



APPIN MINE AREAS 7 AND 9 LONGWALLS 709 TO 711 AND 905 COAL RESOURCE RECOVERY PLAN

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DOCUMENT REVISION LOG

Persons authorising this Plan

Name	Title	Date
Gary Brassington	Manager Approvals	October 2021

Document Revisions

Revision	Description of Changes	Date
ICH Document		
1.0	Original Document	July 2021
1.1	Administrative update	October 2021

Persons involved in the review of this Plan

Name	Title	Company	Exp (yrs)
Cody Brady	Principal Approvals	South32	5
Gary Brassington	Manager Approvals	South32	25

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1. INTRODUCTION

1.1 Project Background

South32 Illawarra Metallurgical Coal (IMC) operates the Bulli Seam Operations (BSO) Appin Mine, extracting hard coking coal used for steel production.

On 22 December 2011 the Planning and Assessment Commission (PAC), under delegation of the Minister for Planning, approved BSO (MP 08_0150) under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to continue mining operations until 2041.

This Coal Resource Recovery Plan (CRRP) supports the Longwalls 709 to 711 905 Extraction Plan for mining of coal from Appin Area (AA) 7 and 9. The relationship between this CRRP and the components of the Extraction Plan is shown in Figure 1 of the Extraction Plan.

The CRRP describes the proposed mining geometry, extraction sequence and the quality of the coal resource to demonstrate the effective recovery of the resource.

1.2 Scope

This CRRP has been prepared in accordance with the mining lease requirements as detailed in the Table 1.

Table 1 Appin Mine Leases, Licences and other Reference Documents

Mining Lease - Document Number	Start	Finish
CCL 767	29 Oct 1991	08 Jul 2029
CL 388	22 Jan 1992	22 Jan 2034
ML 1382	20 Dec 1995	20 Dec 2037
ML 1433	24 Jul 1998	23 Jul 2019 ¹
ML 1678	27 Sep 2012	26 Sep 2033

1.3 Objectives

The objectives of this CRRP are to detail the efficient and effective extraction of coal from Longwalls 709 to 711 and 905 to ensure compliance with the BSO Approval and mining lease conditions.

¹ Application for the renewal of Mining Lease 1433 which was lodged with the NSW Department of Planning and Environment – Division of Resources and Geoscience (Division) on 18 July 2018.

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1.4 Study Area

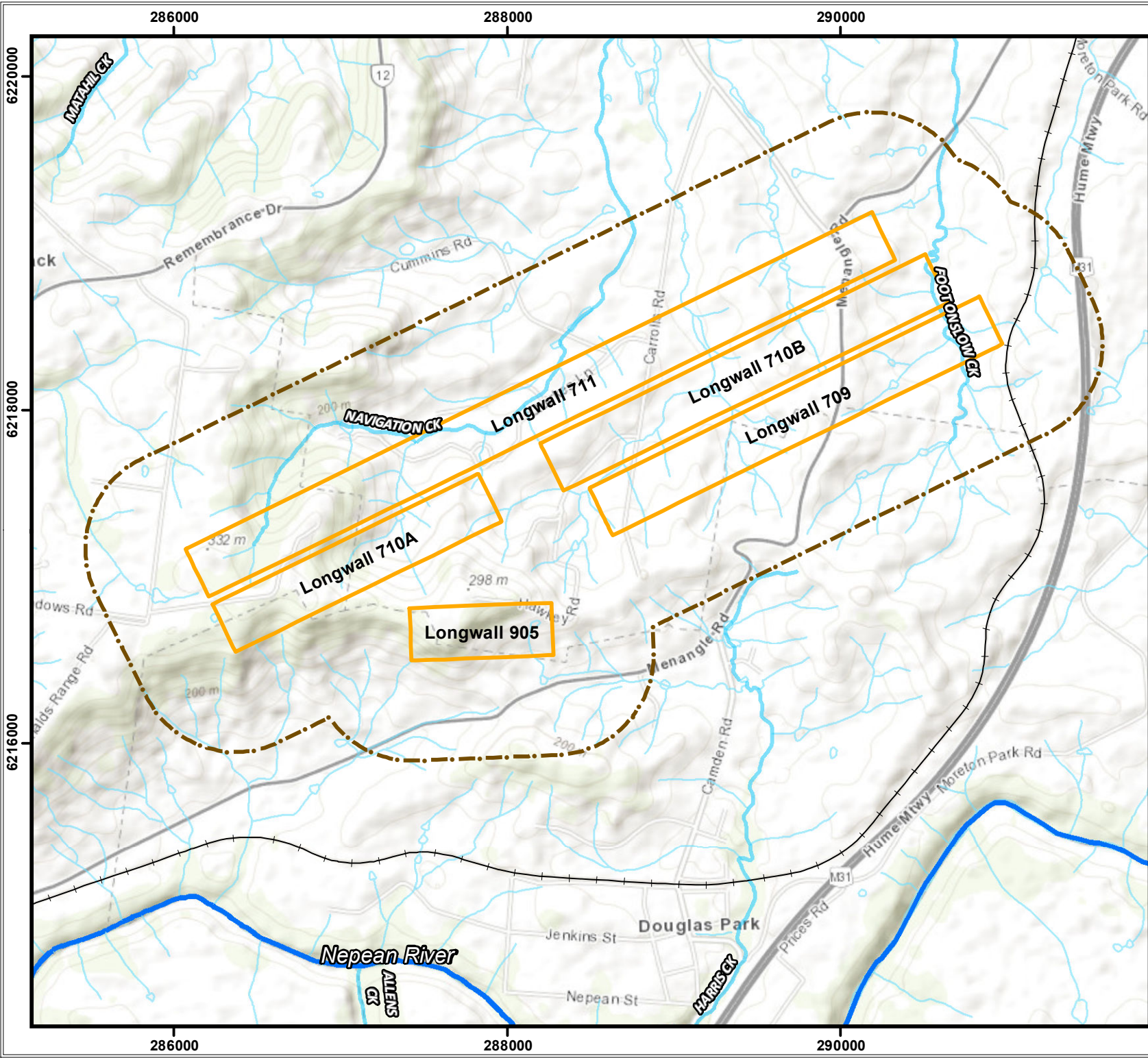
The Study Area for the Extraction Plan is defined in accordance with MSEC (2021) as the surface area predicted to be affected by the proposed mining of Longwalls 709 to 711 and 905 and encompasses the areas bounded by the following limits:-

- A 35° angle of draw line from the maximum depth of cover, which equates to a horizontal distance varying between 530 m and 750 m around the limits of the proposed extraction areas for Longwalls 709 to 711 and 905, and
- The predicted limit of vertical subsidence, taken as the 20 mm subsidence contour, resulting from the extraction of the proposed Longwalls 709 to 711 and 905.

Additionally, features potentially sensitive to far field movements, which includes horizontal, valley closure and upsidence movements that may be outside the 20 mm subsidence zone or 35° angle of draw line have been assessed.

The location of the Longwalls 709 to 711 and 905 Study Area within the BSO is shown in Figure 1.

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SOUTH32

Appin Areas 7 and 9

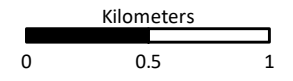
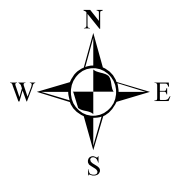
Longwalls 709-711
and 905
Study Area

Figure 1

- Longwalls 709-711 and 905
- 600 m Study Area
- Railway Lines
- Rivers
- Creeks
- Tributaries



Date: December, 2020
 Author: B.Aglan
 Version 1
 Horizontal Datum
 MGA - Zone 56





2. THE RESOURCE

AA7 and 9 mining area lies in the southern part of the Permo-Triassic Sydney Basin, within which the main coal bearing sequence is the Illawarra Coal Measures of Late Permian age. The Illawarra Coal Measures contain several seams, the uppermost of which is the Bulli Seam.

South32 plan to extract high quality coking coal from the Bulli Seam within AA7 and 9 as detailed in the BSO EA.

Three stratigraphic divisions form the overburden to the Bulli Seam. All three belong to the Hawkesbury Tectonic Stage. The lowest division is the Narrabeen Group which is subdivided into a series of interbedded sandstone and claystone units. Overlying the Narrabeen Group is the Hawkesbury Sandstone Group, which is a series of bedded sandstone units. Above the Hawkesbury Sandstone is the Wianamatta Group, which consists of shales and siltstones.

The depth of cover directly above the proposed longwalls varies between 530 - 750 m. The minimum depth of cover occurs along Foot Onslow Creek where it crosses the finishing (i.e. eastern) end of Longwall 709. The maximum depth of cover occurs along the Razorback Range above the western end of Longwall 711. Surface depth contours can be found in MSEC (2021) Drawing No. 1117-05 Appendix E.

The Bulli Seam floor within the Study Area generally dips from the south to the north. The seam thickness within the proposed longwall goaf areas varies between 2.8 m and 3.3 m.

The proposed longwall dimensions are provided in Table 2. The lengths of longwall extraction excluding the installation headings are approximately 9 m less than the overall void length provided in the belowtable. The longwall face widths excluding the first workings are 315 m. The longwalls will be extracted from west to east.

Table 2 Geometry of the Proposed Longwalls 709 to 711 and 905

Longwall	Overall Void Length Including Installation Heading (m)	Overall Void Width Including First Workings (m)	Overall Tailgate Chain Pillar Width (m)
709	2615	324	45
710A	1787	324	-
710B	2529	324	45
711	4469	324	55
905	858	324	49

The layout and dimension of the proposed longwalls has been modified from the layout of the BSO EA. The BSO EA layout within AA7 and 9 comprised longwalls having overall lengths varying between 1,150 m and 5,575 m, overall void widths varying between of 320 m and 325 m with chain pillars varying between 35 - 45 m.

Two important objectives which formed part of the longwall layout optimization were:

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- Setbacks from the Nepean River and the cliffs within the valley, so as to minimise potential for impact, and
- Minimisation of the volume of sterilised coal which could be efficiently extracted while meeting the stream impact minimisation criteria from the BSO EA and the requirements of the Project Approval.

2.1 Extraction Sequence

Extraction of longwalls will occur in a staged process commencing with Longwall 709 and finishing with Longwall 711 in AA7 and extraction of the final longwall in AA9. The scheduled mining of Longwalls 709 to 711 and 905 is provided below in Table 3.

Table 3 Expected Schedule for Longwall Extraction 709 to 711 and 905

Longwall	Start	Finish
709	December 2021	June 2023
905	July 2022	December 2022
710A	June 2023	February 2024
710B	March 2024	December 2024
711	December 2024	May 2026

2.2 Estimated Recovery

Longwalls 709 to 711 and 905 contain approximately 18.6 million tonnes of run-of mine (ROM) coal with 1.7 million tonnes ROM recoverable from roadway development totalling 20.3 million tonnes of resource recovery. The proposed longwalls will extract the full seam height.

2.3 Possible Effects on Other Seams

The Bulli Seam is the top seam in the Illawarra Coal Measures and consequently, mining this seam does not preclude future extraction of the seams below. There are currently no workings in other seams in the area. There are five coal seams below the Bulli Seam ranging in thickness from 0.8 m to 9.0 m.

The adjacent Balgownie seam is from 5.0 m to 10 m below the Bulli seam, but is only approximately 1.2 m thick and is not considered economically viable to mine. The mining of Longwalls 709 to 711 and 905 will not preclude the future mining of the lower seams.

Using available technology the Bulli Seam is currently the only economic seam in the area and there are no existing plans for mining other seams.

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3. PLAN ADMINISTRATION

3.1 Distribution

South32 will make the Extraction Plan and other relevant environmental documentation publicly available on the South32 website (Condition 11, Schedule 6).

Individual management plans will be developed in consultation with, and copies will be provided to, the relevant Government agencies and stakeholders as detailed in the appropriate Plan.

3.2 Review and Update

In accordance with Condition 5 of Schedule 6 of the Appin Mine approval, the Extraction Plan will be reviewed, and if necessary revised, within three months, of:

- the submission of an Annual Review;
- the submission of an incident report;
- the submission of an Independent Environmental Audit (IEA) report; or
- any modification to the conditions of the Appin Mine approval (unless the conditions require otherwise).

If significant deficiencies in this Plan are identified in the interim period, the plans will be modified as required. This process has been designed to ensure that environmental documentation continues to meet current environmental requirements, including changes in technology and operational practice, and expectations of stakeholders.

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4. REFERENCES

MSEC (2021) Appin – *Longwalls 709, 710A, 710B, 711 and 905 Subsidence Predictions and Impact Assessments for the Natural and Built Features due to the Extraction of the Proposed Longwalls 709, 710A, 710B, 711 and 905 at Appin Colliery*. MSEC1117. Rev A.

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