facilities), and</li> <li>(4) <b>natural features</b> (e.g. cliffs, <b>steep slopes</b>, natural caves or dams or <b>surface of land</b>), where subsidence may result in hazardous conditions due to instability of rock or soil masses, rock falls, landslide, fractures, sinkholes, inundation, gas release or pollution of drinking water.</li> </ul>                                                                                                                                                                                            | <p>Section 7 (Relevant Features)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |
| Area requiring risk management (s2.2.3)                                    | <p><b>The area requiring risk management is defined by the areal distribution of relevant and appropriate components of subsidence.</b> For example, the use of the vertical displacement may not be relevant and appropriate to define an area if the risks from the development of horizontal displacement need to be managed. In practice, the areal distribution of horizontal displacement can be noticeably different from the vertical displacement.</p> <p>When defining the area where risk management is required, consideration should be given to any <b>factors that may cause the development of far-field subsidence</b>, such as:</p> <ul style="list-style-type: none"> <li>(1) overlying or underlying mine workings, in particular, old pillar workings,</li> <li>(2) topographic characteristics of the land,</li> <li>(3) nature and magnitude of horizontal stress field,</li> <li>(4) geological structures, and</li> <li>(5) Complexities or anomalies in overburden geological or geotechnical conditions.</li> </ul> <p>The intensity of risk management across the area may vary depending on the nature, likelihood, potential consequences and complexity of subsidence hazards at any particular location within the area where risk management is required.</p> | <p>Section 3 (Scope)</p> <p>MSEC (2013) and MSEC (2020)</p>                                                   |

| Referenced Section                                          | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Where Addressed in PSMP                                                                                     |
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| Period requiring risk management (s2.2.4)                   | <p>The <b>period requiring risk management is defined from the onset of subsidence to a point in time when risks of subsidence have become negligible to the health and safety of people.</b></p> <p>The definition should be made based on relevant and appropriate components of subsidence. For example, the period requiring risk management for bridges affected by subsidence may need to be defined by considering valley closures and horizontal displacement, which may commence earlier and finish later than vertical subsidence.</p> <p><b>When defining the period of risk management, consideration should be given to any factors that may cause the development of long-term subsidence or delayed subsidence, such as:</b></p> <ul style="list-style-type: none"> <li>(1) overlying or underlying mine workings, in particular, old pillar workings,</li> <li>(2) topographic characteristics of the land,</li> <li>(3) nature and magnitude of horizontal stress field,</li> <li>(4) geological structures,</li> <li>(5) climate conditions,</li> <li>(6) water in the mine workings, and</li> <li>(7) Complexities or anomalies in overburden, roof or floor geological or geotechnical conditions, in particular, the nature and existence of claystone in the floor or roof strata, which have a potential for strength deterioration over time.</li> </ul> <p>The intensity of risk management may vary depending on the nature, likelihood, potential consequences and complexity of subsidence hazards at any particular time during the period requiring risk management.</p> | <p>Section 10 (Monitoring)</p> <p>MSEC (2013) and MSEC (2020)</p>                                           |
| s2.3 Identification and understanding of subsidence hazards | <p>Under clause 34 of the WHS Regulation, a duty holder, including the mine operator, must identify all reasonably foreseeable hazards that could give rise to risks to health and safety.</p> <p>To understand the identified subsidence hazards, <b>the scope of investigation and analysis should include:</b></p> <ul style="list-style-type: none"> <li>(1) the nature of the hazards, including their magnitude, location, distribution, timing and duration,</li> <li>(2) the likelihood of the hazards affecting the health or safety of a person, and</li> <li>(3) the severity of the potential health and safety consequences.</li> </ul> <p>When identifying, investigating and analysing subsidence hazards, the mine operator should consider the matters set out in sections 2.3.1 to 2.3.4 below</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |

| Referenced Section                            | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Where Addressed in PSMP                                                                                                                          |
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| Factors affecting subsidence hazards (s2.3.1) | <p>The <b>following factors should be considered when identifying, investigating and analysing subsidence hazards:</b></p> <p>(1) the characteristics of all relevant surface and subsurface features as set out in section 2.2.2 above, including any known future developments (e.g. sub-divisions or other improvements) within the area where risk management is required,</p> <p>(2) the characteristics of the mining operation, including the rate, method, layout, schedule and sequence of mining operations, the thickness of the seam to be mined, extraction height and cover depth,</p> <p>(3) the characteristics of any previously excavated or abandoned workings that may interact with any proposed or existing mine workings,</p> <p>(4) the existence, distribution, geometry and stability of significant voids, standing pillars or remnants within any old pillar workings that may interact with any proposed or existing mine workings (for further details, refer to section 2.3.3.2 below),</p> <p>(5) the characteristics of all relevant geological, hydrogeological, hydrological, geotechnical, topographical and climatic conditions of the area where risk management is required, including the structural, lithological and geotechnical characteristics of the overburden, inter-burden, floor and roof strata,</p> <p>(6) the characteristics of any conditions that may cause elevated or abnormal subsidence or formation of sinkholes (for further details, refer to section 2.3.3 below), and</p> <p>(7) the predicted and actual nature, magnitude, location, distribution, timing and duration of subsidence.</p> | <p>Section 7 (Relevant Features)</p> <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |

| Referenced Section   | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Where Addressed in PSMP                                                                                 |
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| Uncertainty (s2.3.2) | <p>Uncertainty has the potential to lead to an incomplete, inaccurate, inappropriate or a lack of understanding of subsidence hazards. Consequently, this may affect the basis on which risk control measures will be developed and selected.</p> <p>Generally, uncertainty occurs as a result of:</p> <ul style="list-style-type: none"> <li>(1) the inherent variations and complexities of the environment within which subsidence risk management takes place. This is often the case where very large volume of heterogeneous rock/soil masses containing numerous geological structures and other discontinuities are deformed as a result of underground coal mining operations,</li> <li>(2) the assumptions used during investigations, analysis or risk assessments, or</li> <li>(3) available information that: <ul style="list-style-type: none"> <li>(a) is partial,</li> <li>(b) is vague,</li> <li>(c) consists of an unknown level of accuracy or reliability,</li> <li>(d) is variable or subject to different interpretations,</li> <li>(e) is conflicting or inconsistent,</li> <li>(f) involves factors whose relationship or interaction is unknown,</li> <li>(g) involves a range of possibilities, or</li> <li>(h) changes over time.</li> </ul> </li> </ul> <p>The characteristics of the above-mentioned information are due to the inherent variations and complexities described above and the nature of subsidence engineering, which often requires input from:</p> <ul style="list-style-type: none"> <li>(1) multiple engineering or science disciplines,</li> <li>(2) multiple organisations or stakeholders, or</li> <li>(3) multiple phases of investigations with varying qualities.</li> </ul> <p>Uncertainty is a significant matter when managing risks to health and safety associated with subsidence. It is important to specifically address any uncertainties when managing risks to health and safety associated with subsidence. For further guidance, refer to sections 2.5.3 and 2.7 of this guideline.</p> | MSEC (2013) and MSEC (2020) include an assessment of the reliability of predicted subsidence parameters |

| Referenced Section                 | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Where Addressed in PSMP                                                                                                                                                                         |
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| Specific Subsidence Issues (2.3.3) | <p>The specific subsidence issues refer to conditions that may cause elevated or abnormal subsidence, which may result in an unplanned event that causes harm to people. For example, subsidence that occurs earlier or later than predicted could result in a hazardous condition where no risk control measures have been implemented.</p> <p>Abnormal subsidence means the development of subsidence that is:</p> <p>(1) different from the predicted nature (e.g. tension or compression), magnitude, location, distribution, timing or duration of subsidence, or</p> <p>(2) difficult to predict or unexpected in terms of the nature (e.g. tension or compression), magnitude, location, distribution, timing or duration of subsidence.</p> <p>Based on the current industry experience and knowledge, sections 2.3.3.1 to 2.3.3.9 of this guideline provide a non-exhaustive list of situations where there is a potential for the development of abnormal subsidence.</p> <p>The mine operator should ensure that hazard identification, investigation and analysis consider any situation (including the situations set out in sections 2.3.3.1 to 2.3.3.9 below, if relevant), where there is a potential for the development of abnormal subsidence.</p> <p>Specific considerations in risk control (see sections 2.5.3 and 2.7 below) are also necessary in these situations (including those set out in sections 2.3.3.1 to 2.3.3.9 below, if relevant) to ensure that the risk management system is capable of responding to any changes in an adequate and timely manner.</p>                                                                                                                     | <p>No known abnormal subsidence issues at site.</p> <p>The listed aspects are assessed in Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> <p>Refer to Sections below.</p> |
|                                    | <p><b>Long Term or Delayed Subsidence</b> (s2.3.3.1)</p> <p>Risk management of long-term subsidence or delayed subsidence is difficult due to uncertainty in the timing and duration of the risks. This is one of the important factors causing the unplanned subsidence impacts previously observed in NSW. The occurrence of either long-term or delayed subsidence is determined by the long-term stability of first workings or partially extracted workings, if these workings are not properly designed taking into consideration the site conditions.</p> <p>Where the long-term stability of first workings or partially extracted workings is required for the protection of surface or subsurface features, the mine operator should ensure the hazards of long-term subsidence or delayed subsidence are adequately identified and assessed taking into consideration:</p> <p>(1) the relevant mine design parameters, such as the layout of mine workings and the geometry and strengths of pillars,</p> <p>(2) the presence and characteristics of water affecting the strata surrounding the mine workings,</p> <p>(3) the structural, lithological and geotechnical characteristics of the overburden, inter-burden, floor and roof strata, in particular, any claystone units in the floor or roof that have a potential for strength degradation when affected by water ingress into the fabric of rocks, and</p> <p>(4) any conditions that may cause increased loading on the pillars or changes to the stress environment surrounding the mine workings, for example, interactions with the adjacent old workings or the presence of any spanning massive strata in the roof or overburden</p> | <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                                                                                                        |



| Referenced Section | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Where Addressed in PSMP                                           |
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|                    | <p><b>Multi-seam mining involving old pillar workings</b> (s2.3.3.2)</p> <p>In the context of managing the risks of subsidence, the old pillar workings refer to:</p> <ul style="list-style-type: none"> <li>(1) any overlying old pillar workings, and</li> <li>(2) certain underlying old pillar workings, which are located within the influence of the stresses induced by any proposed or existing mine workings.</li> </ul> <p>The interactions of the old pillar workings with any proposed or existing mine workings have a potential to cause:</p> <ul style="list-style-type: none"> <li>(1) far-field subsidence,</li> <li>(2) elevated subsidence,</li> <li>(3) irregular distribution of subsidence, or</li> <li>(4) elevated strains, tilts and curvature resulting from the above-mentioned irregular distribution of subsidence.</li> </ul> <p>The hazard identification, investigation and analysis should consider the existence, distribution, geometry and stability of significant voids, standing pillars or remnants within any old pillar workings that may interact with any proposed or existing mine workings.</p> | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |
|                    | <p><b>Multi-seam mining involving previously extracted longwalls</b> (S2.3.3.3)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |
|                    | <p><b>Massive Strata</b> (s2.3.3.4)</p> <p>Depending on the mechanical strengths and geometrical attributes of the massive strata in relation to the characteristics of the mine layout design, the presence of the massive strata in the roof or overburden has a potential to cause:</p> <ul style="list-style-type: none"> <li>(1) reduced subsidence,</li> <li>(2) far-field subsidence,</li> <li>(3) complicated loading conditions on pillars,</li> <li>(4) irregular or abrupt distribution of subsidence, or</li> <li>(5) elevated strains, tilts and curvature resulting from the irregular or abrupt distribution of subsidence.</li> </ul> <p>The reduced subsidence may be of benefit if the mine layout can be appropriately designed in relation to the mechanical and geometrical attributes of the massive strata in the roof or overburden. However, the other above-mentioned effects will cause difficulty or uncertainty in risk management. For example, it will be difficult or impossible to predict the strains or tilts associated with the irregular or abrupt distribution of subsidence.</p>                      | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |

| Referenced Section | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Where Addressed in PSMP                                                                                                                                                                         |
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|                    | <p><b>Creek crossings, valleys or gorges</b> (s2.3.3.5)</p> <p>Underground coal mining beneath or in the vicinity of creek crossings, valleys or gorges, irrespective of their steepness, has a potential to cause:</p> <ul style="list-style-type: none"> <li>(1) valley closure, and</li> <li>(2) upsidence of the valley floor.</li> </ul> <p>Valley closure and upsidence may develop outside the normal distribution limit of the vertical displacement.</p> <p>Any built features or public utilities (e.g. bridges or high pressurised gas pipelines) that are located across or on the floor of these topographic features may be subject to elevated and complicated stress conditions that may exceed their design capacities for managing risks to health and safety.</p> <p>Creek crossings, valleys or gorges are sometimes surface expressions of geological structures (e.g. faults). In these cases, specific considerations in risk control (see sections 2.5.3 and 2.7 below) are important as it may be difficult to understand the nature of the risks prior to the development of subsidence.</p> | <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                                                                                                        |
|                    | <p><b>Steep topography</b> (s2.3.3.6)</p> <p>Underground coal mining in areas with steep topography has a potential to:</p> <ul style="list-style-type: none"> <li>(1) cause tensile strains on the hill tops or along the valley sides, resulting in hazardous conditions such as damage to built features, rock falls or slope instability,</li> <li>(2) contribute to the development of valley closure, or</li> <li>(3) contribute to the development of upsidence of the valley floor.</li> </ul> <p>The complex effects of steep topography on subsidence development are not at present commonly considered across the coal mining industry. As a result, there is a potential for unplanned events when undertaking underground coal mining in areas with steep topography. The effects of steep topography on subsidence development should be considered by the mine operator as part of the hazard identification, investigation and analysis.</p>                                                                                                                                                          | <p>Section 7.3.4 (Impacts to Steep Slopes) and 9.4 (Management of Steep Slopes)</p> <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |
|                    | <p><b>Geological Features</b> (2.3.3.7)</p> <p>Geological structures, in particular, faults, folds, sills or dykes, are one of the most important factors causing the development of abnormal subsidence. The hazard identification, investigation and analysis should consider the geological structures on both regional and local scales, as relevant</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                                                                                                        |
|                    | <p><b>Sinkhole Formations</b> (2.3.3.8)</p> <p>Sinkholes, or potholes, are the most hazardous form of subsidence because:</p> <ul style="list-style-type: none"> <li>(1) their impacts on any affected surface or subsurface features are likely to occur rapidly or abruptly,</li> <li>(2) any surface or subsurface features located within the areas affected by a sinkhole are likely to be severely damaged resulting in hazardous conditions, and</li> <li>(3) it is difficult to predict or monitor the timing of the impact of sinkhole formation.</li> </ul> <p>In NSW, sinkholes have generally been observed above partially extracted workings, including first workings, under the depth of cover generally less than 50 metres. The geological, geotechnical, hydrogeological and climatic conditions are known to be the important factors for sinkhole formation, which should be considered as part of the hazard identification, investigation and analysis</p>                                                                                                                                      | <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment. Ranked as low risk.</p> <p>No Shallow Workings, DOC &gt;300m.</p>                                                         |

| Referenced Section                     | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Where Addressed in PSMP                                                                                                                                                                                                        |
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|                                        | <p><b>Shear Strain</b> (s2.3.3.9)</p> <p>Shear strain is one of the components of deformation. However, shear strain has not been recognised in the conventional subsidence engineering theories and the coal mining industry has not commonly considered it when managing risks of subsidence. Therefore, it has a potential to cause unplanned events.</p> <p>In recent years, investigations have established evidence that shear strain is an inherent component of subsidence. The investigations have also shown that shear strain is a significant factor that causes damage to dwellings or other built structures in areas with deep cover depths, where the conventional horizontal strains may otherwise indicate a low level of risks. Shear strain should be considered as part of the hazard identification, investigation and analysis</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                                                                                                                                                              |
| Procedures and Outcomes (s2.3.4)       | <p>Under clause 67(2)(c) of the WHSMP Regulation, the mine operator of an underground coal mine must ensure that any investigation of subsidence and any interpretation of subsidence information are carried out only by a competent person</p> <p>The mine operator of an underground coal mine should identify, investigate and analyse all reasonably foreseeable subsidence hazards by considering the matters set out in sections 2.3.1 to 2.3.3 above (as relevant), as well as any other relevant site-specific factors associated with subsidence at the mine.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Subsidence Assessment undertaken by geotechnical engineer – MSEC (2013) and MSEC (2020)</p> <p>EP Prepared by consultants endorsed by DPIE.</p> <p>WHS Risk Assessment facilitated by Mining Engineer</p>                   |
|                                        | <p>The outcomes of the subsidence hazard identification, investigation and analysis should detail:</p> <p>(1) the mine operator's understanding of all identified subsidence hazards, including:</p> <ul style="list-style-type: none"> <li>(a) the nature of the hazards, including their magnitude, location, distribution, timing and duration,</li> <li>(b) the likelihood of the hazards affecting the health or safety of a person, and</li> <li>(c) the severity of the potential health and safety consequences,</li> </ul> <p>(2) any limitations and assumptions used in the investigation and analysis,</p> <p>(3) any identified site-specific factors that have a potential to cause the development of abnormal subsidence, and</p> <p>(4) any identified site-specific factors that may cause uncertainty which may potentially lead to incomplete, inaccurate, inappropriate or even a lack of understanding of subsidence hazards.</p> <p>Importantly, the mine operator should consider the above-mentioned details (see items (1) to (4) above) when:</p> <p>(1) developing risk scenarios to manage uncertainty (refer to section 2.5.3 below),</p> <p>(2) managing change and continual improvement to risk management (refer to section 2.7 below), or</p> <p>(3) designing the subsidence monitoring program (refer to section 2.9 below).</p> | <p>Sections 7 (Relevant Features, Predictions and Impacts), 12 (Adaptive Management) and 13 (Contingency Plan)</p> <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |
| S2.4 Assessment of risks of subsidence | Under clause 9(2) of the WHSMP Regulation, a PCBU at a mine, including the mine operator, must ensure that a risk assessment is conducted in accordance with clause 9 by a person who is competent to conduct the particular risk assessment having regard to the nature of the hazard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment facilitated by Mining Engineer                                                                                                                               |

| Referenced Section                                    | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Where Addressed in PSMP                                                                                  |
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|                                                       | In conducting a risk assessment, the mine operator should have regard to the outcomes of subsidence hazard identification, investigation and analysis as set out in section 2.3.4 above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                                        |
|                                                       | The participation in subsidence risk assessment by the stakeholders, such as authorities or operators of public utilities or amenities, is essential to ensure the validity and adequacy of the risk assessment. Further guidance on consultation, co-operation and co-ordination is provided in section 2.8 of this guideline.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Section 11 (Consultation)<br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment           |
|                                                       | In undertaking a risk assessment, the mine operator may refer to the relevant publications, such as AS/NZS ISO 31000:2009 and SA/SNZ HB 436:2013, and specific standards adopted by stakeholders.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                                        |
|                                                       | Under clause 9(5) of the WHSMP Regulation, the mine operator (or a PCBU at a mine, who is a contractor) must keep a record of the following:<br>(1) each risk assessment conducted and the name and competency of the person who conducted the risk assessment, and<br>(2) the control measures implemented to eliminate or minimise any risk that was identified through any such risk assessment. However, under clause 9(6) of the WHSMP Regulation, a PCBU at a mine is not required to keep a record of the risk assessment if:<br>(a) the risk assessment is one that an individual worker is required to carry out before commencing a particular task, and<br>(b) the person keeps a record of risk assessments that addresses the overall activity being undertaken, such as risk assessments carried out in relation to the development of the safety management system (SMS) or for a PHMP. | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                                        |
| s2.5 Development & Selection of Risk Control Measures | In complying with Part 3.1 of the WHS Regulation, the mine operator must develop and implement risk control measures that:<br>(1) eliminate risks to health and safety so far as reasonably practicable; and<br>(2) if it is not reasonably practicable to eliminate risks to health and safety - minimise those risks so far as is reasonably practicable.<br>The various ways of controlling risks can be ranked from the highest level of protection and reliability to the lowest. This is referred to as the hierarchy of control measures.<br>The mine operator must apply the hierarchy of control measures to manage the risks to health and safety in accordance with clause 36 of the WHS Regulation.                                                                                                                                                                                        | Section 9 (Management Measures)                                                                          |
|                                                       | When applying the hierarchy of control measures to manage the risks of subsidence, the mine operator should consider:<br>(1) all possible risk control measures for the identified subsidence hazards (refer to sections 2.3 and 2.4 above), and<br>(2) the underground coal mine, including the rate, method, layout, schedule and sequence of mining operations, as one of the available risk control measures pursuant to clause 67(2)(a) of the WHSMP Regulation. For more information, refer to section 3.5.1 and Appendix A of this guideline. The mine operator should work through the hierarchy to ensure that the most effective and reliable risk control measures are developed and selected for implementation.                                                                                                                                                                           | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment<br><br>Section 9 (Management Measures) |

| Referenced Section                                                                                    | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Where Addressed in PSMP                                                                                                                           |
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| Selection of risk control measures to be implemented before or during subsidence development (s2.5.2) | <p>There are primarily two different methods to control the risks of subsidence, namely:</p> <p>Method A – Selection of risk control measures to be implemented prior to the development of subsidence, and</p> <p>Method B – Selection of risk control measures to be implemented during the development of subsidence. The risk control measures should be implemented in a timely manner in response to the results of monitoring and consultation with stakeholders. A trigger action response plan (TARP) is commonly used by the underground coal mining industry for this method.</p>                                                                                                                                                                             | <p>Section 9 (Management Measures) and Section 13 (Contingency Plan)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |
| Control Measures for Risk Scenarios (s2.5.3)                                                          | <p>Where there is uncertainty about a subsidence hazard with potentially severe health and safety consequences, it is important to prepare for potential variations in the nature and likelihood of the hazard. The mine operator should establish relevant risk scenarios so that there is preparedness for change, instead of adopting a single management strategy. Effective and reliable risk control measures should be developed and selected for each of the risk scenarios in accordance with section 2.5.1 of this guideline.</p> <p>A contingency plan should be developed and used to implement the risk control measures selected for the risk scenarios, if changes identified by monitoring and stakeholder consultation warrant such implementation.</p> | <p>Section 13 (Contingency Plan)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                     |



| Referenced Section                                           | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Where Addressed in PSMP                                                                                                                                                                                                                                                                  |
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| s2.6 Implementation and maintenance of risk control measures | <p>Under clause 37 of the WHS Regulation, a duty holder, including a mine operator, who implements a control measure to eliminate or minimise risks to health and safety must ensure that the control measure is, and is maintained so that it remains, effective, including by ensuring that the control measure is and remains:</p> <ol style="list-style-type: none"> <li>(1) fit for purpose, and</li> <li>(2) suitable for the nature and duration of the work, and</li> <li>(3) installed, set up and used correctly.</li> </ol> <p>When implementing and maintaining the risk control measures developed in accordance with sections 2.5.1 to 2.5.3 above, the mine operator should:</p> <ol style="list-style-type: none"> <li>(1) ensure that the risk control measures are installed, set up and used correctly in terms of: <ol style="list-style-type: none"> <li>(a) their design specification,</li> <li>(b) operational requirements, and</li> <li>(c) location, timing and duration of implementation or maintenance,</li> </ol> </li> <li>(2) ensure that it is feasible to implement and maintain the risk control measures having regard to: <ol style="list-style-type: none"> <li>(a) site-specific conditions (e.g. land access to implement and maintain the risk control measures,</li> <li>(b) the weather, in particular, adverse weather conditions,</li> <li>(c) availability of technologies,</li> <li>(d) availability of resources, and</li> <li>(e) availability of time to complete the implementation and maintenance,</li> </ol> </li> <li>(3) have a defined schedule to implement and maintain the risk control measures,</li> <li>(4) define the accountability of the competent person who implements and maintains the risk control measures,</li> <li>(5) measure the progress of implementation and maintenance against the development of subsidence to ensure timely completion of the implementation and maintenance of risk control measures,</li> <li>(6) ensure that the implementation and maintenance of one group of risk control measures do not adversely affect the functionality and effectiveness of other groups of risk control measures,</li> <li>(7) monitor the risk control measures to ensure that they remain effective (refer to section 2.9.1 below),</li> <li>(8) maintain the risk control measures so that they remain effective,</li> <li>(9) rectify any failures, malfunctions, defects or deterioration of the implemented risk control measures, and</li> <li>(10) ensure preparedness for change through the implementation of a contingency plan (refer to section 2.5.3 above) so that the risk control remains effective on an on-going basis.</li> </ol> | <p>Section 9 (Management Measures), Section 10 (Monitoring Program), Section 11 (Consultation), Section 12 (Adaptive Management), Section 13 (Contingency Plan) and Section 14 (Roles and Responsibilities)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> |

| Referenced Section                             | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Where Addressed in PSMP                                                                                                                      |
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| Trigger Action Response Plan (TARP) (s2.6.2)   | <p>A TARP should be put in place only after a risk assessment has verified the selection of the most effective control measures. In managing the risks of subsidence, a TARP may be used where:</p> <ul style="list-style-type: none"> <li>(1) there is a gradual and slow deteriorating trend in the development of subsidence,</li> <li>(2) the surface and subsurface features have defined tolerances for subsidence, against which certain triggers can be established and used, and</li> <li>(3) it is feasible to implement the selected risk control measures in a timely manner to control the risks during the development of subsidence.</li> </ul>                                                                                                             | <p>Section 13 (Contingency Plan)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                |
| s2.7 Continual Improvement & Change Management | <p>This section of the guideline is particularly relevant where there is a high level of uncertainty about the nature and likelihood of a subsidence hazard with potentially severe health and safety consequences.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>MSEC (2013) and MSEC (2020).</p> <p>The WHS Risk Assessment did not identify any subsidence hazards with a high level of uncertainty.</p> |
|                                                | <p>During the development of subsidence, the mine operator should:</p> <ul style="list-style-type: none"> <li>(1) gain an improved understanding of subsidence hazards through: <ul style="list-style-type: none"> <li>(a) on-going subsidence monitoring and reviews (refer to section 2.9 below),</li> <li>(b) additional investigations and assessments, as necessary,</li> <li>(c) on-going verification of the risk assessments previously conducted,</li> <li>(d) on-going verification of the assumptions used during the subsidence hazard identification, investigation, analysis and risk assessment previously conducted, and</li> <li>(e) on-going update of relevant subsidence and geological database for the underground coal mine,</li> </ul> </li> </ul> | <p>Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan), Section 16 (Review)</p>                 |
|                                                | <ul style="list-style-type: none"> <li>(2) revise risk control measures in response to an improved understanding of subsidence hazards through: <ul style="list-style-type: none"> <li>(a) on-going testing and verification of the effectiveness and reliability of the implemented risk control measures,</li> <li>(b) applying the hierarchy of control measures to select the most effective risk control measures, as necessary,</li> <li>(c) implementing additional risk control measures or modifications to the existing risk control measures, as necessary, and</li> <li>(d) modifying the rate, method, layout, schedule and sequence of mining operations, as necessary,</li> </ul> </li> </ul>                                                               | <p>Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan), Section 16 (Review)</p>                 |
|                                                | <ul style="list-style-type: none"> <li>(3) regularly consult with stakeholders in relation to managing the risks of subsidence (refer to section 2.8 below),</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Section 11 (Consultation)</p>                                                                                                             |
|                                                | <ul style="list-style-type: none"> <li>(4) ensure on-going detection of early warnings of changes from the results of risk assessments to facilitate corrective or proactive management actions or the commencement of emergency procedures in a timely manner, and</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan)</p>                                      |
|                                                | <ul style="list-style-type: none"> <li>(5) ensure timely implementation of a contingency plan in the event that the implemented risk control measures are not effective. This contingency plan needs to be established taking into consideration the risk scenarios as discussed in section 2.5.3 of this guideline</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan)</p>                                      |

| Referenced Section                                            | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Where Addressed in PSMP                                                                                                                                                    |
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| s2.8 Consultation, Co-operation and co-ordination             | Under clause 67(2)(e) of the WHSMP Regulation, “the mine operator <b>must ensure that</b> so far as is reasonably practicable, procedures are implemented for the effective consultation, co-operation and co-ordination of action with respect to subsidence between the mine operator and relevant persons conducting any business or undertaking that is, or is likely to be, affected by subsidence”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Section 11 (Consultation)                                                                                                                                                  |
|                                                               | The procedures for consultation, co-operation and co-ordination of action with respect to subsidence <b>should include</b> :<br>(1) a process for identifying stakeholders, such as authorities or operators responsible for public utilities or amenities or owners or operators of an industrial or commercial establishment, who may be affected by subsidence,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Section 11 (Consultation)                                                                                                                                                  |
|                                                               | (2) a mechanism to undertake and record regular consultation between the mine operator and stakeholders during subsidence risk management. The following questions should be addressed during the consultation:<br>(a) have all subsidence hazards been identified?<br>(b) is the mine operator’s understanding of subsidence hazards still current and correct?<br>(c) have the implemented risk control measures been working effectively?<br>(d) are the risks of subsidence being adequately managed?<br>(e) have there been any early warnings of changes from the results of risk assessments, which warrant corrective or proactive management actions or the commencement of emergency procedures?<br>(f) have any incidents of subsidence occurred and what is the learning from the investigations of these incidents?<br>(g) should the implemented risk control measures be revised according to the results of subsidence monitoring and review? | Section 11 (Consultation) and Section 15 (Reporting)                                                                                                                       |
|                                                               | (3) a mechanism to ensure effective communication between the mine operator and stakeholders, and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Section 11 (Consultation) and Section 15 (Reporting)                                                                                                                       |
|                                                               | (4) a process for obtaining stakeholder endorsement of the relevant risk management plans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Section 11 (Consultation) and Section 15 (Reporting)                                                                                                                       |
| s2.9 Monitoring and Review:<br>Subsidence Monitoring (s2.9.1) | <i>Note: Refer to Subsidence Monitoring Program for compliance with guidelines requirements for s2.9.1 (Subsidence Monitoring) including detailed requirements in s2.9.1-2.9.3 (including baseline etc), as per cross references included below to the SMP where these are addressed.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SMP                                                                                                                                                                        |
| Objectives of Subsidence Monitoring (s2.9.1.1)                | In undertaking subsidence monitoring, the mine operator should determine how the monitoring data is to be captured, recorded, communicated and, importantly, acted upon, for the purpose of:<br>(1) ensuring that the mine operator has a current and correct understanding of the hazards of subsidence<br>(2) ensuring that the risk control measures are maintained so that they remain effective,<br>(3) avoiding unplanned events.<br>(4) detecting early warnings of changes from the results of risk assessments to facilitate corrective or proactive management actions or the commencement of emergency procedures,<br>(5) identifying emerging new risks of subsidence, and<br>(6) informing the continual improvement and change management.                                                                                                                                                                                                      | SMP Section 8 (Performance Measures and Indicators), Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan), Section 16 (Review) |

| Referenced Section                                                         | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Where Addressed in PSMP                                                                                                                               |
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| Scope of Subsidence Monitoring (s2.9.1.2)                                  | The scope of subsidence monitoring must include: <ul style="list-style-type: none"> <li>Monitoring of subsidence</li> <li>Monitoring of the effects of subsidence on relevant surface or subsurface features</li> </ul>                                                                                                                                                                                                                                                                                                                                    | SMP Section 10 (Monitoring Program), Section 16 (Review)                                                                                              |
| Design, implementation and maintenance of Subsidence Monitoring (s2.9.1.3) | When designing, implementing and maintaining a subsidence monitoring program, the mine operator of an underground coal mine should:                                                                                                                                                                                                                                                                                                                                                                                                                        | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (1) address the objective and scope of the subsidence monitoring program (refer to sections 2.9.1.1 and 2.9.1.2 above)                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                       |
|                                                                            | (2) consider the outcomes of subsidence hazard identification, investigation and analysis (refer to section 2.3.4 above). In particular, the subsidence monitoring program should be designed and implemented to assist with: <ul style="list-style-type: none"> <li>(a) the verification of the risk assessments previously conducted,</li> <li>(b) the verification of the assumptions used during the investigations, analyses or risk assessments previously conducted;</li> <li>(c) the management of uncertainty and abnormal subsidence,</li> </ul> | SMP Section 8 (Performance Measures and Indicators), Section 10 (Monitoring Program), Section 12 (Adaptive Management), Section 13 (Contingency Plan) |
|                                                                            | (3) consider the results of stakeholder consultation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SMP Section 11 (Consultation)                                                                                                                         |
|                                                                            | (4) ensure that the monitoring activities are carried out by a competent person                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SMP Section 14 (Roles and Responsibilities)                                                                                                           |
|                                                                            | The subsidence monitoring program should specify:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (1) the individual monitoring activities of the subsidence monitoring program,                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (2) the information to be captured from each of the individual monitoring activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (3) the locations and area where each of the individual monitoring activities will be undertaken, in particular, the layout and/or locations of instrumentation, monitoring points and inspections,                                                                                                                                                                                                                                                                                                                                                        | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (4) the timing, frequency and duration of monitoring activities and reporting                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SMP Section 10 (Monitoring Program)                                                                                                                   |
|                                                                            | (5) the monitoring methods, technologies, industry standards and codes of practice that apply when undertaking the monitoring activities                                                                                                                                                                                                                                                                                                                                                                                                                   | SMP Section 10.1 (Survey Control, Standards of Accuracy and Quality Assurance)                                                                        |
|                                                                            | (6) the measures and procedures for quality assurance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SMP Section 10.1 (Survey Control, Standards of Accuracy and Quality Assurance)                                                                        |
|                                                                            | (7) the measures and procedures for detecting emerging new risks or early warnings of changes from the results of risk assessments                                                                                                                                                                                                                                                                                                                                                                                                                         | SMP Section 13 (Contingency Plan)                                                                                                                     |
|                                                                            | (8) the measures and procedures for recording and reporting monitoring results to the regulator and stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                           | SMP Section 15 (Reporting)                                                                                                                            |

| Referenced Section                                                         | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Where Addressed in PSMP                                                 |
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|                                                                            | (9) the measures and procedures for rectifying any disturbances to or malfunctions of the implemented monitoring device in a timely manner so that the subsidence monitoring program remains effective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SMP Section 13 (Contingency Plan)                                       |
|                                                                            | (10) a set of criteria, which if satisfied, enables a competent person to vary the implemented subsidence monitoring program (e.g. timing, frequency or duration of subsidence monitoring or reporting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SMP Section 12 (Adaptive Management) and Section 13 (Contingency Plan)  |
|                                                                            | (11) any necessary “redundancies”, that is, different monitoring technologies or procedures that are to be used to monitor the same subsidence hazard. “Redundancies” should be considered where the subsidence hazard may have potentially severe health and safety consequences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SMP Section 10 (Monitoring Program)                                     |
|                                                                            | (12) Relevant details of a proposed subsidence monitoring program should be demonstrated on a graphical plan (i.e. Plan 7) that is part of the HRA notification (refer to the NSW Department of Industry WHS guideline “Notifying the regulator of a high risk activity”).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Extraction Plan A0 Plan 7                                               |
| Baseline Subsidence Data (s2.9.1.4)                                        | Prior to the development of subsidence, the mine operator should complete:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SMP Section 10 (Monitoring Program)                                     |
|                                                                            | (1) the design and implementation of the subsidence monitoring program in accordance with section 2.9.1.3 above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SMP Section 6 (Baseline Monitoring)                                     |
| s2.9.2. Review<br>(Subsidence Monitoring)                                  | (2) the collection of base-line subsidence data in accordance with the subsidence monitoring program                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SMP Section 6 (Baseline Monitoring)                                     |
|                                                                            | The mine operator must ensure that any interpretation of subsidence information (e.g. reviewing the risk control measures for subsidence) is carried out only by a competent person                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SMP Section 14 (Roles and Responsibilities)                             |
|                                                                            | The mine operator must review and as necessary revise the risk control measures implemented for subsidence in accordance with clause 10 of the WHSMP Regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SMP Section 16 (Review)                                                 |
|                                                                            | In undertaking the reviews, the stakeholders must, so far as is reasonably practicable, be consulted and the following questions should be addressed”<br>(1) have all subsidence hazards been identified?<br>(2) is the mine operator’s understanding of subsidence hazards still current and correct?<br>(3) have the implemented risk control measures been working effectively?<br>(4) are the risks of subsidence being adequately managed?<br>(5) have there been any early warnings of changes from the results of risk assessments, which warrant corrective or proactive management actions or the commencement of emergency procedures?<br>(6) have any incidents of subsidence occurred and what is the learning from the investigations of these incidents?<br>(7) should the implemented risk control measures be revised according to the results of subsidence monitoring and review? | Section 16 (Review)                                                     |
| <b>PRINCIPAL HAZARD MANAGEMENT PLANS</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |
| <b>Principle Hazard Management Plan</b> for subsidence (s3), s3.1 General) | The guidance notes provided for the development and selection of risk control measures (refer to sections 2.5.1 to 2.5.3 above) and management of uncertainty, abnormal subsidence and changes (refer to sections 2.3 and 2.7 above) are particularly relevant to a PHMP for subsidence. Sections 2 and 3 of this guideline should be considered when identifying a principal hazard and developing and implementing a PHMP for subsidence                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sections 2 and 3 of the guidelines have been considered as noted above. |



| Referenced Section                                             | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Where Addressed in PSMP                                                                                                                                                                         |
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| Identifying principal hazards in relation to subsidence (s3.2) | To identify principal hazards in relation to subsidence, the mine operator should conduct a comprehensive and systematic investigation and analysis of all relevant matters set out in section 2 of this guideline, in particular, sections 2.2, 2.3 and 2.8 above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | As above.                                                                                                                                                                                       |
| Risk Assessment (s3.3)                                         | <p>In satisfying Clause 23(2) of the WHSMP Regulation...The mine operator, <b>in undertaking a risk assessment for a principal hazard of subsidence, must:</b></p> <p>(1) ensure that the risk assessment involves a comprehensive and systematic investigation and analysis of all aspects of risk to health and safety associated with the principal hazard,</p> <p>(2) use investigation and analysis methods that are appropriate to the principal hazard being considered. For example:</p> <ul style="list-style-type: none"> <li>(a) a historical mine layout plan is not appropriate for assessing the stability of overlying or underlying old pillar workings underneath a major public utility if the accuracy of the layout plan cannot be verified,</li> <li>(b) any structural conditions of a dwelling that may become hazardous when affected by subsidence should be identified and assessed by a competent person prior to the development of subsidence. The results of the investigation should be used for the development and implementation of appropriate risk control measures, or</li> <li>(c) it is not appropriate to assess the stability of embankments supporting critical transport infrastructure based on assumed mechanical parameters for the embankments. These parameters should be obtained through site-specific investigations, and</li> </ul> <p>(3) consider the principal hazard individually and also cumulatively with other hazards at the mine (e.g. inflow or inrush of water).</p> <p>To conduct the risk assessment for a principal hazard of subsidence, the mine operator <b>should conduct a comprehensive and systematic investigation and analysis of all relevant matters set out in section 2 of this guideline, in particular, sections 2.2 to 2.5 and section 2.8 above.</b></p> | <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p> <p><i>Refer above for Section 2 of the guideline which has been considered.</i></p> |
| S3.4 Preparing a PHMP for subsidence                           | <p>Under clause 24 of the WHSMP Regulation, the mine operator <b>must prepare a PHMP for each principal hazard</b> associated with mining operations at the mine in accordance with clause 24 and Schedule 1.</p> <p>Clause 3C of Schedule 1 of the WHSMP Regulation states that:</p> <p>"The following matters must be considered in developing the control measures to manage the risks of subsidence:</p> <ul style="list-style-type: none"> <li>(a) the characteristics of all relevant surface and subsurface features,</li> <li>(b) the characteristics of all relevant geological, hydrogeological, hydrological, geotechnical, topographic and climatic conditions, including any conditions that may cause elevated or abnormal subsidence or the formation of sinkholes,</li> <li>(c) the characteristics of any previously excavated or abandoned workings that may interact with any proposed or existing mine workings,</li> <li>(d) the existence, distribution, geometry and stability of significant voids, standing pillars or remnants within any old pillar workings that may interact with any proposed or existing mine workings,</li> <li>(e) the predicted and actual nature, magnitude, distribution, timing and duration of subsidence,</li> <li>(f) the rate, method, layout, schedule and sequence of mining operations." </li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Section 7 (Relevant Features)</p> <p>MSEC (2013) and MSEC (2020)</p> <p>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment</p>                                                |
|                                                                | In addition to the requirements of clause 3C of Schedule 1, the mine operator should prepare the PHMP for subsidence by comprehensively and systematically considering all relevant matters set out in section 2 of this guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | See matters listed above (s2).                                                                                                                                                                  |

| Referenced Section                                                                                         | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Where Addressed in PSMP                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                            | The PHMP for subsidence is part of the SMS for a mine (see clause 14(1)(c)(i)) of the WHSMP Regulation, which must be implemented so far as is reasonably practicable under clause 13(2) of the WHSMP Regulation). For guidance notes on SMS, refer to “NSW code of practice - Safety management systems in mines”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Noted                                                                                                                                                                                          |
|                                                                                                            | Under clause 24(3) of the WHSMP Regulation, the PHMP for subsidence must:<br>(1) describe the nature of the principal hazard of subsidence to which the plan relates. The descriptions should be based on the results of investigations and analyses undertaken in accordance with the relevant matters set out in section 2 of this guideline, in particular, sections 2.2 to 2.4 and 2.8 above,<br>(2) describe how the principal hazard of subsidence relates to other hazards associated with mining operations at the mine,<br>(3) describe the analysis methods used in identifying the principal hazard of subsidence to which the plan relates,<br>(4) include a record of the most recent risk assessment conducted in relation to the principal hazard of subsidence,<br>(5) describe the investigation and analysis methods used in determining the control measures to be implemented,<br>(6) describe all control measures to be implemented to manage risks to health and safety associated with the principal hazard of subsidence. The descriptions should be provided in accordance with all relevant matters set out in section 2 of this guideline, in particular sections 2.5 to 2.9 above,<br>(7) refer to any design principles, engineering standards and technical standards relied on for control measures for the principal hazard of subsidence, and<br>(8) set out the reasons for adopting or rejecting each control measure considered. | Section 7 (Relevant Features),<br>Section 8 (Performance Measures and Indicators),<br>Section 10 (Monitoring Program)<br><br>Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment |
|                                                                                                            | Under clause 24(5) of the WHSMP Regulation, the mine operator must ensure that no mining operations are carried out at the mine that may give rise to a principal hazard before the PHMP for that hazard has been prepared. A PHMP for subsidence should be prepared and implemented prior to the development of subsidence that may give rise to the principal hazard of subsidence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Extraction will not commence in the EP Area until approval of the Extraction Plan (and the PSMP supporting sub-plan)                                                                           |
| S3.5 Other matters relevant to managing risks associated with a principal hazard in relation to subsidence | Under clause 24(4)(b) of the WHSMP Regulation, when preparing a PHMP, the mine operator must consider “any other matter relevant to managing the risks associated with the principal hazard at the mine”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Section 7 (Relevant Features)                                                                                                                                                                  |
| S3.5.1 Mining Operation as a risk control measure                                                          | When applying the hierarchy of control measures (refer to section 2.5 above), the mine operator <b>should consider the underground coal mine, including its rate, method, layout, schedule or sequence of mining operations, as one of the available risk control measures in accordance with clause 67(2)(a) of the WHSMP Regulation.</b><br>It is <b>important that a PHMP for subsidence incorporates a procedure that activates and implements “controlled mining operation” as a risk control measure.</b> While using the mining operation to control subsidence hazards can be effective, the implementation of this control measure may require specific and significant planning and preparation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Appendix 2 of Extraction Plan Main Document – WHS Risk Assessment                                                                                                                              |
| S3.5.2 Management Status reporting to assist with regular consultation                                     | Appendix B of the guidelines provides an example of a management status report which has been used in the industry to assist with regular consultation, co-operation and co-ordination between the mine operator and stakeholders. No requirement is specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Section 11 Consultation                                                                                                                                                                        |

| Referenced Section                                                            | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Where Addressed in PSMP                                                                   |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| S3.5.3 Other Examples of best industry practices relevant to PHMP             | Appendix C of the guidelines provides an example for managing WHS aspects of dwellings and similar civil structures. No requirement is specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>N/A to EP Area</b><br>(no dwellings or civil structures in EP Area)                    |
| S3.6 Review, Audit & Maintenance (Of PHMPs):<br>S3.6.1 Review and Maintenance | The mine operator must ensure that the PHMP for subsidence is reviewed and as necessary revised in accordance with clause 25 of the WHSMP Regulation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Section 16 (Review)                                                                       |
|                                                                               | If the PHMP for subsidence is revised, the mine operator must record the revision, <b>including any revision of a risk assessment, by amending the plan in writing.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Section 16 (Review)                                                                       |
|                                                                               | A PHMP is part of the SMS for a mine (see clause 14(1)(c)(i)), which must be audited under clause 15, maintained under clause 16 and reviewed, and as necessary revised, under clause 17 of the WHSMP Regulation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 16 (Review)<br>Springvale SMS                                                     |
|                                                                               | For further guidance notes in relation to maintenance and review, refer to sections 2.6 and 2.9 of this guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Refer for s2.6 and 2.9 earlier above                                                      |
| 3.6.2 Audit                                                                   | The mine operator must audit a PHMP for subsidence as part of auditing the effectiveness of the SMS in accordance with clause 15 of the WHSMP Regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Section 16.1 (General Review)                                                             |
|                                                                               | Under clause 15(c) of the WHSMP Regulation, the system for auditing the effectiveness of the SMS must be set against the performance standards for measuring the effectiveness of all aspects of the SMS, including the methods, frequency and results of the audit process. The audit should also consider the following matters:<br>(1) competency of the auditor,<br>(2) the person responsible for ensuring the audit is conducted, and<br>(3) the person responsible for implementing the results of the audit.                                                                                                                                                                                                                                                                        | Section 16.1 (General Review)<br>SMP                                                      |
| s4 High Risk Activity Notification in relation to subsidence                  | A mine operator must give notice of a HRA to the regulator and ensure that the requirements of clause 33 and Schedule 3 of the WHSMP Regulation are complied with. In Schedule 3 of the WHSMP Regulation, there are three HRAs that relate to subsidence:<br>(1) clause 16 - Secondary extraction or pillar extraction, splitting or reduction,<br>(2) clause 17 - Shallow depth of cover mining, and<br>(3) clause 28 - Highwall mining.                                                                                                                                                                                                                                                                                                                                                   | Applicable in relation to Clause 16 – secondary extraction                                |
|                                                                               | Specifically, when submitting a HRA notification that involves subsidence, the mine operator must provide:<br>(1) details of how the risks to the health and safety of workers and other persons from subsidence caused by the activity will be managed - refer to clause 16, Schedule 3 - Secondary extraction or pillar extraction, splitting or reduction,<br>(2) information on how the risks to the health and safety of workers and other persons from the potential formation of sinkholes will be managed - refer to clause 17, Schedule 3 - Shallow depth of cover mining, or<br>(3) information on how the risks to the health and safety of workers and other persons from subsidence caused by the activity will be managed - refer to clause 28, Schedule 3 - Highwall mining. | A HRA Notification will be submitted prior to secondary extraction.<br>PSMP Section 4.5.2 |

| Referenced Section                    | Guideline Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Where Addressed in PSMP                                                                                                |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|                                       | The HRA notification should consider and address all relevant matters set out in section 2 of this guideline, in particular sections 2.2 to 2.9 above. The level of detail required for all the relevant matters set out in section 2 of this guideline should be commensurate with the nature, likelihood, potential consequences and complexity of subsidence hazards identified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Refer s2.2 to 2.9 above                                                                                                |
|                                       | For guidance notes on how to provide a HRA notification in accordance with clause 33 and Schedule 3, refer to the NSW Department of Industry, WHS guideline “Notifying the regulator of a high risk activity”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Noted                                                                                                                  |
| S5 Engineering Plans and Drawings     | Engineering plans and drawings are part of the results of the mine operator’s investigation, assessment and consideration. The mine operator should refer to the NSW Department of Industry, WHS guideline “ <b>Notifying the regulator of a high risk activity</b> ” for guidance notes on how to prepare and submit the engineering plans and drawings in relation to:<br>(1) secondary extraction or pillar extraction, splitting or reduction,<br>(2) shallow depth of cover mining, or<br>(3) highwall mining.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Noted. Engineering plans submitted as part of the HRA notification will be prepared in accordance with this guideline. |
| s6 Notification of Incident or Injury | <b><i>NOTE by Centennial:</i></b> The following relates specifically to notification requirements in relation to subsidence where an injury has <b>not</b> occurred. Requirements where injuries are involved to any party within the Mining Lease are identified and managed in accordance with the Springvale Mine SMS.<br>For guidance notes on how to notify the regulator of subsidence-related incidents or injuries, refer to the NSW Department of Industry, WHS guide “Notification of incident and injury” “Accordingly the following is provided:”<br>Under Clause 128 of the WHSMP Regulations (Duty to Notify Regulator):<br>(1) The operator of a mine or petroleum site <b>must take all reasonable steps to ensure that the regulator is notified in accordance with this clause</b> after becoming aware of an incident (other than a notifiable incident) arising out of the carrying out of mining operations or petroleum operations at the mine or petroleum site, but only if the incident:<br>(a) results in illness or injury that requires medical treatment within the meaning of clause 13 of Schedule 9, or<br><b>(b) is a high potential incident.</b><br>(6) In this clause:.....high potential incident means any of the following:<br>(n) any <b>indication from monitoring data</b> of the development of <b>subsidence which may result in any incident referred to in clause:</b><br>179 (a) (xvi)-a <b>failure of ground, or of slope stability control measures</b> , or<br>179 (a) (xvii) <b>rock falls, instability of cliffs, steep slopes or natural dams, occurrence of sinkholes, development of surface cracking or deformations or release of gas at the surface, due to subsidence.</b> | Section 15 (Reporting)                                                                                                 |
| S7 Notification of Reportable Events  | For guidance notes on how to notify the regulator of reportable events relevant to subsidence, e.g. commencement of mining operations or proposed material changes in relation PHMP, refer to the NSW Department of Industry, WHS factsheet “ <i>Notifying the regulator of reportable events factsheet</i> ”.<br><b>Accordingly, notification requirements for high potential incidents are as per s6 of guideline immediately above.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Section 15 (Reporting)                                                                                                 |

## **APPENDIX 2: STAKEHOLDER CONSULTATION**



# Stakeholder Consultation

### A3.1 Detailed Summary of Stakeholder Consultation

**Table A3.1** below provides a detailed summary of aspects and issues raised during stakeholder consultation specifically undertaken for the Extraction Plan and supporting component plans, and where those have been addressed. It is noted that this is in addition to and builds upon previous and ongoing consultation with various key stakeholders as part of the approved EIS for SSD 5594 and existing operations at the mine (including previous Extraction Plans).

**Table A3.1 Detailed Summary of Stakeholder Consultation for the Extraction Plan and Supporting Component Plans**

| Stakeholder                         | Date       | Mode            | Summary of Consultation                                                                                                                                                                                                                                                                                                 | Where Addressed                       |
|-------------------------------------|------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Independent Monitoring Panel / DPIE | 24-03-2020 | Teleconference  | A meeting was held with the IMP to discuss the impending Extraction Plan for Longwalls 428-432. This time was also used as an opportunity to discuss the consolidation of the Biodiversity Management Plan (BMP), Water Management Plan (WMP) and Swamp Monitoring Program to cover Longwalls 415-432.                  | BMP, Swamp Monitoring Program and WMP |
|                                     | 25-05-2020 | Email           | A copy of the Longwalls 415-432 Environmental Monitoring Program was provided to the IMP for review and feedback (via DPIE). The document outlined the proposed environmental and subsidence monitoring approach for the Extraction Plan.                                                                               | -                                     |
|                                     | 18-06-2020 | Email / Letter  | Feedback regarding the Longwalls 415-432 Environmental Monitoring Program was provided from the IMP.                                                                                                                                                                                                                    | -                                     |
|                                     | 30-07-2020 | Teleconference  | A teleconference was held between Centennial and the IMP to discuss swamp water level monitoring, proximity of mining in relation to State Mine and Marrangaroo Swamp, and review of the electrical resistance tomography report.                                                                                       | -                                     |
|                                     | 03-09-2020 | Teleconference  | A teleconference was held between Centennial and the IMP to provide the IMP with a specialist presentation from JBS&G on the groundwater model.                                                                                                                                                                         | -                                     |
|                                     | 22-09-2020 | Site Inspection | A site inspection was undertaken with the following sites visited: Marrangaroo Swamp, Barrier Swamp, Pine and Nine Mile Swamp, Carne West Swamp, Gang Gang Swamp and a ridgeline view of the pagodas.                                                                                                                   | -                                     |
|                                     | 16-11-2020 | Email / Letter  | A revised version of the Longwalls 415-432 Environmental Monitoring Program was provided to the IMP.                                                                                                                                                                                                                    | -                                     |
|                                     | 7-12-2020  | Email / Letter  | Feedback regarding the revised Longwalls 415-432 Environmental Monitoring Program was provided from the IMP.                                                                                                                                                                                                            | -                                     |
|                                     | 8-12-2020  | Email           | In response to queries raised by the IMP regarding the revised Longwalls 415-432 Environmental Monitoring Program, additional information was provided. This included information regarding the mapping of Glow Worm Swamp (not a THPSS) and a report demonstrating compliance with EPBC approval 2013/6881 conditions. | -                                     |

| Stakeholder         | Date       | Mode           | Summary of Consultation                                                                                                                                                                                                                                                                                                                                                          | Where Addressed                                                              |
|---------------------|------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                     | 19-12-2020 | Email          | Submission of BMP, Swamp Monitoring Program, LMP and WMP for consultation to IMP by James Wearne (Centennial). These documents addressed feedback provided by the IMP regarding the Longwalls 415-432 Environmental Monitoring Program.                                                                                                                                          | BMP, Swamp Monitoring Program, LMP and WMP                                   |
|                     | 11-02-2021 | Email / Letter | The IMP responded with a letter providing comment on the BMP, Swamp Monitoring Program, LMP and WMP. These have been addressed in the applicable management plans.                                                                                                                                                                                                               | BMP, Swamp Monitoring Program, LMP and WMP                                   |
|                     | 16-02-2021 | Meeting        | A meeting was held with the IMP, DPIE, Centennial and SLR to discuss feedback provided by the IMP regarding the draft component plans.                                                                                                                                                                                                                                           | -                                                                            |
| Resources Regulator | 4-12-2020  | Email          | Centennial provided a copy of the EMP for Longwalls 415-432 to the Resources Regulator requesting comment on the proposed approach to consolidate management plans for Longwalls 411-418 into the Extraction Plan management plans.                                                                                                                                              | BMP, Swamp Monitoring Program and WMP                                        |
|                     | 17-12-2020 | Teleconference | Meeting to discuss Extraction Plan approach and interaction with the Longwalls 411-418 Subsidence Management Plan.                                                                                                                                                                                                                                                               | -                                                                            |
|                     | 23-12-2020 | Email          | Submission of Land Management Plan (LMP), Built Features management Plan (BFMP), Subsidence Monitoring Program, Public Safety Management Plan (PSMP) and Powerline Management Plan for consultation to Greg Kininmonth (Resources Regulator) by Adam Williams (SLR Principal Consultant).                                                                                        | LMP, BFMP, Subsidence Monitoring Program, PSMP and Powerline Management Plan |
|                     | 23-12-2020 | Email          | Email from Greg Kininmonth (Resources Regulator) to Adam Williams (SLR Principal Consultant) requesting the plans be sent to <a href="mailto:nswresourcesregulator@service-now.com">nswresourcesregulator@service-now.com</a> . This was actioned by Adam Williams.                                                                                                              | LMP, BFMP, Subsidence Monitoring Program, PSMP and Powerline Management Plan |
|                     | 21-01-2021 | Email / Letter | Email from Alex Tutt-Branco (Resources Regulator) to Adam Williams (SLR Principal Consultant) advising that based on the review of the extraction plan documents, the Resources Regulator advises that it has no specific comments regarding mine safety or mine rehabilitation matters in relation to the proposal at this time.                                                | LMP, BFMP, Subsidence Monitoring Program, PSMP and Powerline Management Plan |
| DAWE                | 04-12-2020 | Email          | Centennial contacted Australian Department of Agriculture, Water and the Environment (DAWE) to discuss the BMP and Swamp Monitoring Program which cover Longwalls 415-432.                                                                                                                                                                                                       | BMP and Swamp Monitoring Program                                             |
|                     | 15-12-2020 | Email          | Email from Sarah Taylor (DAWE Assistant Director, Water Resources Regulatory Support) to James Wearne (Springvale's Group Manager Approvals) confirming she was the best contact at DAWE and to provide the plans for review. She also requested a meeting in the new year to discuss the plans. James Wearne responded stating he would provide the plans as soon as available. | BMP and Swamp Monitoring Program                                             |
|                     | 19-12-2020 | Email          | Submission of BMP and Swamp Monitoring Program for consultation to DAWE by James Wearne (Centennial).                                                                                                                                                                                                                                                                            | BMP and Swamp Monitoring Program                                             |
|                     | 27-01-2021 | Meeting        | A meeting was held with DAWE, Centennial and SLR to discuss the approach developing the Longwalls 415-432 BMP and Swamp Monitoring Program. Overviews of the documents and monitoring programs were provided, with additional information requested and provided as outlined below.                                                                                              | BMP and Swamp Monitoring Program                                             |

| Stakeholder | Date       | Mode                 | Summary of Consultation                                                                                                                                                                                                                                                                                                                                                                                                                          | Where Addressed                  |
|-------------|------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|             | 27-01-2021 | Email                | Email from James Wearne (Centennial) to Dwaine McMaugh, Natasha Amerasinghe and Sarah Taylor (DAWE) providing a copy of the swamp and water presentation delivered and discussing dates for potential site visit by DAWE.                                                                                                                                                                                                                        | BMP and Swamp Monitoring Program |
|             | 27-01-2021 | Email                | Email from James Wearne (Centennial) to Dwaine McMaugh, Natasha Amerasinghe and Sarah Taylor (DAWE) providing a copy of the approval letter for the Longwalls 424-472 BMP and Swamp Monitoring Program.                                                                                                                                                                                                                                          | BMP and Swamp Monitoring Program |
|             | 27-01-2021 | Email                | Email from James Wearne (Centennial) to Dwaine McMaugh, Natasha Amerasinghe and Sarah Taylor (DAWE) providing a copy of the WMP for reference.                                                                                                                                                                                                                                                                                                   | WMP                              |
| FCNSW       | 31-07-2020 | Email                | Email to Melanie Klootwijk (FCNSW Fire and Stewardship Manager) from Natalie Gardiner (Springvale Environment and Community Coordinator) to confirm if there were any further plans for forestry plantation reestablishment within Extraction Plan Area.                                                                                                                                                                                         | LMP and BFMP                     |
|             | 03-08-2020 | Email                | Email from Melanie Klootwijk (FCNSW Fire and Stewardship Manager) to Natalie Gardiner (Springvale Environment and Community Coordinator) confirming FCNSW Newnes plans remain as 'no further plantation reestablishment' and to continue with general land management tasks.                                                                                                                                                                     | LMP and BFMP                     |
|             | 23-12-2020 | Email                | Submission of LMP and Built Features Management Plan (BFMP) for consultation to Melanie Klootwijk (FCNSW) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                                                                                                           | LMP and BFMP                     |
|             | 01-02-2021 | Email                | Email from Melanie Klootwijk (FCNSW) to Adam Williams (SLR Principal Consultant) providing a letter which confirmed FCNSW is satisfied Centennial Coal has adequately taken into consideration FCNSW as the landowner and the impact longwall extraction has on our surface assets and management responsibilities. Adam Williams (SLR Principal Consultant) responded to Melanie Klootwijk (FCNSW) on 03-02-2021 thanking her for her feedback. | LMP and BFMP                     |
| BCD         | 18-12-2020 | Email                | Email to Liz Mazzar (Conservation Planning Officer) from Natalie Gardiner (Springvale Environment and Community Coordinator) to confirm the appropriate contact for consultation with regards to heritage. Liz Mazzar responded the same day confirming details.                                                                                                                                                                                 | LMP                              |
|             | 23-12-2020 | Email                | Submission of BMP and Swamp Monitoring Program for consultation to Liz Mazzar (BCD) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                                                                                                                                 | BMP and Swamp Monitoring Program |
|             | 19-01-2021 | Email                | Email from Liz Mazzar (BCD) by Adam Williams (SLR Principal Consultant) requesting an extension on providing BMP and Swamp Monitoring Program until 12-02-2021.                                                                                                                                                                                                                                                                                  | BMP and Swamp Monitoring Program |
|             | 20-01-2021 | Email                | Email from Liz Mazzar (BCD) by Adam Williams (SLR Principal Consultant) requesting a copy of the subsidence predictions, subsidence monitoring program and Subsidence Assessments. Adam Williams (SLR Principal Consultant) responded on 21-01-2021 requesting a phone call with Liz Mazzar (BCD).                                                                                                                                               | BMP and Swamp Monitoring Program |
|             | 02-02-2021 | Phone call and email | Phone calls and emails were undertaken between Liz Mazzar (BCD) and Adam Williams (SLR Principal Consultant). Following the phone call, Adam Williams (SLR Principal Consultant) provided a copy of the Longwalls 428-432 Subsidence Monitoring Program, as requested.                                                                                                                                                                           | BMP and Swamp Monitoring Program |

| Stakeholder          | Date       | Mode           | Summary of Consultation                                                                                                                                                                                                                                                                                                                  | Where Addressed                             |
|----------------------|------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
|                      | 12-02-2021 | Email / Letter | Renae Shepherd (BCD) emailed Adam Williams (SLR Principal Consultant) providing a letter with comments and recommendations from BCD. These have been addressed in the applicable management plans.                                                                                                                                       | BMP, LMP, PSMP and Swamp Monitoring Program |
| Boral                | 23-12-2020 | Email          | Submission of Property Management Plan for consultation to David Bolton (Boral) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                             | Property Management Plan                    |
| Lithgow City Council | 08-04-2020 | CCC Meeting    | The Western Region Community Consultative Committee (CCC) Meeting was held by Centennial with Council representatives in attendance.                                                                                                                                                                                                     | -                                           |
|                      | 06-05-2020 | Presentation   | The Centennial Western Region Aboriginal Cultural Heritage Presentation was provided to Council.                                                                                                                                                                                                                                         | LMP                                         |
|                      | 19-08-2020 | CCC Meeting    | The Western Region CCC Meeting was held by Centennial with Council representatives in attendance.                                                                                                                                                                                                                                        | -                                           |
|                      | 28-10-2020 | Presentation   | The Centennial Western Region Aboriginal Cultural Heritage Presentation was provided to Council.                                                                                                                                                                                                                                         | LMP                                         |
|                      | 23-12-2020 | Email          | Submission of Property Management Plan for consultation to Lithgow City Council by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                             | Property Management Plan                    |
|                      | 23-12-2020 | Email          | An automated response was received from Lithgow City Council confirming they had received the email and that it would be referred to the appropriate department for their attention.                                                                                                                                                     | Property Management Plan                    |
|                      | 14-01-2021 | Letter / Email | Letter / email from Lachlan Sims (Lithgow City Council) to Adam Williams (SLR Principal Consultant) confirming that Council considers the Property Management Plan satisfactory.                                                                                                                                                         | Property Management Plan                    |
|                      | 17-02-2021 | CCC Meeting    | The Western Region CCC Meeting was held by Centennial with Council representatives in attendance.                                                                                                                                                                                                                                        | -                                           |
| WaterNSW             | 23-12-2020 | Email          | Submission of WMP and Swamp Monitoring Program for consultation to Jessie Evans (WaterNSW) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                  | WMP and Swamp Monitoring Program            |
|                      | 23-12-2020 | Email          | Emails from Jessie Evans (WaterNSW) to Adam Williams (SLR Principal Consultant) confirming they will review the plans review and respond if a meeting would be beneficial.                                                                                                                                                               | WMP and Swamp Monitoring Program            |
|                      | 19-01-2021 | Email          | Email from Ravi Sundaram (WaterNSW) to Adam Williams (SLR Principal Consultant) stating WaterNSW has no comments on the proposed monitoring and management proposed for the watercourses and swamps overlying the extraction plan area.                                                                                                  | WMP and Swamp Monitoring Program            |
|                      | 20-01-2021 | Email          | Email to Ravi Sundaram (WaterNSW) from Adam Williams (SLR Principal Consultant) thanking him for his response.                                                                                                                                                                                                                           | WMP and Swamp Monitoring Program            |
| Water in NSW         | 23-12-2020 | Email          | Submission of WMP and Swamp Monitoring Program for consultation to Mitchell Isaacs (Water in NSW) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                           | WMP and Swamp Monitoring Program            |
|                      | 04-02-2021 | Email          | Adam Williams (SLR Principal Consultant) contacted Mitchell Isaacs (Water in NSW) requesting feedback on the WMP and Swamp Monitoring Program provided on 23-12-2020. Mitchell Isaacs (Water in NSW) sent an internal email copying in SLR and Centennial Springvale requesting his team provide feedback. No comment has been received. | WMP and Swamp Monitoring Program            |



| Stakeholder      | Date       | Mode           | Summary of Consultation                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Where Addressed           |
|------------------|------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Heritage NSW     | 23-12-2020 | Email          | Submission of LMP for consultation to Heritage NSW by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                                                                                                                                                                                                       | LMP                       |
|                  | 23-12-2020 | Email          | An automated response was received from Heritage NSW confirming they had received the email and would respond as soon as possible.                                                                                                                                                                                                                                                                                                                                                    | LMP                       |
|                  | 12-01-2021 | Email          | Email from Colleen Klingberg (Heritage NSW) requesting confirmation that the LMP is related only to Aboriginal Cultural Heritage and no response is required under the <i>Heritage Act 1977</i> by the Heritage Council.                                                                                                                                                                                                                                                              | LMP                       |
|                  | 15-01-2021 | Email          | Email to Colleen Klingberg (Heritage NSW) from Adam Williams (SLR Principal Consultant) responding to her email on 12-01-2021. Colleen Klingberg responded shortly after thanking Adam Williams for his response.                                                                                                                                                                                                                                                                     | LMP                       |
|                  | 29-01-2021 | Email / Letter | Emails from Tim Olliver and Shikha Jhaldiyal (Heritage NSW) to Adam Williams (SLR Principal Consultant) providing response letter to LMP. Heritage NSW confirmed the document adequately addresses the requirements necessary to identify any impacts to historic heritage within the project impact areas shown in the report listed above. Further, the site has low to nil potential for historical archaeological deposits. Therefore, no further heritage comments are required. | LMP                       |
|                  | 04-02-2021 | Email / Letter | Email from Tim Olliver (Heritage NSW) to Adam Williams (SLR Principal Consultant) providing a revised response letter to LMP which corrected a minor error and wording of the proximity of SHR items to the project area.                                                                                                                                                                                                                                                             | LMP                       |
|                  | 04-02-2021 | Email          | Adam Williams (SLR Principal Consultant) contacted Colleen Klingberg (Heritage NSW) requesting feedback regarding Aboriginal heritage. Colleen responded on 05-02-2021 stating Rose O'Sullivan (copied to email) is the A/Senior Team leader and is better placed to respond to the query.                                                                                                                                                                                            | LMP                       |
|                  | 12-02-2021 | Phone call     | Gillian Goode (Heritage NSW) spoke with Adam Williams (SLR Principal Consultant) to state that she had been provided the LMP for review and would provide feedback by COB 16-02-2021. No feedback has been received.                                                                                                                                                                                                                                                                  | LMP                       |
| Endeavour Energy | 23-12-2020 | Email          | Submission of Powerline Management Plan for consultation to Rod Joyce (Endeavour Energy) by Adam Williams (SLR Principal Consultant).                                                                                                                                                                                                                                                                                                                                                 | Powerline Management Plan |
|                  | 08-01-2021 | Email          | Email from Ravi Veraiahgari (Endeavour Energy) requesting a meeting be arranged to discuss the Powerline Management Plan. This was arranged for 15 January 2021.                                                                                                                                                                                                                                                                                                                      | Powerline Management Plan |
|                  | 15-01-2021 | Teleconference | Teleconference held with Springvale, SLR, Endeavour Energy and Energy Serve to discuss the Powerline Management Plan.                                                                                                                                                                                                                                                                                                                                                                 | Powerline Management Plan |
|                  | 15-01-2021 | Email          | Email from Michael Temesvary (Energy Serve) to Mehren Azami (Endeavour Energy) providing data requested during teleconference.                                                                                                                                                                                                                                                                                                                                                        | Powerline Management Plan |
|                  | 22-01-2021 | Email          | Email from Samantha Hayes (SLR Associate Consultant) to Endeavour Energy teleconference attendees providing meeting minutes from meeting held on 15-01-2021.                                                                                                                                                                                                                                                                                                                          | Powerline Management Plan |
|                  | 25-01-2021 | Email          | Email from John Roberts (Endeavour Energy) to Samantha Hayes (SLR Associate Consultant) with a question regarding bushfire liability if caused by subsidence damaging conductors.                                                                                                                                                                                                                                                                                                     | Powerline Management Plan |

| Stakeholder                   | Date       | Mode         | Summary of Consultation                                                                                                                                                                                                                                                           | Where Addressed           |
|-------------------------------|------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                               | 01-02-2021 | Email        | Email from John Roberts (Endeavour Energy) to Samantha Hayes (SLR Associate Consultant) with a further query regarding bushfire liability if caused by subsidence damaging conductors. Adam Williams (SLR Principal Consultant) responded on 03-02-2021 clarifying these queries. | Powerline Management Plan |
| Land Registry Services        | 07-02-2019 | Email        | <a href="mailto:Surveyor-General-Approvals@customerservice.nsw.gov.au">Surveyor-General-Approvals@customerservice.nsw.gov.au</a> Confirmation of your Survey Mark(s) Removal Application - Newnes Plateau – Lithgow automatic Response of submission                              | BFMP                      |
|                               | 04-03-2019 | Email        | R 19.037 SSM19176 Confirmation of your Survey Mark (s) Removal Application - State Mine Gully Rd - Lithgow - Email from Daniel Sadler (Spatial Services) to Michael Price (Centennial Coal) with Approval of mark removal SSM19176                                                | BFMP                      |
|                               | 13-10-2020 | Email        | <a href="mailto:Surveyor-General-Approvals@customerservice.nsw.gov.au">Surveyor-General-Approvals@customerservice.nsw.gov.au</a> Confirmation of your Survey Mark(s) Removal Application - Newnes Plateau – Lithgow automatic Response of submission                              | BFMP                      |
|                               | 15-10-2020 | Email        | Email from Janez Rom (Spatial Services) to Michael Price (Centennial Coal) request for Mining Lease Plan showing location of SS21304.                                                                                                                                             | BFMP                      |
|                               | 20-10-2020 | Email        | Email from Michael Price (Centennial Coal) to Janez Rom (Spatial Services) sending requested for Mining Lease Plan showing location of SS21304                                                                                                                                    | BFMP                      |
|                               | 21-10-2020 | Email        | R 20.284 SS21304 Newnes Plateau - Email from Janez Rom (Spatial Services) to Michael Price (Centennial Coal) with Approval of mark removal SS21304                                                                                                                                | BFMP                      |
|                               | 23-12-2020 | Email        | Submission of BFMP for consultation to Lisa Powell (Land Registry Services) by Adam Williams (SLR Principal Consultant).                                                                                                                                                          | BFMP                      |
|                               | 13-01-2021 | Email        | Email from Daniel Sadler (Spatial Services) to Adam Williams (SLR Principal Consultant) confirming that consent for the removal / disturbance of SS19176 and SS 21304 has already been granted. Therefore, the office of the Surveyor Generals raised no further concern.         | BFMP                      |
|                               | 14-01-2021 | Email        | Email to Daniel Sadler (Spatial Services) from Adam Williams (SLR Principal Consultant) thanking him for his prompt response.                                                                                                                                                     | BFMP                      |
| Registered Aboriginal Parties | 06-05-2020 | Presentation | The Centennial Western Region Aboriginal Cultural Heritage Presentation was provided to the Registered Aboriginal Parties.                                                                                                                                                        | LMP                       |
|                               | 28-10-2020 | Presentation | The Centennial Western Region Aboriginal Cultural Heritage Presentation was provided to the Registered Aboriginal Parties.                                                                                                                                                        | LMP                       |
|                               | 23-12-2020 | Email        | Submission of LMP for consultation to the Registered Aboriginal Parties by Adam Williams (SLR Principal Consultant).                                                                                                                                                              | LMP                       |

**Copies of Supporting Detailed Correspondence: (refer over page)**

## Independent Monitoring Panel / DPIE

**From:** James Wearne <[James.Wearne@centennialcoal.com.au](mailto:James.Wearne@centennialcoal.com.au)>  
**Sent:** Saturday, 19 December 2020 9:32 AM  
**To:** Andrew Rode <[Andrew.Rode@planning.nsw.gov.au](mailto:Andrew.Rode@planning.nsw.gov.au)>  
**Cc:** Gen Lucas <[Gen.Lucas@planning.nsw.gov.au](mailto:Gen.Lucas@planning.nsw.gov.au)>  
**Subject:** Springvale Extraction Plan - Draft Management Plans

Hi Andrew

We have prepared draft management plans to support the next Springvale Extraction Plan. These management plans incorporate the environmental monitoring program endorsed by the Springvale IMP.

Attached is a letter and a link to the draft Water, Swamp and Biodiversity management plans.

Can you please forward the letter and link on to the Springvale IMP members and seek their comment / feedback on the draft management plans?

Any feedback will be incorporated into revised management plans that will be submitted as final for determination.

These management plans have been sent to other various regulators for review and comment including the Commonwealth Department the final management plans submitted will incorporate any feedback from these agencies as well.

We will arrange a time and date in the new year to meet with the IMP to discuss any feedback and issues closer to the time of submission.

- <https://fileshare.slrconsulting.com/wl/?id=91REknHDHA0FMoCWWRAFPr3AgwMj7GS>

Regards

**James Wearne**  
Group Manager Approvals

p: +61 (0) 2 4935 8944 | m: +61 (0) 407 207 530 | Internal: 8944

From: "Andrew Rode" <[Andrew.Rode@planning.nsw.gov.au](mailto:Andrew.Rode@planning.nsw.gov.au)>  
To: "James Wearne" <[James.Wearne@centennialcoal.com.au](mailto:James.Wearne@centennialcoal.com.au)>  
Cc: "Steve O'Donoghue" <[Stephen.ODonoghue@planning.nsw.gov.au](mailto:Stephen.ODonoghue@planning.nsw.gov.au)>  
Date: 11/02/2021 10:11 AM  
Subject: RE: Springvale Extraction Plan - Draft Management Plans - IMP advice

---

Hi James

Please see attached advice from the Springvale IMP regarding these draft management plans.

It would be worth setting up a meeting to discuss the comments relating to the cease-to-work trigger [related to condition 9(b) under EPBC 2013/6881] – see excerpt below.

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9. This condition applies to all longwalls except **LW418**.

To minimise impacts on **Temperate Highland Peat Swamps**, in addition to Condition 10(h)(ix) (Schedule 3) on the **New South Wales development consent**, trigger action response plans (or similar documents) must:

- a. define specific triggers (exceedence thresholds), with reference to baseline data and control swamps, which will apply to each **Temperate Highland Peat Swamp** within the **project area**
- b. define specific cease-work triggers, with reference to baseline data and control swamps, to respond to cases of sudden, unexpected or persistent exceedences, after which work may not recommence until the impact has been explained or offset to the satisfaction of the **Minister**
- c. define protocols for investigation and appropriate treatment of early warning and cease-work triggers in a timely fashion
- d. establish a protocol for reporting exceedences promptly to the **Department**; and
- e. explain how the measures described in the trigger action response plan will protect **Temperate Highland Peat Swamps**.

The **approval holder** must not **commence longwall mining** before the corresponding trigger action response plan has been approved in writing by the **Minister**. The approved trigger action response plan must be implemented.

Kind regards  
Andrew

---

**Andrew Rode**  
**Senior Environmental Assessment Officer**

Energy, Industry & Compliance Division | Planning & Assessment Group | Department of Planning, Industry and Environment  
**T** 02 8289 6744 | **E** [andrew.ode@planning.nsw.gov.au](mailto:andrew.ode@planning.nsw.gov.au)  
4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150

Mail - Locked Bag 5022, Parramatta NSW 2124  
[www.dpie.nsw.gov.au](http://www.dpie.nsw.gov.au)



*The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.*

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10 February 2021

Mr Mike Young  
Executive Director  
Energy, Industry and Compliance  
Department of Planning, Industry and Environment  
Locked Bag 5022  
PARRAMATTA NSW 2124

Dear Mr Young

**Re: Springvale Mine Extension Project:  
Springvale Longwalls 415 – 432 Monitoring Plans dated December 2020**

I write on behalf of the Independent Monitoring Panel (the Panel) for the Springvale Coal Mine in response to a request dated 21<sup>st</sup> December 2020 from Mr Andrew Rode, Senior Environmental Assessment Officer, of your Department. Mr Rode has sought comments and feedback on a suite of draft management plans to support the next Springvale Extraction Plan for LWs 428-432.

The following documents were forwarded to the Panel:

- Letter dated 22 December 2020 to the Panel from Natalie Gardner, Environment and Community Coordinator, Centennial Coal
- Centennial Longwalls 415-432 Biodiversity Management Plan, December 2020
- Centennial Longwalls 415-432 Swamp Monitoring Program, December 2020
- Centennial Longwalls 415-432 Water Management Plan, December 2020
- Centennial Longwalls 415-432 Land Management Plan, December 2020

The Panel notes that the Land Management Plan was not one of the three plans that Centennial Coal requested the Panel to review and that this management plan falls outside the scope of the Panel. Hence, the Land Management Plan is not addressed in this advice.

### **Overview**

In preparing the above-mentioned management plans to support its Extraction Plan for LWs 428-432, Centennial Coal has taken the opportunity to rewrite the plans in a manner that covers LW 415 to 432. This was motivated by the fact that monitoring methodologies across Longwalls 415 to 427 have been inconsistent due to changes to best practice over time.

Centennial Coal discussed this approach with the Panel on 24 March 2020. Subsequently, the Panel endorsed the approach and provided advice on the consolidation of the management plans on 18<sup>th</sup> June 2020.

The Management Plans under review have had regard to the majority of the Panel's earlier advice. Several residual issues are noted for further consideration towards the end of this current advice.

The Panel generally endorses the format and content of the four management plans under review. Its comments on these plans are concerned primarily with ensuring consistency between plans and refining some technical aspects. It notes that the format of Trigger Action Response Plans differs between the individual management plans and suggests that this be standardised.

### **Biodiversity Management Plan**

In its request of 22 December 2020 for the Panel to review the management plans, Centennial Coal advised that all swamp obligate species have been removed from the Biodiversity Management Plan and are captured within the Swamp Management Plan. The Panel notes that the revised Biodiversity Management Plan now comprises two Management Units, namely, Terrestrial Environment (including fauna and flora) and Riparian Biota. Both these Management Units fall outside the scope of the Panel's expertise. This matter was raised with the Department who advised that the Biodiversity Management Plan would also be reviewed by the Biodiversity, Conservation and Science Directorate and therefore the Department would not be relying on the advice of the Panel.

Against this background, the Panel has no comment on the Biodiversity Management Plan. However, it notes that the Springvale Mine consent requires the Biodiversity Management Plan to be prepared in consultation with OEH and the Independent Monitoring Panel.

### **Swamp Monitoring Plan**

The following matters are raised for further consideration by Centennial Coal.

#### **a. Cease-work triggers**

The Panel notes that the 'cease-to-work' condition incorporated in the plan requires concurrently, both a 25% exceedance of predicted subsidence and post-mining groundwater depth (swamp piezometers) surpassing the 99<sup>th</sup> percentile for more than one month (which cannot be explained by baseline data, climate or observed behaviour at control sites). The Panel has concerns regarding the reasonableness of these threshold values, both individually and collectively.

The threshold values that the Panel is questioning relate to the accuracy of predictions of subsidence **effects** and the **impacts** of these effects on groundwater. It is the Panel's understanding that subsidence predictions are already artificially inflated by some 30% at the site of lineaments to compensate for poor correlation with subsidence predictions using the Incremental Profile Method, which is the dominant prediction methodology in the NSW coal mining industry. To then tolerate another 25% exceedance in subsidence appears excessive. More fundamental, however, is that it is now well established that swamp drainage at Springvale Mine is primarily related to the intersection by longwall goaves of lineament zones on which swamps are located and that this impact can extend well beyond the zone of surface subsidence. Therefore, the Panel questions both the relevance of using excessive predicted subsidence as a performance measure and the logic in requiring predicted subsidence to exceed 25% before a drop in groundwater depth can trigger a cease-work directive.

The most important issue is the impact (drop in groundwater depth) and not the effect (greater than predicted vertical subsidence). The Panel questions the appropriateness of having to wait until a fall in groundwater depth surpasses the 99<sup>th</sup> percentile for more than one month before a cease work-order is activated. It is possible for mining to have progressed a very long way past the monitoring point by the time this threshold value is reached, in which case ceasing to mine is unlikely to serve any purpose in restricting and mitigating consequences.

The Panel questions if the cease-work thresholds are still appropriate given the evolving knowledge of the role of lineaments in affecting the depth of groundwater. This is a matter that would benefit from discussions between Centennial Coal, the Department and the Panel before the Swamp Management Plan is finalised.

#### **b. Monitoring of Hanging Swamps**

The monitoring of control sites for Newnes Plateau Hanging Swamps requires upgrading, noting the Consent Condition 10(v) requirement that the SMP provide '*a minimum of 2 years of baseline data for swamp*

*hydrology and swamp vegetation’ and ‘hydrological and vegetative monitoring which fully satisfies Before After Control Impact (BACI) design principles.* The Panel notes that soil moisture (SM) sites are included in impact swamps Lost City and LC North and LC South and control swamp Twin Gully. However, the timing of their installation may not provide sufficient time for the collection of adequate baseline data. Furthermore, there is no soil moisture monitoring listed for control swamp Amphitheatre, for the Hanging Swamps Fire Tail West and East (only for sites in the NP Shrub Swamp); and no sites for threatened species, notably Giant Dragonfly, are shown for Twin Gully.

It is noted that the activity of installing shallow groundwater monitoring bores into a swamp can potentially damage the swamp. Therefore, an option for groundwater monitoring sites at hanging swamps may be to locate them immediately outside of the surface swamp footprint. This should provide appropriate data and information on shallow/perched groundwater levels without disturbing the swamp ecosystem.

c. Trigger Investigation Areas.

Extensions of Trigger Investigation Areas (TIAs) along lineaments need to be incorporated fully into the document. The Figures provided do not show extensions of the TIAs along identified lineaments. This should be rectified, particularly on maps showing groundwater monitoring locations. ‘TIA’ not ‘600m’ should be specified in line 4 of the TARP (Fig. 14.3).

d. Trigger values

A full range of triggers for all measured water quality parameters should be developed and listed. Tables in Section 9 do not provide objective measures as triggers (e.g. listing them as TBA, or in terms such as ‘water table depth’ or deviation from historical trends without specifying how these are to be assessed). Nor are the triggers for all parameters listed. For example, Section 9.2.4, Table 9.9 gives trigger criteria only for EC and pH. The Panel notes that the December 2020 report prepared for the Panel gives groundwater quality for other parameters described as within ‘acceptable range’ or ‘historical limits’ without specifying values for these parameters. Trigger values should also be defined for reference swamps such as Carne Central and Barrier in order to allow comparison with swamps that are likely to be mining-affected. The date range of the baseline periods for all parameters should be specified.

e. Vegetation mapping

Maps of photo monitoring sites including those for LWs 428-432 and map of vegetation monitoring sites should be included (updating Figs 2 and 5 in the November 2020 Environmental Monitoring Plan).

## **Water Management Plan**

a. Overall conceptualisation and data presentation

The Panel recommends that the conceptualisation of the groundwater systems (Section 6.4), and the tables and graphs of monitoring data and monitoring sites be linked. There are three groundwater systems identified in the conceptualisation in Section 6.4, which appear to be monitored by different groups of monitoring bores with potential for confusion in the naming of ‘shallow’:

- Perched groundwater systems (groundwater sustaining the swamps):
  - these systems appear to be monitored via ‘swamp piezometers’ and ‘shallow piezometres’ (i.e. <15 m below ground);
  - this data is not reported in the Water Management Report (it is reported in the Swamp Monitoring Program);
  - the Water Management Report should identify that it is confined to surface water and deep groundwater, with shallow groundwater and swamps (and the connectivity between surface and shallow groundwater) considered in the Swamp Monitoring Program;

- the use of the term ‘shallow’ should be clarified across the management plans. In the groundwater conceptualisation and modelling (Section 6.4) the term ‘shallow’ refers to the Banks Wall Sandstone (i.e. everything above the Mt York Claystone), but the associated ‘shallow’ piezometers are monitoring the perched swamp water. It is recommended to change nomenclature of the ‘shallow’ monitoring bores to something else (perhaps ‘perched’) to align with the conceptualisation and modelling reports and general appreciation of the groundwater regime;
  - Shallow groundwater system (water in the Burralow and Banks Wall Sandstone):
    - this data appears to be reported as ‘ridge piezometers’ and possibly also in some of the shallow wires of VWP;
    - Linkage between Section 6.4 and the data should be provided;
    - The graph showing ‘ridge piezometers’ needs to be expressed in mAHD (not BGL) and charted as individual or in groups of bores in close proximity to give more meaning to the data.
  - Deep groundwater system (regional groundwater system - water in the coal measures)
- b. Recommendations for future tables and charts
- Each piezometer should be classified under a conceptual groundwater system (i.e. as per Section 6.4 – perched, shallow or deep). This should be reflected in the tables and charts;
  - The depth of piezometers (i.e. in metres below ground level and in metres AHD) should be noted in the tables and on the graphs.
  - The survey height (mAHD) of the bores should be recorded in tables.
  - Graphs should plot mAHD so that level measurements are comparable at the local scale, the total depth of each bore and the mAHD at surface should be noted in the legend of the graph. Where graphs have more than one bore trace the distance between them should be provided.
  - CRD plots should indicate the time period that the CDR is created for and the time period for which the average has been calculated. It is noted that at most sites daily CRD show good alignment to groundwater. For sites that are deeper or where alignment is not as strong, consideration should be given to the comparison of groundwater to average weekly or monthly CRD (i.e. rather than daily);
  - It would be helpful to provide a summary overall discussion on what the data indicates conceptually about the different groundwater systems and the effects of mining and/or climate.
- c. Ongoing monitoring
- It is recommended that model verification be undertaken in a future review (i.e. comparison of modelled drawdown over time from previous models versus actual drawdown over time).
  - Marangaroo Creek should be monitored for both quality and quantity (volume) downstream of Marangaroo Swamp.
  - Monitoring in Upper Marangaroo Swamp (soil moisture, and the perched groundwater sustaining the swamp) and the groundwater within the Burralow Formation (i.e. ridge or VWP) should be considered in order to verify the model predictions of no impact at this swamp.
  - Mitigation and management options for groundwater drawdown/drainage of perched groundwater underlying swamps and associated surface water impacts are not provided. It is assumed that no mitigation or management is being considered for swamps.
- d. Water licensing
- The Aquifer Interference Policy requires proponents to hold licences to account for water ‘take’ (take being defined by both physical removal of water and induced inflow from an adjacent or overlying water source). The groundwater appears to adequately predict the take from the various

groundwater sources as a result of mining. However, the volumetric prediction of enhanced leakage from surface water as a result of mining is not included.

- It is noted that groundwater licences are held to account for some, but not all of the volume of groundwater taken last water year. It is noted that there is a mention that additional excess licence is available at the adjacent Angus Place Mine. The volume of this additional licence volume should be provided (i.e. the excess from Angus Place) and the options for resolving should be provided (i.e. trade or linking of licences).
- The predicted future take of water as a result of mining is understood to increase with increased mining. It is recommended that a clear table (and a graph) be provided that indicates:
  - o Yearly predicted take of water from each water source (groundwater and surface water) into the future (i.e. until end of mining and beyond);
  - o Inclusion of both groundwater and surface water licences volumes and water sources;
  - o If water licences are to be shared with Angus Place then predictions of water from Angus Place should be provided along with total licence volumes; and
  - o Comparison of actual take from each water source as monitored and modelled/calculated at the end of each water year.

### **Residual Issues**

Several issues raised in the Panel's advice of 18 June 2021 are not fully resolved in the current documentation. These are:

- o Flora and Fauna Point 4: *How reliable is it that determinations of 'negligible' impact on moderate risk fauna - broad-headed snake, brush-tailed wallaby, microbats – are to be determined solely on the basis of a one year post-mining survey?* The Panel notes the additional information provided in the Biodiversity Management Plan, especially Tables 10.2 and 13.1 and Appendix, relevant to this Point and to Points 6 and 7 1, but considers that further clarification is warranted.
- o Groundwater Point 12: *What provisions have been made for the monitoring of hanging swamps, noting that a condition of negligible impact applies to them?* The Panel considers that this has not been fully addressed in the management plans under review.

Should you have any queries on this matter, please do not hesitate to contact me.

Yours Sincerely



Emeritus Professor Jim Galvin  
**Chair, Springvale Independent Monitoring Panel**



## Resources Regulator

### Springvale Extraction Plan Consultation



Adam Williams

To greg.kininmonth@planning.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes



RR - Springvale LW 428-432 EP 20201222.pdf  
222 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Wed 23-Dec-2020 2:49 PM

Hi Greg,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to draft Plans included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=7i3fdvvnZaqyzXgijhr7d5aLpiplcWrXC>

**Adam Williams**

Principal - Environmental Assessment & Management



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ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305

**From:** Alexander Tutt-Branco <[alexander.tutt-branco@planning.nsw.gov.au](mailto:alexander.tutt-branco@planning.nsw.gov.au)> **On Behalf Of** RRD EO Executive Director Resources Regulator Mailbox  
**Sent:** Thursday, 21 January 2021 3:57 PM  
**To:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>  
**Cc:** Natalie Gardiner <[Natalie.Gardiner@centennialcoal.com.au](mailto:Natalie.Gardiner@centennialcoal.com.au)>; Greg Kininmonth <[greg.kininmonth@planning.nsw.gov.au](mailto:greg.kininmonth@planning.nsw.gov.au)>  
**Subject:** Springvale Extraction Plan Consultation

Good afternoon Adam

Please see the attached letter for the Resources Regulator's response to your request for feedback on the Springvale EP.

Regards,

**Alex Tutt-Branco**  
**Executive Officer**

NSW Resources Regulator | Department of Regional NSW  
T 02 4063 6604 | E [alexander.tutt-branco@planning.nsw.gov.au](mailto:alexander.tutt-branco@planning.nsw.gov.au)  
516 High Street Maitland 2320



*The Department of Regional New South Wales acknowledges that it stands on Country which always was and always will be Aboriginal land. We acknowledge the Traditional Custodians of the land and waters, and we show our respect for Elders past, present and emerging. We are committed to providing places in which Aboriginal people are included socially, culturally and economically through thoughtful and collaborative approaches to our work.*

Adam Williams  
Principal Environmental Assessment & Management  
SLR Consulting Australia

Via: Email: [ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)  
CC: [Natalie.gardiner@centennialcoal.com.au](mailto:Natalie.gardiner@centennialcoal.com.au)

Dear Mr Williams

### **Re. Extraction Plan – Springvale Mine Extraction Plan LW428-432**

I refer to your request of 23 December 2020 for consultation regarding Springvale Mine's Extraction Plan for Longwalls 428-432. The Resources Regulator has reviewed the request.

#### **Assessment**

Based on the review of the extraction plan documents, the Resources Regulator advises that it has no specific comments regarding mine safety or mine rehabilitation matters in relation to the proposal at this time.

#### **Limitations**

The Resources Regulator does not provide any endorsement of the proposed rehabilitation methodologies presented in the plans provided. Under the conditions of a mining authorisation granted under the *Mining Act 1992*, the Resources Regulator requires the holder to adopt a risk-based approach to achieving the required rehabilitation outcomes.

The applicability of the controls to achieve effective and sustainable rehabilitation is to be determined based on site-specific risk assessments conducted by the authorisation holder. An authorisation holder may also be directed by the Resources Regulator to implement further risk control measures required to achieve effective rehabilitation outcomes during the life of the mine.

#### **Regulatory requirements**

The holder of a Mining Authorisation is required to ensure that the rehabilitation commitments outlined in any approved Extraction Plan are included in the Mining Operations Plan / Rehabilitation Management Plan under the conditions of the Mining Act authorisation. The Mining Operations Plan / Rehabilitation Management Plan must be updated where necessary. The authorisation holder should contact the Regulator directly for further advice on these matters at [nswresourcesregulator@service-now.com](mailto:nswresourcesregulator@service-now.com).

The Resources Regulator may undertake assessments of the mine operators' proposed mining activities under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and Regulation as well as other WHS regulatory obligations.

### **Background**

The NSW Resources Regulator is responsible for compliance and enforcement of the Extraction Plan as it relates to requirements under the Mining Act 1992 and Work Health and Safety legislation. This role principally relates to rehabilitation, workplace safety and public safety.

The Mining Act Inspectorate within the Resources Regulator undertake risk-based compliance and enforcement activities in relation to obligations under the *Mining Act 1992*. This includes undertaking assessment and compliance activities in relation to mine rehabilitation activities and determination of security deposits.

The Mine Safety Inspectorate within the Resources Regulator is responsible for ensuring the mine operators' compliance with the Work Health and Safety (WHS) legislation, in particular the effective management of risks associated with the principal hazards as specified in the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*.

### **Contact**

Should you require any further information or clarification, please contact the Office of the Executive Director ([ED.ResourcesRegulator@planning.nsw.gov.au](mailto:ED.ResourcesRegulator@planning.nsw.gov.au))

Yours sincerely,



**Alex Tutt-Branco**  
**Executive Officer**  
**Office of the Executive Director, Resources Regulator**

21 January 2021

## DAWE

**From:** James Wearne <[James.Wearne@centennialcoal.com.au](mailto:James.Wearne@centennialcoal.com.au)>  
**Sent:** Saturday, 19 December 2020 8:57 AM  
**To:** Sarah Taylor <[Sarah.Taylor@awe.gov.au](mailto:Sarah.Taylor@awe.gov.au)>  
**Cc:** Dwaine McMaugh <[Dwaine.McMaugh@environment.gov.au](mailto:Dwaine.McMaugh@environment.gov.au)>; Natasha Amerasinghe <[Natasha.Amerasinghe@environment.gov.au](mailto:Natasha.Amerasinghe@environment.gov.au)>  
**Subject:** Re: Springvale Mine Management Plans (EPBC 2013/6881 and EPBC 2011/5949) [SEC=OFFICIAL]  
**Importance:** High

Hi Sarah,

As mentioned, Springvale Coal are currently preparing the required management plans to support our next Extraction Plan associated with longwall mining at the Springvale Mine.

We have taken this opportunity to consolidate the management plans required under our two EPBC approvals to ensure a consistent approach using current best management practices.

I have a link to copies of the draft Biodiversity and Swamp Monitoring Plans which are required to be approved by the Department prior to extraction in the relevant longwalls commencing.

These plans are currently out for consultation with various other NSW regulators.

We will send final management plans to you for approval once we have taken into consideration any feedback we receive.

As previously mentioned, it would be valuable to catch up in the new year so we can discuss our approach and present the contents of the management plans to assist in the review and approval of these plans by the Department.

Can I please suggest a Microsoft Teams meeting in the week commencing 25 January 2020? If you could let me know a day and time in this week that would suit you, I will send out a meeting invite.

This should give you enough time to have an initial look at the attached plans to facilitate our discussion.

In the meantime, if you have any questions, please feel free to email me or call me on my mobile 0407 2078 530.

- <https://fileshare.slrconsulting.com/wl/?id=1EWEZyirLEyCjou2sRKy6k1IBRInt6fF>

Regards

**James Wearne**  
Group Manager Approvals

p: +61 (0) 2 4935 8944 | m: +61 (0) 407 207 530 | Internal: 8944

**From:** James Wearne <[James.Wearne@centennialcoal.com.au](mailto:James.Wearne@centennialcoal.com.au)>  
**Sent:** Wednesday, 27 January 2021 3:16 PM  
**To:** [Dwaine.McMaugh@environment.gov.au](mailto:Dwaine.McMaugh@environment.gov.au); [Natasha.Amerasinghe@environment.gov.au](mailto:Natasha.Amerasinghe@environment.gov.au); [Sarah.Taylor@awe.gov.au](mailto:Sarah.Taylor@awe.gov.au)  
**Cc:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>; Natalie Gardiner <[Natalie.Gardiner@centennialcoal.com.au](mailto:Natalie.Gardiner@centennialcoal.com.au)>  
**Subject:** Springvale Water Management Plan

Hopefully the last email of the day...

I have attached the draft Springvale Water Management Plan that is currently out for consultation. Although not required to be approved by the Department, it is provided for context and reference.

Regards

**James Wearne**  
Group Manager Approvals

p: +61 (0) 2 4935 8944 | m: +61 (0) 407 207 530 | Internal: 8944



Centennial Coal Company Pty Limited | Fassifern  
100 Miller Road, Fassifern NSW 2283 Australia  
[centennialcoal.com.au](http://centennialcoal.com.au)



## FCNSW

### Springvale Extraction Plan Consultation



Adam Williams

To: Melanie.Klootwijk@fcnsw.com.au

Cc: Natalie Gardiner; Samantha Hayes



FCNSW - Springvale LW 428-432 EP 20201222.pdf  
217 KB

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Wed 23-Dec-2020 2:45 PM

Hi Melanie,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to draft Plans included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=FEhLzECCzgdHU56yqR6EBGfdLBGjFpyj>

**Adam Williams**

Principal - Environmental Assessment & Management



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+61 412 450 227



ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305

### RE: Springvale Extraction Plan Consultation



Melanie Klootwijk <Melanie.Klootwijk@fcnsw.com.au>

To: Adam Williams

Cc: Natalie Gardiner; Samantha Hayes



Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.



FCNSW Response to Springvale Mine Extraction Plan Longwalls 428-432.pdf  
185 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Mon 01-Feb-2021 11:49 AM

Hi Adam,

Sorry it's a bit late but see attached response to your Plans.

Kind regards,

Melanie

1/02/2021

Ref No.: F2010/01269

Natalie Gardiner  
Environment & Community Coordinator – Springvale Mine  
Box 198  
Wallerawang NSW 2845

Sent via email: [natalie.gardiner@centennialcoal.com.au](mailto:natalie.gardiner@centennialcoal.com.au)

Dear Natalie,

**Centennial Springvale – Longwalls 428-432 Land Management Plan & Built Features  
Management Plan**

Thank you for the opportunity to comment on Centennial Springvale's Longwalls 428-432 Land Management Plan and Built Features Management Plan. Forestry Corporation of NSW (FCNSW) is satisfied Centennial Coal has adequately taken into consideration FCNSW as the landowner and the impact longwall extraction has on our surface assets and management responsibilities.

We note there is an expectation roads and tracks will be impacted by subsidence, however affects should be minor and able to be remediated using normal road maintenance techniques.

There is only one minor comment to make, in both plans s7.1 states "The predominant land uses within the State Forest include **native hardwood harvesting** ..... A small area of vegetated of land within the EMMA is owned by **Boral** and associated with a quarry, ...."

Please note, native hardwood harvesting no longer takes place in Newnes SF and is highly unlikely to recommence in the future. Additionally, Boral is no longer the owner of that parcel of land and associated quarry.

Should you require any further information regarding these comments please contact Tijmen Klootwijk on 0447 744 480.

Yours Sincerely,



**Tijmen Klootwijk**  
Stewardship & Fire Manager  
Northern Softwood Region

## BCD

### Springvale Extraction Plan Consultation



Adam Williams

To liz.mazzer@environment.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes



BCD - Springvale LW 428-432 EP 20201218.pdf  
225 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Wed 23-Dec-2020 2:37 PM

Hi Liz,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to draft Plans included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=q4dR2baaxv9ZDyf7MdemQorErVjzjRXg>

### Adam Williams

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**From:** Renee Shepherd <[Renee.Shepherd@environment.nsw.gov.au](mailto:Renee.Shepherd@environment.nsw.gov.au)>  
**Sent:** Friday, 12 February 2021 12:21 PM  
**To:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>  
**Cc:** Rose-Anne Hawkeswood <[Rose-Anne.Hawkeswood@planning.nsw.gov.au](mailto:Rose-Anne.Hawkeswood@planning.nsw.gov.au)>; Liz Mazzer <[Liz.Mazzer@environment.nsw.gov.au](mailto:Liz.Mazzer@environment.nsw.gov.au)>  
**Subject:** BCS comments: Springvale Extraction Plan Consultation

Hi Adam,

Please see attached BCS's comments regarding the proposed extraction plan for longwalls 428-432 for Springvale Colliery.

If you have any questions please get in touch.

Regards,  
Renee.

**Renee Shepherd**  
**A/Senior Team Leader Planning, North West**

Biodiversity and Conservation Division | Department of Planning, Industry and Environment  
**T** 02 6883 5355 | **M** 0488 444 953 | **E** [renee.shepherd@environment.nsw.gov.au](mailto:renee.shepherd@environment.nsw.gov.au)  
48-52 Wingewarra Street, Dubbo NSW 2830  
[www.dpie.nsw.gov.au](http://www.dpie.nsw.gov.au)



Our ref: DOC21/10387

Your ref: SSD 5594

Adam Williams  
Principal – Environmental Assessment & Management  
SLR Consulting Australia Pty Ltd  
ajwilliams@slrconsulting.com

Dear Mr Williams

### Springvale extraction plan for longwalls 428-432

Thank you for your email dated 23 December 2020 to the Biodiversity, Conservation and Science Directorate (BCS) requesting advice on documents relating to the extraction plan for Springvale longwalls 428-432.

BCS has reviewed the following documents (all dated December 2020):

- Longwalls 415-432 Biodiversity Management Plan
- Longwalls 415-432 Swamp Monitoring Program
- Longwalls 428-432 Land Management Plan
- Longwalls 428-432 Public Safety Management Plan

Given the impacts to the Newnes Plateau Shrub Swamp endangered ecological community from Centennial Coal's longwall mining activities, and the likely further damage to the swamps that will be caused by extraction of longwalls 428 to 432, BCS considers that this extraction plan should be referred to:

- the Independent Monitoring Panel established under the development consent for SSD 5594, and
- the Independent Advisory Panel for Underground Mining.

BCS' recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require further information regarding this matter, please contact Liz Mazzer, Conservation Planning Officer, via [liz.mazzer@environment.nsw.gov.au](mailto:liz.mazzer@environment.nsw.gov.au) or (02) 6883 5325.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Sarah Carr'.

**Sarah Carr**  
**Director North West**  
**Biodiversity and Conservation Division**

**11 February 2021**

CC: Rose-Anne Hawkeswood, Team Leader Resource Assessments, DPIE

Attachment A – BCS Recommendations  
Attachment B – BCS Detailed Comments



## BCS recommendations

### Springvale Mine extraction plan for longwalls 428 to 432

---

- 1.1 The permissibility of impacting swamps that have not been assessed or included in the development consent for SSD 5594 should be determined prior to the approval of the extraction plan for longwalls 428 to 432.
- 2.1 Any breach of conditions should be addressed by the consent authority prior to any approval of the extraction plan for longwalls 428 to 432.
- 2.2 The Swamp Monitoring Program should include the outcomes of investigations into groundwater trigger exceedances.
- 3.1 Longwalls 428 to 432 be shortened to avoid directly undermining Marrangaroo Creek and Marrangaroo Creek Upper swamps.
- 3.2 A revised subsidence impact assessment be conducted for the swamps.
- 3.3 If greater than negligible environmental consequences are predicted, the maximum predicted offset liability must be calculated for Marrangaroo Creek and Marrangaroo Creek Upper swamps.
- 4.1 The definition of 'negligible' in the development consent for SSD 5594 be used for the purpose of the Biodiversity Management Plan.
- 4.2 The alternative definition of 'negligible' in section 8.1.1 of the Biodiversity Management Plan should be removed.
- 4.3 All performance targets and triggers should be based on the definition of 'negligible' in the development consent.
- 5.1 The definition of pre-mining is changed to the period before commencement of second workings for longwalls 428 to 432.
- 6.1 All data be used for statistical summaries and analysis.
- 7.1 Carne Central be identified as an impacted swamp rather than a control swamp.
- 8.1 Monitoring of hanging swamps be specifically addressed in the Swamp Monitoring Program.
- 9.1 Longwall 432 be shortened to avoid isolated pagodas.
- 10.1 All indicators and triggers in the trigger, action, response plans should be quantified.
- 11.1 An analysis of the cumulative impact of longwall mining at Springvale and Angus Place should be included within the Swamp Monitoring Program to provide context for the impacts to swamps through the mining of longwalls
- 12.1 A detailed report on the research and monitoring program conducted so far be provided for peer review by Blue Mountains Water Skink experts. This should include the methodology used for modelling of habitat and field research and results. Planned future research and monitoring should also be included.
- 12.2 All data, including records of captures and marking of skinks, should be provided to BCS.
- 12.3 Further Blue Mountains Water Skink monitoring and research must be co-ordinated with BCS. We invite Centennial Coal and RPS to discuss their Blue Mountains Water Skink research methodology and results with our science and threatened species staff, and with other Blue Mountains Water Skink experts.
- 12.4 Centennial Coal's Blue Mountains Water Skink research and monitoring program should be revised after discussion with species experts.

## BCS detailed comments

### Springvale Mine extraction plan for longwalls 428 to 432

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The following comments apply to the Swamp Monitoring Program (SMP), Biodiversity Management Plan (BMP) and Landscape Management Plan (LMP) for Longwalls 428 to 432

#### 1 Swamps that have not undergone environmental assessment are to be impacted

The SMP (Table 7.1) identifies Lost City, Lost City North and Lost City South Newnes Plateau shrub swamps as being impact swamps. These swamps were not identified or assessed in the environmental impact statement for the Springvale mine extension project. In addition, there are six Newnes Plateau hanging swamps (Lost City, Lost City North, Lost City South, Plum, Ninox and Wishbone) that were not assessed.

These swamps have not been specifically listed in the development consent for SSD 5594. In accordance with Schedule 3, Condition 1 of the consent, there must be negligible environmental consequences caused by subsidence impacts to these swamps. In addition, some of these swamps (e.g. North Lost City and Ninox) appear to be outside the application area for SSD 5594.

The fact that the SMP identifies impact to swamps not previously assessed or included in the development consent indicates the development consent conditions for SSD 5594 are not being adhered to.

#### Recommendation:

- 1.1 The permissibility of impacting swamps that have not been assessed or included in the development consent for SSD 5594 should be determined prior to the approval of the extraction plan for longwalls 428 to 432.

#### 2 Swamps that are required to have negligible environmental consequences have been impacted

The development consent for the Springvale mine extension project (SSD 5594) requires that Sunnyside and Nine Mile Newnes Plateau shrub swamps are to experience negligible environmental consequences from mining subsidence (Schedule 3, Condition 1). Information suggests impacts above this threshold have occurred.

Table 7.1 of the SMP lists both Sunnyside and Nine Mile as impact swamps. This is consistent with advice from DPIE Science, Economics and Insights Division, which has analysed data from the relevant piezometers<sup>1</sup> and concluded that the data suggests the groundwater table has been impacted in its upper sections (Martin Krogh, Principal Scientist Major Assessments *pers. com* 19 January 2021).

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<sup>1</sup> SS1, SS2, SS3 at Sunnyside and BS1 at Nine Mile. Note that table 5.15 of MSEC 2021 lists BS1 as being in Pine Swamp Upper Swamp. However, based on Figure 10.6 of the environmental impact assessment for SSD 5594, this piezometer is located in Nine Mile swamp.

BCS notes that there were exceedances of groundwater depth monitoring triggers for five piezometers located in Nine Mile and Pine swamps in 2019 (Centennial Coal 2020)<sup>2</sup>. The final outcome of investigations into these exceedances is not provided in the SMP.

#### Recommendations:

- 2.1 Any breach of conditions should be addressed by the consent authority prior to approval of the extraction plan for longwalls 428 to 432.
- 2.2 The Swamp Monitoring Program should include the outcome of investigations into groundwater trigger exceedances.

### 3 Marrangaroo Creek swamps may be significantly impacted

Table 8.10 of the SMP predicts that there may be significant reductions in water flows in Marrangaroo Creek and Marrangaroo Creek Upper swamps.

An upgraded groundwater model also predicts a large decline in swamp water level in Marrangaroo Creek swamp with continuation of mining at Springvale through to Longwall 432 (SMP section 8.3.2).

The development consent for SSD 5594 requires negligible environmental consequences for these swamps (Schedule 3, Condition 1). Schedule 3, Condition 5 of the consent requires that, prior to the commencement of mining operations under an approved extraction plan which are predicted to cause greater than negligible environmental consequences to Marrangaroo Creek and Marrangaroo Creek Upper swamps, the applicant must demonstrate that it can satisfy the maximum predicted offset liability for the total area of swamps predicted to be impacted.

The maximum predicted offset liability for Marrangaroo Creek and Marrangaroo Creek Upper swamps has not been provided to BCS with the extraction plan documents.

Longwalls 428 to 432 could be shortened to avoid directly undermining Marrangaroo Creek and Marrangaroo Creek Upper swamps. This may assist in reducing or avoiding impacts on these swamps. A revised subsidence impact assessment would be required given the type 2 lineament that runs along Marrangaroo Creek.

#### Recommendations:

- 3.1 Longwalls 428 to 432 be shortened to avoid directly undermining Marrangaroo Creek and Marrangaroo Creek Upper swamps.
- 3.2 A revised subsidence impact assessment be conducted for the swamps.
- 3.3 If greater than negligible environmental consequences are predicted, the maximum predicted offset liability must be calculated for Marrangaroo Creek and Marrangaroo Creek Upper swamps.

### 4 The definition of 'negligible' cannot be changed

Under Schedule 3 Condition 1 of the consent for the Springvale Mine extension project, subsidence impacts of the project must have negligible environmental consequences on many performance measures. Negligible is defined in the consent as small and unimportant, such as to be not worth considering.

Section 8.1.1 of the BMP states that, for the purpose of the BMP, negligible is defined as,

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<sup>2</sup> Centennial Coal (2020) *EPBC 2013/6881 Annual Compliance Report Springvale Mine*. March 2020

*In the longer term being small and insignificant and causing little or no impact. Short term impacts may be greater than negligible but if they are of limited duration they may be negligible when considered over the longer term.*

BCS considers that the BMP should not redefine 'negligible' as this is inconsistent with the development consent. All performance measures should be based on the definition provided in the development consent.

#### Recommendations:

- 4.1 The definition of 'negligible' in the development consent for SSD 5594 be used for the purpose of the Biodiversity Management Plan.
- 4.2 The alternative definition of 'negligible' in section 8.1.1 of the Biodiversity Management Plan should be removed.
- 4.3 All performance targets and triggers should be based on the definition of 'negligible' in the development consent.

## 5 The definition of 'pre-mining' needs to be changed

For the purpose of this SMP, for groundwater, soil moisture surface water and flora, baseline (i.e. pre-mining) data is defined as all data collected prior to longwall mining encroaching within 600 m of the monitoring point. All data gathered after that time is deemed to be post-mining data. Additionally, where a swamp or monitoring point is underlain by a known lineament, the baseline pre-mining period ceases if longwall mining intersects the lineament and the distance to the swamp or piezometer is less than 2,000 metres. All data gathered after this is considered post-mining data.

Given the far-reaching influence of interactions between longwalls and geological faults and lineaments (i.e. up to 2.25 kilometres [MSEC 2021<sup>3</sup>]), BCS recommends that pre-mining be defined as the period before commencement of second workings for longwalls 428 to 432. Once the first of these longwalls has commenced, data potentially becomes post-mining if far-field impacts due to the interaction of subsidence with lineaments occur.

#### Recommendation:

- 5.1 The definition of pre-mining is changed to the period before commencement of second workings for longwalls 428 to 432.

## 6 Statistical summaries in the SMP should include all data

BCS is concerned about the magnitude of flow data that has been selectively excluded when calculating and presenting flow statistics.

For example, Table 7.3 of the SMP summarises swamp surface water flow statistics. The three years daily gauged data for the combined Gang Gang East/Gang Gang South West and Tri Star swamps has not been included in calculating swamp surface water flow statistics in the SMP.

As can be seen in Table 1 of this response, the three year daily gauged data provided 1391 records for the combined Gang Gang swamps and 1333 records for Tri Star swamp compared with

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<sup>3</sup> MSEC (2021) *Centennial Coal: Springvale Colliery – LW428 to LW432. Subsidence predictions and impact assessments for the natural and built features due to the mining of the proposed LW 428 to LW432 in support of the extraction plan application*. February 2021. Report number: MSEC 1090

only seventeen records for Gang Gang and forty-three records for Tri Star being included in the SMP analysis. This results in a significant difference in the average (mean) flow data presented.

Accuracy of data is important to enable full analysis of impacts. Observations by DPIE Science, Economics and Insights Division along with analysis of flow and soil moisture data indicates that there is now no flow downstream of Gang Gang swamps except possibly after heavy rain.

**Table 1 Comparison of three year daily gauged data and data presented in the SMP**

| Swamp                                 | Three year daily gauged data |               |                  | Data presented in SMP table 7.3                                   |               |                  |
|---------------------------------------|------------------------------|---------------|------------------|-------------------------------------------------------------------|---------------|------------------|
|                                       | Dates                        | Mean (ML/day) | No. measurements | Dates                                                             | Mean (ML/day) | No. measurements |
| Gang Gang East & Gang Gang South West | 08/02/2013 to 30/11/2016     | 5.4           | 1391             | 27/09/2016 to 06/12/2017 (GGE)<br>27/09/2016 to 22/11/2016 (GGSW) | 0.4           | 17               |
| Tri Star                              | 09/02/2013 to 01/12/2016     | 5.4           | 1333             | 02/11/2016 to 15/05/2020                                          | 0.68          | 43               |

#### Recommendation:

6.1 All data be used for statistical summaries and analysis.

## 7 Carne Central swamp should not be used as a control swamp

Impact and control swamps are summarised in Table 7.1 of the SMP. Carne Central swamp is included as a control swamp.

DPIE Science, Economics and Insights Division have analysed piezometer data and advised that Carne Central was impacted at the same time as Gang Gang East swamp. Carne Central may have been impacted by the undermining of the Deane's Creek lineament. This swamp was burnt during the 2019 bushfires and is demonstrating poor post-fire recovery (Martin Krogh *pers comm* 19 January 2021).

BCS considers that it is inappropriate to use Carne Central as a control swamp for swamp monitoring.

#### Recommendation:

7.1 Carne Central be identified as an impacted swamp rather than a control swamp.

## 8 Monitoring of hanging swamps is required

To date, there appears to have been limited monitoring of hanging swamps. Adequate monitoring is required to determine whether the performance measure of negligible environmental consequences identified in Schedule 3, Condition 1 of the development consent for SSD 5594 is being achieved.

The SMP should clearly identify which hanging swamps have been, and are to be, monitored along with the types of monitoring (e.g. flora, fauna, water) that have been applied.

Recommendation:

- 8.1 Monitoring of hanging swamps be specifically addressed in the Swamp Monitoring Program.

## 9 Impacts on pagodas could be avoided

The LMP and BMP identify that isolated pagodas located above the southern end of the proposed longwall 432 could experience fracturing and spalling due to mining.

BCS considers that longwall 432 could be shortened to avoid the pagodas.

Recommendation:

- 9.1 Longwall 432 should be shortened to avoid isolated pagodas.

## 10 All triggers in the TARPs must be quantifiable

Table 13.1 of the BMP provides a trigger, action, response plan (TARP) for terrestrial fauna. Triggers include subsidence monitoring/inspections to identify potential for impact at surface in the vicinity of potentially relevant amphibian, reptile, cave dwelling microbat or mammal habitat.

The TARP should include the indicators to be used to establish potential for impact. These should be quantified so that the differences between conditions green, amber and red are clearly delineated.

Recommendation:

- 10.1 All indicators and triggers in the trigger, action, response plans should be quantified.

## 11 Cumulative impact should be quantified

MSEC (2021) provides Table 5.15 which summarises impacts to shrub swamps above previous longwall mining at Angus Place and Springvale collieries.

As the SMP covers longwalls 415 to 432 (that is it is not limited to longwalls 428 to 432), a similar table should be included. However, rather than being restricted to shrub swamps directly above longwalls, the table should also provide information on impacted swamps that are not directly undermined (e.g. Nine Mile, Sunnyside, Paddys and Carne Central swamps).

An analysis of the cumulative impact of longwall mining at Springvale and Angus Place should be included within the SMP to provide context for the impacts to swamps through the ongoing mining of longwalls.

Recommendation:

- 11.1 An analysis of the cumulative impact of longwall mining at Springvale and Angus Place should be included within the Swamp Monitoring Program to provide context for the impacts to swamps through the mining of longwalls.



## 12 BCS should be consulted regarding Blue Mountains Water Skink monitoring

The conditions of consent for SSD 5594 require the biodiversity management plan for each extraction plan to include a management and research program for the Blue Mountains Water Skink (*Eulamprus leuraensis*).

We understand that the Blue Mountains Water Skink (BMWS) research and management program began in October 2015 and has been conducted by RPS. This program is separate to the extraction plan BMP and SMP but should be used to inform both.

BCS has concerns with the RPS project which include (but are not limited to):

- No report on the research and management program has been provided. BCS is unaware of any peer review of the methodology by BMWS experts. This should have already been completed given the project has been underway for five years.
- BCS has been directly involved in BMWS research since 2012. RPS has not contacted or consulted with BCS regarding BMWS research programs. We have concerns with RPS trapping, marking and recapturing skinks in areas that overlap with BCS monitoring sites due to the confusion that can be caused by two groups marking individual animals. This needs to be discussed directly with BCS as it has the potential to impact on spatial and population viability monitoring programs. All BMWS data should be provided to BCS, including records of captures and marking, to assist in resolving this issue.
- RPS had no 'before' data for the majority of impacted swamps and no baseline assessment of population fluctuations against which any proposed triggers could be assessed.

### Recommendations:

- 12.1 A detailed report on the research and monitoring program conducted to date be provided for peer review by Blue Mountains Water Skink experts. This should include the methodology used for modelling of habitat and field research and results. Planned future research and monitoring should also be included.
- 12.2 All data, including records of captures and marking of skinks, should be provided to BCS.
- 12.3 Further Blue Mountains Water Skink monitoring and research must be co-ordinated with BCS. We invite Centennial Coal and RPS to discuss their Blue Mountains Water Skink research methodology and results with our science and threatened species staff, and with other Blue Mountains Water Skink experts.
- 12.4 Centennial Coal's Blue Mountains Water Skink research and monitoring program should be revised after discussion with species experts.

## Boral

FW: Springvale Extraction Plan Consultation



Adam Williams

To david.bolton@boral.com.au

Cc Natalie Gardiner; Samantha Hayes



Boral - Springvale LW 428-432 EP 20201222.pdf  
217 KB

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Wed 23-Dec-2020 2:30 PM

Hi David,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=bjoiXiytzjmuwDL7dGxptF0Z453z32QE>

**Adam Williams**

Principal - Environmental Assessment & Management



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ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305

## Lithgow City Council

### Springvale Extraction Plan Consultation



Adam Williams

To: [skye.ellacott@lithgow.nsw.gov.au](mailto:skye.ellacott@lithgow.nsw.gov.au)

Cc: Natalie Gardiner; Samantha Hayes



Lithgow City Council - Springvale LW 428-432 EP 20201222.pdf  
217 KB

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Wed 23-Dec-2020 2:32 PM

Hi Skye,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=IYJkCl9IBvkTFtx8B8hGKgOOrth3KQOz>

**Adam Williams**

Principal - Environmental Assessment & Management



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SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305

**FW: Springvale Extraction Plan Consultation****Adam Williams**To: [council@lithgow.nsw.gov.au](mailto:council@lithgow.nsw.gov.au)

Cc: Natalie Gardiner; Samantha Hayes

Lithgow City Council - Springvale LW 428-432 EP 20201222.pdf  
217 KB[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [...](#)

Wed 23-Dec-2020 3:21 PM

Good afternoon,

I sent the below email to Skye however received an error message. If this email and attachment could please be forwarded to Skye or another suitable contact that would be greatly appreciated.

Regards,

Adam

**Adam Williams**

Principal - Environmental Assessment &amp; Management



+61 2 4037 3211



+61 2 4037 3200



+61 412 450 227

[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305From: "Lithgow City Council" <[council@lithgow.nsw.gov.au](mailto:council@lithgow.nsw.gov.au)>To: "Natalie.gardiner@centennialcoal.com.au" <[Natalie.gardiner@centennialcoal.com.au](mailto:Natalie.gardiner@centennialcoal.com.au)>

Date: 14/01/2021 11:05 AM

Subject: Springvale Mine Draft Extraction Plan (Longwalls 428-432)

Hi Natalie

Please find attached letter in relation to the abovementioned matter.

Yours sincerely

Cassandra Ford | Administration Assistant  
Economic Development & Environment | Lithgow City Council  
Phone: (02) 6354 9999 | Fax: (02) 6351 4259

1854165: LGS  
Economic Development and Environment



13 January 2021

Natalie Gardiner  
Environment & Community Coordinator – Springvale Mine  
Box 198  
Wallerawang NSW 2845

Natalie.gardiner@centennialcoal.com.au

Dear Natalie,

**Springvale Mine Draft Extraction Plan (Longwalls 428-432)**

I refer to your email received 23 December 2020 in relation to the Springvale Mine Property Management Plan in support of the Draft Extraction Plan for longwalls 428-432.

Council considers that the Springvale Mine Property Management Plan is satisfactory to support the Extraction Plan for secondary extraction of longwalls 2428-432.

Please do not hesitate to contact Miss Lauren Stevens on (02) 6354 9999, Monday to Friday; in Council's Economic Development and Environment should you require any additional information in relation to this matter.

Yours Sincerely

Lachlan Sims  
**TEAM LEADER DEVELOPMENT PLANNER**

## WaterNSW

### Springvale Extraction Plan Consultation



Adam Williams

To jessie.evans@waterNSW.com.au

Cc Natalie Gardiner; Samantha Hayes



WaterNSW - Springvale LW 428-432 EP 20201218.pdf  
222 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Wed 23-Dec-2020 2:40 PM

Hi Jessie,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to draft Plans included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://files.share.slrconsulting.com/wl/?id=2QFwa7dTE1AKFOZWMCzHYBmSwdm9cKLw>

**Adam Williams**

Principal - Environmental Assessment & Management

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ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305



**RE: Springvale Extraction Plan for Longwalls 428-432**

Ravi Sundaram &lt;ravi.sundaram@waterNSW.com.au&gt;

To: Adam Williams

Cc: 'Natalie.gardiner@centennialcoal.com.au'; Samantha Hayes; Jessie Evans

 Follow up. Start by Tuesday, 19 January 2021. Due by Tuesday, 19 January 2021.

|                                                                                           |                                                                                               |                                                                                             |                                                                                     |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  Reply |  Reply All |  Forward |  |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|

Tue 19-Jan-2021 11:49 AM

Hello Adam

Thank you for providing WaterNSW to review and comment on the Swamp and Water Management Plans for Springvale Mine Longwalls 428-432. WaterNSW notes that these longwalls are located within the Wolgan River catchment and are outside the Upper Cocks River catchment. WaterNSW therefore has no comments on the proposed monitoring and management proposed for the watercourses and swamps overlying the extraction plan area. The Springvale Mine pit top facilities are located within the Upper Cocks River catchment and WaterNSW is satisfied that water management at the pit-top facilities are adequate.

Please do contact either me or Jessie Evans Mining Manager at WaterNSW if you wish to discuss this matter further.

Regards

Ravi

## Water in NSW

### Springvale Extraction Plan Consultation



Adam Williams

To mitchell.isaacs@industry.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes



Water in NSW - Springvale LW 428-432 EP 20201218.pdf  
222 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Wed 23-Dec-2020 2:42 PM

Hi Mitchell,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to draft Plans included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=QcigTPYxMFmDtEyCPMeO2NiDjewqm5zc>

**Adam Williams**

Principal - Environmental Assessment & Management



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+61 2 4037 3200



+61 412 450 227



[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)

SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305

**RE: Springvale Extraction Plan Consultation****Adam Williams**

To mitchell.isaacs@industry.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes

 Follow up. Start by Wednesday, 3 March 2021. Due by Wednesday, 3 March 2021.

↩ Reply

↩ Reply All

➡ Forward

⋮

Thu 04-Feb-2021 2:32 PM

Hi Mitchell,

I hope that you have been going well.

We have not received a response regarding the management plans provided. If Water in NSW plan to provide feedback could this please be sent no later than COB 12 February? The Extraction Plan is being lodged with DPIE by end of this month.

Regards,

Adam

**Adam Williams**

Principal - Environmental Assessment &amp; Management

 +61 2 4037 3211 +61 2 4037 3200 +61 412 450 227 ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305

**RE: Springvale Extraction Plan Consultation****Mitchell Isaacs** <mitchell.isaacs@dpie.nsw.gov.au>

To NRAR Service Desk Mailbox

Cc Natalie Gardiner; Samantha Hayes; Adam Williams; Liz Rogers

 Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.

This message is part of a tracked conversation. Click here to find all related messages or to open the original flagged message.

↩ Reply

↩ Reply All

➡ Forward

⋮

Thu 04-Feb-2021 2:42 PM

Hi NRAR team

Could you please respond to Adam and provide him a status / timing update?

Thanks

Mitchell

## Heritage NSW

### Springvale Extraction Plan Consultation



Adam Williams

To heritagemailbox@environment.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes



Heritage NSW - Springvale LW 428-432 EP 20201222.pdf  
217 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Wed 23-Dec-2020 2:47 PM

To whom it may concern,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://files.share.slrconsulting.com/wl/?id=SCiWV5dNfxkG2VzmDyawP1TA15g3GIGg>

**Adam Williams**

Principal - Environmental Assessment & Management



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+61 412 450 227



ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305

**RE: Springvale Extraction Plan Consultation**

Colleen Klingberg <Colleen.Klingberg@environment.nsw.gov.au>  
To: Adam Williams  
Cc: Natalie Gardiner; Samantha Hayes

 Follow up. Start by Tuesday, 12 January 2021. Due by Tuesday, 12 January 2021.

 Reply  Reply All  Forward 

Tue 12-Jan-2021 11:18 AM

Dear Adam and Natalie

Thank you for this referral.

Regarding this referral, Heritage NSW has multiple areas of responsibility and we wish to confirm the details of the request.

Can you please confirm that this request:

- is related only to Aboriginal Cultural Heritage and
- no response is required under the Heritage Act 1977 by the Heritage Council.

Many thanks

Colleen

**Colleen Klingberg** | Assistant Customer Strategies Officer  
Heritage NSW, Community Engagement, Department of Premier and Cabinet  
Level 6, 10 Valentine Ave, Parramatta | Locked bag 5020, Parramatta NSW 2124  
T: 02 9873 8566 | [colleen.klingberg@environment.nsw.gov.au](mailto:colleen.klingberg@environment.nsw.gov.au)



*I acknowledge and respect the Traditional Custodians and Ancestors of the land I work across.*

## RE: Springvale Extraction Plan Consultation



Adam Williams

To: Colleen Klingberg

Cc: Natalie Gardiner; Samantha Hayes

[Reply](#) [Reply All](#) [Forward](#) [...](#)

Fri 15-Jan-2021 12:18 PM

 Follow up. Start by Friday, 15 January 2021. Due by Friday, 15 January 2021.

This message is part of a tracked conversation. [Click here](#) to find all related messages or to open the original flagged message.

Hi Colleen,

Thank you again for your time yesterday. I hope the following is a good summary to assist with the review process.

The Plan is required under SSD 5594 to be *prepared in consultation with OEH and relevant stakeholders for both Aboriginal and non-Aboriginal heritage, which provides for the management of potential environmental consequences of the proposed second workings on Aboriginal and non-Aboriginal heritage*. It addresses potential subsidence related impacts upon five Aboriginal heritage sites and one locally listed heritage item (I245). The Wolgan Valley Railway Corridor (Newnes to Zig Zag) has no track or associated infrastructure which would be susceptible to subsidence impacts. The heritage item is not listed on the State Heritage Register.

Although no impacts are predicted to the non-Aboriginal heritage site (no subsidence impacts nor surface disturbance), the scope of the Plan encompasses both Aboriginal and non-Aboriginal sites, and consultation with the former OEH. For compliance purposes we are seeking comment from Heritage NSW regarding the management of potential impacts upon both Aboriginal and non-Aboriginal sites.

If you have any further questions please call me on 0412 450 227.

Regards

Adam

**Adam Williams**

Principal - Environmental Assessment &amp; Management

 +61 2 4037 3211 +61 2 4037 3200 +61 412 450 227 [ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)



**RE: Springvale Extraction Plan Consultation**

Tim Olliver <Timothy.Olliver@environment.nsw.gov.au>  
To Adam Williams  
Cc Natalie Gardiner; Samantha Hayes

 Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.



LETTER-SSD-5594-Springvale Mine Extraction Plan-HNSW Response-JAN 2021.pdf  
36 KB

 Reply  Reply All  Forward 

Fri 29-Jan-2021 8:02 PM

Hi Adam,

Please find attached Heritage NSW response letter to SSD 5594.

Kind regards,

**Tim Olliver | Senior Heritage Assessment Officer**

Heritage NSW, Department of Premier and Cabinet  
Level 6, 10 Valentine Ave Parramatta NSW 2150 | Locked Bag 5020, Parramatta 2150  
T: (02) 4927 3203 | [Timothy.Olliver@environment.nsw.gov.au](mailto:Timothy.Olliver@environment.nsw.gov.au)



**Premier  
& Cabinet**

**From:** Shikha Jhaldiyal <[Shikha.Jhaldiyal@environment.nsw.gov.au](mailto:Shikha.Jhaldiyal@environment.nsw.gov.au)>  
**Sent:** Friday, 29 January 2021 6:33 PM  
**To:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>  
**Cc:** Tim Olliver <[Timothy.Olliver@environment.nsw.gov.au](mailto:Timothy.Olliver@environment.nsw.gov.au)>  
**Subject:** RE: Springvale Extraction Plan Consultation

Hi Adam

There appears to be an unscheduled outage with the MP site, and we are unable to upload the SSD response letter.

I am sending the letter (as attached), as it is due today.

Best regards

Shikha

**Shikha Jhaldiyal** | Acting Senior Team Leader  
Regional Heritage Assessments North  
Heritage NSW | Department of Premier and Cabinet  
Level 6, 10 Valentine Avenue Parramatta NSW 2150 | Locked Bag 5020 Parramatta 2124  
T: 02 9873 8545 | W: [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)



*I acknowledge and respect the traditional custodians and ancestors of the lands I work across*

**From:** Tim Olliver <[Timothy.Olliver@environment.nsw.gov.au](mailto:Timothy.Olliver@environment.nsw.gov.au)>  
**Sent:** Wednesday, 3 February 2021 6:04 PM  
**To:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>  
**Subject:** RE: Springvale Extraction Plan Consultation  
**Importance:** High

Hi Adam,

Please find attached an updated letter correcting a typo and wording of the proximity of SHR items to the project area.

Thanks,

**Tim Olliver** | Senior Heritage Assessment Officer  
Heritage NSW, Department of Premier and Cabinet  
Level 6, 10 Valentine Ave Parramatta NSW 2150 | Locked Bag 5020, Parramatta 2150  
T: (02) 4927 3203 | [Timothy.Olliver@environment.nsw.gov.au](mailto:Timothy.Olliver@environment.nsw.gov.au)



Heritage NSW and coronavirus (COVID-19)



Our ref: DOC21/20171

Adam Williams  
Principal  
SLR Consulting  
2 Lincoln Street  
LANE COVE WEST NSW 2066

By email: [ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)

Dear Mr Williams

**Springvale Mine Extraction Plan for Longwalls 428-432 - Extraction Plan Comment - SSD 5594**

Thank you for your referral dated 23 December 2020 inviting comments from the Heritage Council of NSW on the above State Significant Development proposal.

The following report was considered in our assessment: Longwalls 428-432 Land Management Plan, prepared by Centennial, dated December 2020;

The subject site is not listed on the State Heritage Register (SHR), however is it in the immediate vicinity of the SHR items St. John the Evangelist Church (SHR No: 01702), Wallerawang rail bridges over Cox's River (SHR No: 01064) and Wallerawang Railway Station and yard group (SHR No: 01282).

As delegate of the Heritage Council of NSW, we note the document adequately addresses the requirements necessary to identify any impacts to historic heritage within the project impact areas shown in the report listed above. Further, the site has low to nil potential for historical archaeological deposits. Therefore, no further heritage comments are required.

If you have any questions about this correspondence, please contact please contact Tim Olliver, Senior Heritage Assessment Officer, at Heritage NSW, on (02) 4927 3203 or [Timothy.Olliver@environment.nsw.gov.au](mailto:Timothy.Olliver@environment.nsw.gov.au).

Yours sincerely

**Shikha Jhaldiyal**  
A/Senior Team Leader  
Regional Heritage Assessments North  
Heritage NSW, Department of Premier and Cabinet  
**As Delegate of the Heritage Council of NSW**  
28 January 2021

**RE: Springvale Extraction Plan Consultation****Adam Williams**

To: Colleen Klingberg

Cc: Natalie Gardiner; Samantha Hayes

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Thu 04-Feb-2021 2:36 PM



Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.

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Hi Colleen,

I hope that you have been going well since we last spoke.

We have received correspondence regarding historic heritage, however no feedback regarding Aboriginal heritage has been provided. You were very helpful assisting with the below and I'm hoping you may be able to please check with the relevant contact if feedback is planned? If we are also requesting that this can please be provided no later than COB 12 February. We are submitting the final Extraction Plan to DPIE by end of month, so this timing is important to allow adequate time to address feedback and submit.

Thanks again for your assistance.

Regards,

Adam

**Adam Williams**

Principal - Environmental Assessment &amp; Management



+61 2 4037 3211



+61 2 4037 3200



+61 412 450 227



ajwilliams@slrconsulting.com

**DOC20/1061230 - UPDATE REQUEST - RE: Springvale Extraction Plan Consultation**

Colleen Klingberg <Colleen.Klingberg@environment.nsw.gov.au>

To Adam Williams

Cc Natalie Gardiner; Samantha Hayes; Rose O'Sullivan

 Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.

 Reply  Reply All  Forward 

Fri 05-Feb-2021 9:57 AM

Hi Adam

Your request reference number is DOC20/1061230 and is with the ACH Regulation Branch North team for response

Rose O'Sullivan (copied) is the A/Senior Team leader and is better placed to respond to your query

Regards

Colleen

**Colleen Klingberg** | Assistant Customer Strategies Officer

Heritage NSW, Community Engagement, Department of Premier and Cabinet

Level 6, 10 Valentine Ave, Parramatta | Locked bag 5020, Parramatta NSW 2124

T: 02 9873 8566 | [colleen.klingberg@environment.nsw.gov.au](mailto:colleen.klingberg@environment.nsw.gov.au)



**Premier  
& Cabinet**

*I acknowledge and respect the Traditional Custodians and Ancestors of the land I work across.*



## Endeavour Energy

### Springvale Extraction Plan Consultation



Adam Williams

To Rod.Joyce@endeavourenergy.com.au

Cc Natalie Gardiner; Samantha Hayes



Endeavour Energy - Springvale LW 428-432 EP 20201222.pdf  
217 KB

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [...](#)

Wed 23-Dec-2020 2:54 PM

Hi Rod,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=IsNmxBgRvZZdyKhvNENU1HeqMZGHwEDt>

**Adam Williams**

Principal - Environmental Assessment & Management



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+61 2 4037 3200



+61 412 450 227



[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305

**From:** Ravi Kanth Veraiahgari <[Ravi.Veraiahgari@endeavourenergy.com.au](mailto:Ravi.Veraiahgari@endeavourenergy.com.au)>

**Date:** 8 January 2021 at 7:54:51 am AEDT

**To:** Adam Williams <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>, "Natalie.Gardiner@centennialcoal.com.au" <[Natalie.Gardiner@centennialcoal.com.au](mailto:Natalie.Gardiner@centennialcoal.com.au)>

**Cc:** Rod Joyce <[Rod.Joyce@endeavourenergy.com.au](mailto:Rod.Joyce@endeavourenergy.com.au)>, John Pang <[John.Pang@endeavourenergy.com.au](mailto:John.Pang@endeavourenergy.com.au)>, Bradley Ham <[Bradley.Ham@endeavourenergy.com.au](mailto:Bradley.Ham@endeavourenergy.com.au)>, John Roberts <[John.Roberts2@endeavourenergy.com.au](mailto:John.Roberts2@endeavourenergy.com.au)>, Mehran Azimi <[Mehran.Azimi@endeavourenergy.com.au](mailto:Mehran.Azimi@endeavourenergy.com.au)>

**Subject:** FW: Springvale Extraction Plan Consultation

Hi Adam,

Can you arrange a teams meeting with subject matter expert to see effects of the underground mining activity, on our assets overground sometime next week.

Best Regards

Ravi Veraiahgari

## RE: Springvale Extraction Plan Consultation



Samantha Hayes

To: Ravi.Veraiahgari@endeavourenergy.com.au

Cc: Adam Williams; 'Natalie Gardiner'; Rod.Joyce@endeavourenergy.com.au; John.Pang@endeavourenergy.com.au; Bradley.Ham@endeavourenergy.com.au; John.Roberts2@endeavourenergy.com.au; Mehran.Azimi@endeavourenergy.com.au

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 Reply  Reply All  Forward 

Tue 12-Jan-2021 9:16 AM

Hi Ravi,

Adam is currently on annual leave for the first half of this week so I'm emailing on his behalf to schedule a meeting. Are you available Friday morning? If so I will send a meeting invite.

Many thanks,

Samantha Hayes

**Samantha Hayes**

Associate - Environmental Assessment & Management

 +61 2 4037 3247

 +61 2 4037 3200

 +61 417 634 982

 shayes@slrconsulting.com

## RE: Springvale Extraction Plan Consultation



Ravi Kanth Veraiahgari &lt;Ravi.Veraiahgari@endeavourenergy.com.au&gt;

To: Samantha Hayes

Cc: Adam Williams; 'Natalie Gardiner'; Rod Joyce; John Pang; Bradley Ham; John Roberts; Mehran Azimi

 You replied to this message on 22-Jan-2021 2:38 PM.

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Tue 12-Jan-2021 9:21 AM

[Suggested Meetings](#)[+ Get more add-ins](#)

Hi Samantha,

Friday morning from 10:00 Am should be fine.

Best Regards

Ravi Veraiahgari

**From:** [michael.t@energyserve.com.au](mailto:michael.t@energyserve.com.au) <[michael.t@energyserve.com.au](mailto:michael.t@energyserve.com.au)>**Sent:** Friday, 15 January 2021 3:44 PM**To:** [mehran.azimi@endeavourenergy.com.au](mailto:mehran.azimi@endeavourenergy.com.au)**Cc:** 'Mark McDonald' <[mark@energyserve.com.au](mailto:mark@energyserve.com.au)>; 'Adam Williams' <[ajwilliams@slrconsulting.com](mailto:ajwilliams@slrconsulting.com)>**Subject:** PLS Bak file - Springvale Subsidence

Hi Mehran,

As discussed in today's meeting, please find attached the PLS bak file for the post subsidence condition for Endeavour's feeder. Any issues feel free to contact myself or Mark.

Kind Regards,

**Michael Temesvary**

Jemtom Pty Ltd T/A Energy Serve

ABN: 36 078 771 650

[\(02\) 6885 3224](tel:(02)68853224)[0416 750 335](tel:0416750335)*Energy Serve*

**RE: PLS Bak file - Springvale Subsidence**

michael.t@energyserve.com.au  
To: mehran.azimi@endeavourenergy.com.au

[↩ Reply](#) [↩ Reply All](#) [→ Forward](#) [⋮](#)

Fri 15-Jan-2021 4:01 PM

Hi Mehran,

I've tried emailing you the bak file but it appears to be too large. I've sent you a link via dropbox, if you haven't received it or are having troubles downloading it please let me know.

Kind Regards,

Michael  
02 6885 3224

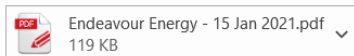
**RE: Springvale Extraction Plan Consultation**

Samantha Hayes  
To: Ravi Kanth Veraiahgari  
Cc: Adam Williams; 'Natalie Gardiner'; Rod Joyce; John Pang; Bradley Ham; John Roberts; Mehran Azimi

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Fri 22-Jan-2021 2:39 PM

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Hi Ravi and team,

Please see attached the meeting minutes from our meeting on Friday 15 January.

Any comments please let me know.

Thanks,  
Sam

**Samantha Hayes**

Associate - Environmental Assessment & Management

 +61 2 4037 3247  
 +61 2 4037 3200  
 +61 417 634 982  
 shayes@slrconsulting.com

**RE: Springvale Extraction Plan Consultation**

John Roberts <John.Roberts2@endeavourenergy.com.au>

To Samantha Hayes; Ravi Kanth Veraiahgari

Cc Adam Williams; 'Natalie Gardiner'; Rod Joyce; John Pang; Bradley Ham; Mehran Azimi

 Follow up. Start by Monday, 25 January 2021. Due by Monday, 25 January 2021.

You replied to this message on 29-Jan-2021 9:02 AM.

This message is part of a tracked conversation. [Click here](#) to find all related messages or to open the original flagged message.

 Reply  Reply All  Forward 

Mon 25-Jan-2021 8:30 AM

Hi Sam,

Thanks for the minutes, and apologies for not being able to make the meeting. The only additional question I had was if the ground was to move suddenly (unlikely I know) and the phase conductors clashed, dropping molten metal and started a bush fire who would be liable in such an instance?

Kind Regards,

**John Roberts**

Design Development Manager Mains

02 9853 7009 or 0401 588 157

[John.Roberts2@endeavourenergy.com.au](mailto:John.Roberts2@endeavourenergy.com.au)

43 Glendenning Road, NSW 2148

[www.endeavourenergy.com.au](http://www.endeavourenergy.com.au)



**RE: Springvale Extraction Plan Consultation****Adam Williams**

To John Roberts; Samantha Hayes; Ravi Kanth Veraiahgari

Cc 'Natalie Gardiner'; Rod Joyce; John Pang; Bradley Ham; Mehran Azimi



Follow up. Start by Monday, 15 February 2021. Due by Monday, 15 February 2021.

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Wed 03-Feb-2021 4:18 PM

Hi John,

In the unlikely instance that mining resulted in consequences upon Endeavour Energy infrastructure, Springvale Coal would act to repair the infrastructure and compensate for any impacts as outlined in the management plan and required by the development consent.

Regards,

Adam

**Adam Williams**

Principal - Environmental Assessment &amp; Management



+61 2 4037 3211



+61 2 4037 3200



+61 412 450 227



ajwilliams@slrconsulting.com

## Land Registry Services



**Fw: Confirmation of your Survey Mark(s) Removal Application - State Mine Gully Rd - Lithgow**  
**Michael Price** to: Sarah Kimm, Jacob Weal, Madison Haddon

04/03/19 02:25 PM

Regards

**Michael Price**  
Surveyor

p: +61 (0)2 6350 1674

**Centennial Coal**

Centennial Coal Company Limited | Springvale  
980 Castlereagh Highway, Lidsdale NSW 2780 Australia  
[centennialcoal.com.au](http://centennialcoal.com.au)

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--- Forwarded by Michael Price/Centennial Coal on 04/03/2019 02:25 PM ---

From: "Surveyor-General-Approvals" <Surveyor-General-Approvals@finance.nsw.gov.au>  
To: "michael.price@centennialcoal.com.au" <michael.price@centennialcoal.com.au>  
Date: 04/03/2019 01:53 PM  
Subject: RE: Confirmation of your Survey Mark(s) Removal Application - State Mine Gully Rd - Lithgow

Hi Michael,

Please see attached Surveyor General's Approval for SSM19175.

Regards

**Daniel Sadler**  
Geodetic Surveyor, Survey Operations – Bathurst

Spatial Services | ICT and Digital Government  
Department of Finance, Services & Innovation  
P: 02 6332 8059 | M: 0400 648 772 | 346 Panorama Ave., Bathurst |  
E: [daniel.sadler@finance.nsw.gov.au](mailto:daniel.sadler@finance.nsw.gov.au) | [spatialservices@finance.nsw.gov.au](mailto:spatialservices@finance.nsw.gov.au)

**Finance,  
Services &  
Innovation**

Please consider the environment before printing this email



**From:** Michael Price [<mailto:michael.price@centennialcoal.com.au>]  
**Sent:** Monday, 25 February 2019 11:13 AM  
**To:** Surveyor-General-Approvals <[Surveyor-General-Approvals@finance.nsw.gov.au](mailto:Surveyor-General-Approvals@finance.nsw.gov.au)>  
**Subject:** Fw: Confirmation of your Survey Mark(s) Removal Application - State Mine Gully Rd - Lithgow

Regards

**Michael Price**  
 Surveyor

p: +61 (0)2 6350 1674



**Centennial Coal**

Centennial Coal Company Limited | Springvale  
 980 Castlereagh Highway, Lidsdale NSW 2790 Australia  
[centennialcoal.com.au](http://centennialcoal.com.au)

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----- Forwarded by Michael Price/Centennial Coal on 25/02/2019 11:11 AM -----

**From:** [surveyor-general-approvals@finance.nsw.gov.au](mailto:surveyor-general-approvals@finance.nsw.gov.au)  
**To:** [michael.price@centennialcoal.com.au](mailto:michael.price@centennialcoal.com.au)  
**Date:** 07/02/2019 10:48 AM  
**Subject:** Confirmation of your Survey Mark(s) Removal Application - State Mine Gully Rd - Lithgow

This is an automatic response. We will process your Application for Surveyor-General approval as soon as possible.

**WARNING:** If this application is not answered within 14 days, or if you received a message that your email delivery has failed, would you please forward this email confirmation, including any attachments, directly to: [Surveyor-General-Approvals@finance.nsw.gov.au](mailto:Surveyor-General-Approvals@finance.nsw.gov.au)

A summary of your application is below for your reference.

| Existing Application / Approval No. |                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------|
| • Your Reference:                   |                                                                                              |
| Applicant's Contact Details         |                                                                                              |
| • Your Name:                        | Michael Price                                                                                |
| • Company Name:                     | Centennial Coal                                                                              |
| • Address:                          | 980 Castlereagh HWY Lidsdale NSW 2790                                                        |
| • Phone:                            | 63501612                                                                                     |
| • Email:                            | <a href="mailto:michael.price@centennialcoal.com.au">michael.price@centennialcoal.com.au</a> |
| • Confirm Your Email:               | <a href="mailto:michael.price@centennialcoal.com.au">michael.price@centennialcoal.com.au</a> |

|                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Address of Survey or proposed works</b>                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • No.:                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • Street:                                                                                                                                         | State Mine Gully Rd                                                                                                                                                                                                                                                                                                                                                                                                 |
| • Suburb / Locality:                                                                                                                              | Lithgow                                                                                                                                                                                                                                                                                                                                                                                                             |
| • Lot / DP:                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Public Authority or Organisation responsible for the works</b>                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • Public Authority or Organisation responsible for the works:                                                                                     | Centennial Coal                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Type, extent &amp; date of commencement of proposed works</b>                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • Please provide details below or in an attached document:                                                                                        | It is believed that SS19176 will likely be affected by mine subsidence from Springvale Colliery. The longwall blocks in Mining Lease 1727 (held by Centennial Coal) currently being worked by Springvale will likely result in subsidence in which the mark will likely be affected.                                                                                                                                |
| <b>List all Survey Marks potentially affected by the works</b>                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • Permanent Survey Marks:                                                                                                                         | SS19176                                                                                                                                                                                                                                                                                                                                                                                                             |
| • Cadastral Reference / Bench Marks:                                                                                                              | SSM in conc, found intact                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Details of Application</b>                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| • Please provide details of your application in the space provided below or in an attached document. Dropbox links also accepted for attachments. | Centennial Coal is seeking approval to disturb SS19176 through subsidence from its Springvale Colliery. Springvale is currently working an area through longwall mining that will likely cause subsidence in the area in which the mark is located. It is anticipated that the mark will be re-established through an appropriate survey once the mark is stable with the process to be managed by Centennial Coal. |
| • Attachments:                                                                                                                                    | No file uploaded                                                                                                                                                                                                                                                                                                                                                                                                    |
| • Do you need to provide more attachments?:                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                     |

\*\*\*\*\*

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\*\*\*\*\* R 19.037 SSM19176.pdf



## Spatial Services

346 Panorama Avenue, Bathurst NSW 2785  
Tel 02 6332 8200

Michael Price  
Centennial Coal  
980 Castlereagh HWY  
Lidsdale NSW 2790

Email: michael.price@centennialcoal.com.au

Dear Michael,

RE: Removal of permanent survey mark SSM19176 for Mine subsidence

|                 |          |
|-----------------|----------|
| Mark Locality:  | Lithgow  |
| Your Reference: | SSM19176 |
| Our Reference:  | R 19/037 |

I refer to correspondence via email on February 07, 2019.

Your request to remove the permanent survey mark SSM19176 has been considered and approved with the following conditions:

- SSM19176 must be replaced giving due consideration to inter-visibility to adjacent marks and Work Health & Safety issues regarding pedestrian and vehicle traffic.
  - It is not required for the replacement mark to be established before the removal of SSM19176.
  - The replacement mark should be placed after all mine subsidence has settled.
- The replacement mark must be placed in accordance with Surveyor-General's Direction No.1, noting compliance with Clause 27, Surveying and Spatial Information Regulation 2017 (the Regulation) [http://spatialservices.finance.nsw.gov.au/surveying/publications/surveyor\\_generals\\_directions](http://spatialservices.finance.nsw.gov.au/surveying/publications/surveyor_generals_directions).
- A Locality Sketch Plan of the replacement mark must be forwarded to DFSI Spatial Services at: [SS-SCIMS@finance.nsw.gov.au](mailto:SS-SCIMS@finance.nsw.gov.au)
- SSM19176 is horizontally established (B3). DFSI Spatial Services requires any replacement permanent survey mark to be established to the same class as the original mark. Please refer to Surveyor General's Direction No. 12 for the required survey methodology.
- SSM19176 has an accurate height (LCL3). DFSI Spatial Services requires that the replacement permanent survey mark is surveyed to Class LC. Please refer to Surveyor General's Direction No. 12 for the required survey methodology.
- DFSI Spatial Services must be formally notified of the removal of the permanent survey mark SSM19176 using the Mark Status Report facility on our website [http://spatialservices.finance.nsw.gov.au/surveying/surveying\\_services/forms\\_and\\_applications/scims\\_status\\_report](http://spatialservices.finance.nsw.gov.au/surveying/surveying_services/forms_and_applications/scims_status_report)
- Following SSM19176 removal, permanent survey mark SSM19176 must either be returned to DFSI Spatial Services; or the engraved number must be rendered illegible by filing (or other means) and the marks disposed of.

### Please note:

- During the interim period of mark destruction to the re-establishment of new survey marks and/or lodgement of Plan for Survey Information Only, your contact details will be provided to any persons from the public enquiring about the loss of survey infrastructure. If contacted by any such person then the applicant must supply any relevant information that may assist in their inquiry (such as survey data that may assist in defining GDA, AHD or the cadastre).
- If a minor variation to this approval is required, then notification needs to be sent to: [Surveyor-General-Approvals@finance.nsw.gov.au](mailto:Surveyor-General-Approvals@finance.nsw.gov.au)
- Any major variation to the approval will require a new application for Survey Mark(s) Removal.
- If a Plan of Survey Information Only is required by this approval, quote the Approval No. adjacent to the Surveyor's Reference on that plan.
- SCIMS data can be obtained free of charge from the "SIX Maps - SCIMS Online" facility from the new DFSI Spatial Services Portal by logging in or registering a new "SIX" account at: <https://six.nsw.gov.au/>
- Where possible, provide at least 30 business days notification before the proposed removal or replacement of survey marks (permanent survey marks or reference marks) thereby extending the timeframe of 14 days minimum under Clause 90 of the Regulation.
- For all future requests to remove a survey mark please use the Application for Surveyor General Approval - Survey Mark(s) Removal form on our website under Surveyor Generals Directions No.11 [http://spatialservices.finance.nsw.gov.au/surveying/surveying\\_services/forms\\_and\\_applications/survey\\_marks\\_removal](http://spatialservices.finance.nsw.gov.au/surveying/surveying_services/forms_and_applications/survey_marks_removal)

Please quote the Approval No. R19/037 in any future correspondence.

Yours sincerely,



Daniel Sadler

for Narelle Underwood  
Surveyor-General of NSW

4 March 2019



**Fw: R 20.284 SS21304 Newnes Plateau**  
**Michael Price** to: Sarah Kimm, Madison Haddon

21-10-20 01:13 PM

Regards

**Michael Price**  
Senior Surveyor

p: +61 (0)2 6350 1674 | Internal: 1674



Centennial Coal Company Limited | Springvale  
980 Castlereagh Highway, Lidcombe NSW 2170 Australia  
[centennialcoal.com.au](http://centennialcoal.com.au)

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— Forwarded by Michael Price/Centennial Coal on 21/10/2020 01:13 PM —

From: "Surveyor-General-Approvals" <Surveyor-General-Approvals@customerservice.nsw.gov.au>  
To: "michael.price@centennialcoal.com.au" <michael.price@centennialcoal.com.au>,  
Date: 21/10/2020 01:10 PM  
Subject: R 20.284 SS21304 Newnes Plateau

Dear Michael,

Please find attached Survey Mark Removal Approval.

Please note that if the mark is not found using the locality sketch (attached) and the AHD height published in SCIMS (1161.837m), you can report it as destroyed (condition 2).

If the mark is found, you need to notify us as it may need to be replaced and levelled.

*More information regarding Survey Mark Removal applications and Data Submission Requirements can be found under Surveyor General's Direction No. 11.**A list of documents needed to be attached to the application can be found in our POSI Application Support Guide*[https://www.spatial.nsw.gov.au/\\_data/assets/pdf\\_file/0019/227116/POSI\\_Application\\_Support\\_Guide\\_v1.2.pdf](https://www.spatial.nsw.gov.au/_data/assets/pdf_file/0019/227116/POSI_Application_Support_Guide_v1.2.pdf)*Templates and examples of documents needed to be prepared can be found in our POSI Resource Pack**Data Submission Requirements and examples can be found in a separate folder of the POSI Resource Pack*[https://www.spatial.nsw.gov.au/\\_data/assets/file/0004/227218/POSI\\_Resource\\_Pack.zip](https://www.spatial.nsw.gov.au/_data/assets/file/0004/227218/POSI_Resource_Pack.zip)*AUSPOS reports and corresponding data can be submitted through our AUSPOS submission form under Surveyor General's Direction No. 7.*[https://www.spatial.nsw.gov.au/surveying/surveying\\_services/forms\\_and\\_applications/auspos\\_submission](https://www.spatial.nsw.gov.au/surveying/surveying_services/forms_and_applications/auspos_submission)

Kind regards,

**Janez Rom**

Geodetic Surveyor, Metropolitan Operations &amp; POSI

Spatial Services | Department of Customer Service  
e [surveyor-general-approvals@customerservice.nsw.gov.au](mailto:surveyor-general-approvals@customerservice.nsw.gov.au) | [spatial.nsw.gov.au](http://spatial.nsw.gov.au)



Please consider the environment before printing this email

*Due to the COVID-19 public health emergency, I and other DCS Spatial Services employees are working from home until further notice. This may impact my ability to respond to your enquiry in a timely manner or restrict the services I am able to provide. I apologise for any inconvenience caused and ask for your patience at this time.*

\*\*\*\*\*

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\*\*\*\*\* R 20.284 SS21304 Newnes Plateau.pdf SS21304.pdf



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## Spatial Services

McKell Building - 2-24 Rawson Place, Sydney NSW 2000  
Tel: 02 9372 8877 | TTY: 1300 301 181  
ABN: 81 913 830 179 | [www.customerservice.nsw.gov.au](http://www.customerservice.nsw.gov.au)

Michael Price  
Centennial Springvale  
980 Castlereagh Highway  
Lidsdale NSW 2790

Email: [michael.price@centennialcoal.com.au](mailto:michael.price@centennialcoal.com.au)

Dear Michael,

### **Removal of Survey Mark(s) S521304 for Proposed Longwall LW428 and LW429, ML1727**

Mark Locality: Newnes Plateau

Your Ref: SVC Survey - S521304 Removal Application Our Ref: R 20/284

Your request to remove the Survey Mark(s) S521304 has been considered and approved with the following conditions:

1. This consent must be read in conjunction with document(s) listed below:
  - SVY06697\_Survey Mark Removal Plan
  - Pages from ML1727
2. Spatial Services is formally notified of the removal of the survey mark and the status of any other survey mark already destroyed or not found using the Mark Status Report facility on our website [https://www.spatial.nsw.gov.au/surveying/surveying\\_services/forms\\_and\\_applications/sdms\\_status\\_report](https://www.spatial.nsw.gov.au/surveying/surveying_services/forms_and_applications/sdms_status_report)

### **Please note:**

- During the interim period of mark destruction to the re-establishment of new survey marks and/or lodgement of Plan of Survey Information Only, your contact details will be provided to any persons from the public enquiring about the loss of survey infrastructure. If contacted by any such person then the applicant must supply any relevant information that may assist in their inquiry (such as survey data that may assist in defining GDA, AHD or the cadastre).
- If a minor variation to this approval is required, then notification needs to be sent to: [Surveyor-General-Approvals@customer.service.nsw.gov.au](mailto:Surveyor-General-Approvals@customer.service.nsw.gov.au)
- Any major variation to the approval will require a new application for Survey Mark(s) Removal.
- If a Plan of Survey Information Only is required by this approval, quote the Approval No. adjacent to the Surveyor's Reference on that plan.
- SCIMS data can be obtained free of charge from "SIX Maps - SCIMS Online" facility from the new Spatial Services Portal by logging in or registering a new "SIX" account at: <https://six.nsw.gov.au/>
- Where possible, provide at least 30 business days notification before the proposed removal or replacement of survey marks (Permanent Survey Marks or Cadastral Reference Marks) thereby extending the timeframe of 14 days minimum under Clause 90, Surveying and Spatial Information Regulation 2017.

- For all future requests to remove a survey mark please use the Application for Surveyor General Approval - Survey Mark(s) Removal form on our website under Surveyor Generals Directions No.11 [https://www.spatial.nsw.gov.au/surveying/surveying\\_services/forms\\_and\\_applications/survey\\_marks\\_removal](https://www.spatial.nsw.gov.au/surveying/surveying_services/forms_and_applications/survey_marks_removal)

Please quote the Approval No. R 20/284 in any future correspondence.

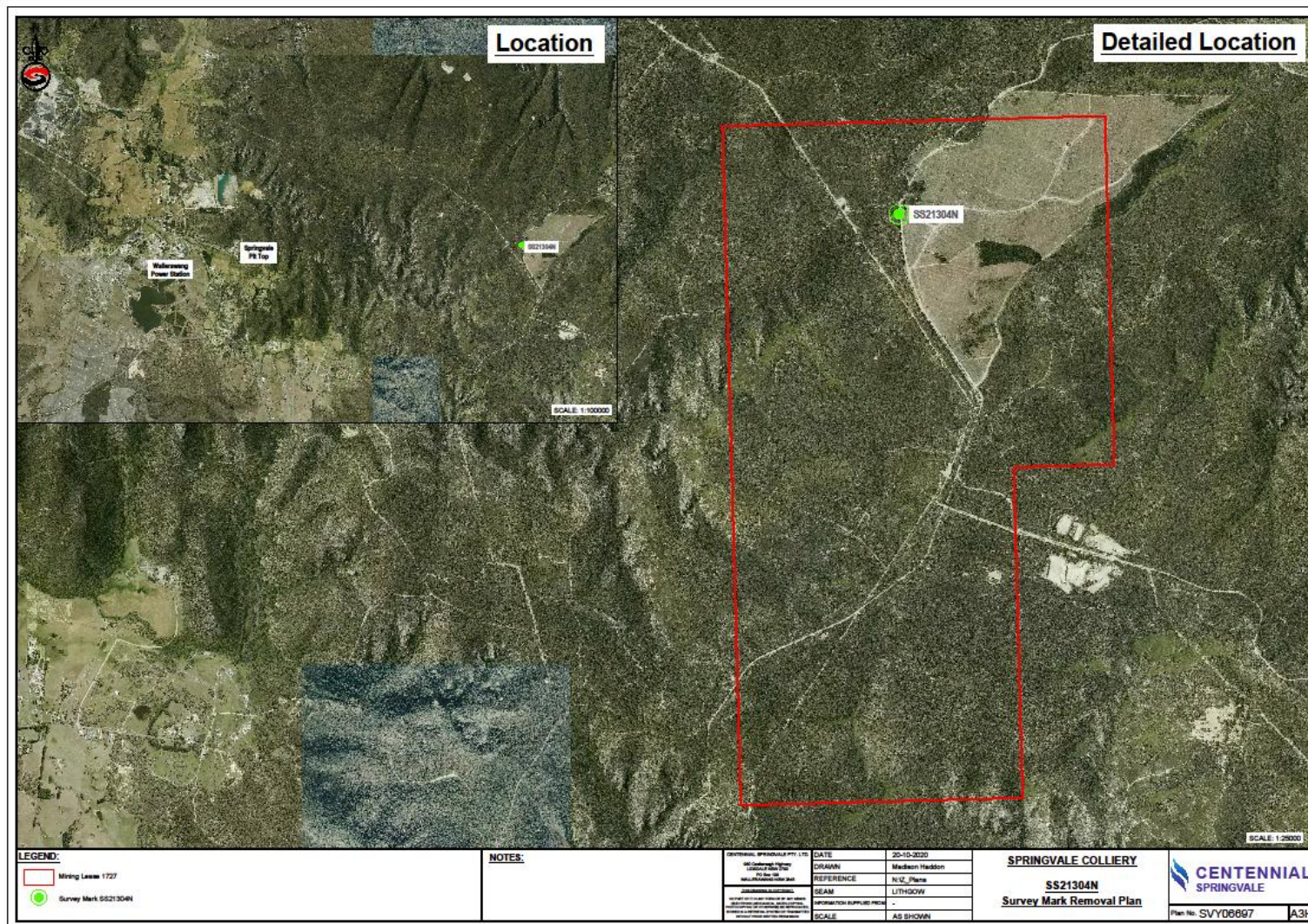
Yours sincerely,



Janez Rom  
for Narelle Underwood  
Surveyor-General of NSW

21 October 2020





SS21304 | Print Date: 21/10/2020 12:25 | No Of Pages: 1 | Property of DFSI - Spatial Services

Survey Co-ordination Act, 1949.



PM No. ORIGINAL  
SSM No. 21304  
S.C. ....

### LOCALITY SKETCH PLAN

(To be drawn in black waterproof ink, or HB pencil, not necessarily to scale.)

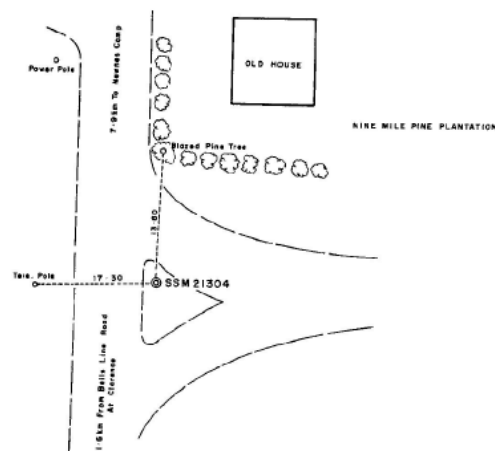
Parish ..... County COOK ..... City or Town .....

Municipality or Shire BLAXLAND ..... Survey Area .....

Zone ..... Map Sheet ..... Aerial Photograph N.S.W. ....

NOTE - Measurements are to be shown from the mark to as many nearby survey marks, buildings, fence posts, kerbs, etc., as practicable. Up to six measurements are desirable.

Measurements are in METRES .....



Mark last inspected .....  
Placed in connection with (type of survey or work) ..... MAPPING CONTROL  
Co-ordinate values of mark .....  
Projection ..... Origin .....  
Reduced level of mark ..... to Datum .....  
Inspection Book No. .... Fol. 10  
Site selected by AUSTRALIAN AERIAL MAPPING  
Mark placed by ..... Date APR 1975 PROVISIONAL SKETCH ONLY  
Locality sketch drawn by ..... Date JUN 1975  
Locality sketch put into use by ..... Date .....

2717/70

PM No. ORIGINAL  
SSM No. 21304

Officer-in-Charge  
Survey Co-ordination Branch

## Springvale Extraction Plan Consultation



Adam Williams

To Surveyor-General-Approvals@customerservice.nsw.gov.au

Cc Natalie Gardiner; Samantha Hayes



Land Reg Services - Springvale LW 428-432 EP 20201222.pdf  
217 KB

[Reply](#) [Reply All](#) [Forward](#) [...](#)

Wed 23-Dec-2020 3:22 PM

Good afternoon,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you would like a video conference call to discuss or ask questions, please let us know and we will be happy to organise at a time that suits.

Regards,

Adam

<https://fileshare.slrconsulting.com/wl/?id=OOVruvNTThM6c9gJnHEQCTx6DBeCSsTN>

**Adam Williams**

Principal - Environmental Assessment & Management



+61 2 4037 3211



+61 2 4037 3200



+61 412 450 227



ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd

10 Kings Road, New Lambton, NSW, Australia, 2305

**RE: Springvale Extraction Plan Consultation****Surveyor-General-Approvals** <Surveyor-General-Approvals@customerservice.nsw.gov.au>

To Adam Williams; Surveyor-General-Approvals

Cc Natalie Gardiner; Samantha Hayes; Joel Edwards

 Follow up. Start by Wednesday, 13 January 2021. Due by Wednesday, 13 January 2021.

↩ Reply

↩ Reply All

→ Forward

⋮

Wed 13-Jan-2021 1:36 PM



Hi Adam,

Consent for the removal / disturbance of SS 19176 and SS 21304 has already been granted, please see attached .pdf's.

The office of the Surveyor Generals raises no further concern.

Regards

**Daniel Sadler****Senior Surveyor, Survey Operations – Regional**

Spatial Services | Department of Customer Service

**P:** 02 8587 0511 **M:** 0400 649 772 | 346 Panorama Ave. Bathurst |**E:** [daniel.sadler@customerservice.nsw.gov.au](mailto:daniel.sadler@customerservice.nsw.gov.au) |

346 Panorama Ave, Bathurst NSW 2795

**Customer  
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## Registered Aboriginal Parties

### Springvale Extraction Plan Consultation



Adam Williams

To jilleanbower14@gmail.com; bathlalc2@bigpond.com; shaun@gundungurra.org.au; trindall@live.com.au; mingaan.lithgow@gmail.com; wirimbili@newco.page; bill.allen47@yahoo.com.au; wwwac@hotmail.com; mwilliams18@bigpond.com

Cc Natalie Gardiner; Samantha Hayes

Wed 23-Dec-2020 3:40 PM

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Good afternoon,

Springvale Colliery have developed an Extraction Plan for Longwalls 428-432. An approved Extraction Plan is required prior to any secondary extraction of longwalls.

As part of the process, we are seeking feedback from stakeholders. Additional details have been provided in the attached letter and a link to a draft Plan included below.

If you have any questions please contact us.

Regards,

Adam

<https://files.share.slrconsulting.com/wl/?id=SCiWV5dNfxkG2VzmDyawP1TA15g3GIGg>

**Adam Williams**

Principal - Environmental Assessment & Management

+61 2 4037 3211

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ajwilliams@slrconsulting.com

SLR Consulting Australia Pty Ltd  
10 Kings Road, New Lambton, NSW, Australia, 2305