WHITEHAVEN COAL

CONSOLIDATED COAL LEASE (CCL) 701
BRICKWORKS, MELVILLE AND SPRINGFIELD
REHABILITATION MANAGEMENT PLAN

Approval	Name	Position	Signed	Date
Document Owner:	Andrew Raal	Env Supt		29/7/22
Authorised by:	Daryl Robinson	Env & Rehab Mgr		29/7/22

Summary Table	
Name of Mine	Gunnedah Colliery
Rehabilitation Management Plan Commencement Date	July 2022
Rehabilitation Management Plan version and revision date	version 3.0, January 2025
Mining Authorisations (Lease / Licence No.)	Consolidated Coal Lease 701
Name of Authorisation holder(s)	Namoi Mining
Name of Mine Operator (if different)	Whitehaven Coal Mining Limited

Contents

1 PART 1 - INTRODUCTION TO MINING PROJECT

This Rehabilitation Management Plan (RMP, the Plan) has been prepared by SLR Consulting Australia Pty Limited (SLR) in conjunction with Whitehaven Coal Limited (Whitehaven). Namoi Mining Pty Ltd (Namoi Mining), a wholly owned subsidiary of Whitehaven, holds the Consolidated Coal Lease 701 (CCL701). CCL701 is the site of the former Gunnedah Colliery which operated for over 100 years until closure in September 2000. Demolition and rehabilitation works are undertaken by Whitehaven.

CCL701 encompasses the Black Jack Colliery and operations at Melville Open Cut, Springfield, Brickworks, No5, No4 and No2 entries and Underground workings, the Gunnedah Colliery Coal Processing Plant (CPP), a disused tramway and old coal loader, previous exploration areas, and portions of Black Jack Mountain. These sites are located between 5 and 10 kilometres to the southwest of Gunnedah town centre within the New England north-west Region of New South Wales (NSW) (see **Figure *1-1***).

This Rehabilitation Management Plan (RMP, the Plan) has been prepared in accordance with the Mining Exploration and Geoscience – Resources Regulator's (RR) Form and Way: Rehabilitation Management Plan for Large Mines (RR, 2021) and associated guidelines (refer Section 1.3).

This RMP should be read in conjunction with the Detailed Mine Closure Plan (DMCP) for CCL 701 and its associated assessments, studies, and reports.

1.1 HISTORY OF OPERATIONS

There is a long history of mining in the Gunnedah basin, with coal first discovered in the late 1870s in the vicinity of Black Jack Mountain by farmers boring for water for agricultural purposes. Notification to commence mining on the south-eastern slopes of Black Jack Mountain was given in 1895 and became what is now referred to as the Gunnedah Colliery No.1 Entry area.

The Gunnedah Colliery mined reserves in the Hoskisson and Melville Seams by underground methods for most of the twentieth Century, producing high quality thermal and semisoft coking coal for domestic and export markets. The Gunnedah Colliery closed in mid-2000 as economic coal reserves in both seams were exhausted.

For the purpose of closure planning, Whitehaven has divided the historical mining areas within CCL701 into discrete Closure Management Areas (CMAs). The CMAs adopted for the purpose of this RMP are shown in **Figure *1-2*** and are as follows:

- CMA 1: Black Jack / Melville Underground.
- CMA 2: No. 2, No.4 and No.5 Underground.
- CMA 3: Melville Open Cut.
- CMA 4: Coal Preparation Plant (CPP).
- CMA 5: Tramway and Old Coal Loader.
- CMA 6: Other Lands.
- CMA 7: Road Corridors.
- CMA 8: Springfield Rehabilitation Plan Area.
- CMA 9: Brickworks Opencut Area*.
- CMA 10: Melville Opencut Area* (Rejects Emplacement Area (REA) and former maintenance (surface) facilities).

A brief summary of the history of mining within each of the CCL701 mining areas is included in **Table *1-1***.

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CCL701

FIGURE 1
REGIONAL LOCALITY

LEGEND

Project Approval Boundary

ML1624

ML1680

CCL701

Data Sources:
DoR NSW Exploration and Mining Leases
NSW LPI Base Map

0 1 2 Kilometres

Coordinate System:	GDA2020
Scale:	1:100,000 at A3
Project Number:	630.30268
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Drawn by:	LC
Annual Reporting Period:	2021

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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FIGURE 2
SITE LAYOUT

Inset A
Scale: 1:15,000,000

KAMILAROI HIGHWAY

OXLEY HIGHWAY

ML1624

ML1624

CCL701

CCL701

ML1680

ML1680

LEGEND

- Railway
- Major Road
- Mining Lease
- Project Approval Boundary

Closure Management Area

- CMA 1 - Black Jack / Melville UG
- CMA 10 - Melville MOP Area
- CMA 2 - No. 2, No. 4 and No. 5 UG
- CMA 3 - Melville OC
- CMA 4 - Coal Preparation Plant
- CMA 5 - Tramway
- CMA 6 - Other Lands
- CMA 7 - Road Corridor
- CMA 8 - Springfield MOP Area
- CMA 9 - Brickworks MOP Area
- OoS - Sunnyside

Data Sources:
DoR NSW Exploration and Mining Leases
NSW LPI Base Map

0 1 2 Kilometres

Coordinate System:	GDA2020
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Table 1-1 Summary of Historic CCL701 Mining Operations

CMA#	Area Description	Mining / Operations Commenced	Mining / Operations Concluded	Additional Information
CMA 1	No.1 Entry (Black Jack Colliery including Gladstone Coal Mine)	1890	1971	The initial coal mine, No.1 Entry, is located on the eastern side of Black Jack Mountain and extensively worked the Hoskisson Seam, with some development headings driven into the Melville Seam, approximately 60 metres below. A chimney was located on the Crown Land section and later demolished for safety reasons under a development consent.
	Melville Underground	1995	1997	There were three underground entries off the highwall in a void left originally as an emplacement area in the Melville North (Open) Cut workings. Coal was extracted from the Hoskisson and Melville Seams and fed to a breaker feeder then transferred to the surface via conveyor. The coal was transferred by road to the Gunnedah Colliery CPP for processing.
CMA 2	No. 2 Entry	1970	Before 1990	Installed on the western side of Black Jack Mountain including a pit top area and associated infrastructure (workshop, bathhouse, tanks, dam). The underground mine progressed further to the west. The workings are connected to the north with the No 4 Entry site.
	No. 4 Entry	1976	Before 1990	No. 4 Entry was installed to the north of No.2 Entry mine workings. The workings between No.2 and No. 4 Entry as well as No.2 and No.5 Entry are connected. Underground mining accessed from the No.4 Entry extended in a north and north-westerly direction. This area included a coal bin and stockpiles.
	No. 5 Entry	1985	2000	The ventilation trench and access drift at the No.5 Entry site were used for underground mining via bord and pillar extraction of the Hoskisson Seam. Mining in this area was ongoing for a number of years extracting coal further to the west on either side of the Oxley Highway. Infrastructure at this site included coal bin and conveyors, man and materials box cut, workshop, bathhouse, fuel farm, laydown areas, and explosives

CMA#	Area Description	Mining / Operations Commenced	Mining / Operations Concluded	Additional Information
				magazine. A road from No. 5 Entry was used to transport coal across the lease to the CPP.
CMA 3	Melville Open Cut	1984	1996 (mining) 2017 (rejects)	Approved in 1981, coal was extracted from the Melville Seam using conventional haul open cut mining system with concurrent pre-stripping, overburden removal, coal extraction, void backfilling and rehabilitation activities. The North Cut void (now known as the Melville Rejects Emplacement Area (REA)) was used for the emplacement of coarse coal rejects from the former Gunnedah Colliery mining operations and then after drying trucked from Whitehaven CPP located approximately 6 km to the northeast.
CMA 4	Gunnedah Colliery Coal Processing Plant (CPP) site	1978	2002	Coal was trucked from the various mining operations in the area to the CPP where it was washed. The coal from the CPP was then trucked to various local customers or railed to the Port of Newcastle for shipment overseas. Associated with CPP were reject emplacement areas that were progressively capped and rehabilitated. Decommissioning of the Gunnedah Colliery CPP commenced following commissioning of the Whitehaven CPP west of the site. Infrastructure on the site included rotary breaker, run-of-mine stockpile, dams and ponds.
CMA 5	Historic Coal Loader	1988 (unconfirmed)	2000s (unconfirmed)	The coal loader approved by Gunnedah Shire Council in 1988 has been removed but the site requires rehabilitation. The rail line within the area is used and maintained by Australian Rail Track Corporation (ARTC) as part of the Mungindi line.
	Tramway	1899	1970s (unconfirmed)	A private railway some 5.7 km in length was completed from the railway station to the mine. The Government took over operations in September 1957. The easement remains but the railway line was removed.
CMA 6	Other Lands	1899	2000s (unconfirmed)	Previous disturbance circa the 1800s is understood to have occurred mainly on the areas later operated and disturbed as listed in this table. Additionally, an extensive exploration programme was undertaken within CCL701 from 1969.

CMA#	Area Description	Mining / Operations Commenced	Mining / Operations Concluded	Additional Information
CMA 7	Road Corridor	N/A	N/A	Road corridors exist within the CCL701 area including gazetted and paper roads and the Oxley Highway as named on 7 August 1928.
CMA 8	Springfield Rehabilitation Plan Area (No. 3 Entry)	1971	Before 2000	Whilst No. 2 Entry was being developed in the west, No. 3 Entry (a small underground mine) was installed immediately to the south of the No.1 Entry. The development of this entry was limited in its extent from the box cut due to a geological igneous intrusion. A small amount of coal was recovered from the box cut (Springfield) resulting in a void and out-of-pit overburden dumps, and the area (within the expired ML1403) was subsequently rehabilitated under a 1996 approval. Rehabilitation works at the site have been completed in accordance with the Springfield Rehabilitation Plan.
CMA 9	Brickworks Paddock Open Cut Area	1996	1999	Coal was extracted from the Melville Seam using conventional haul open cut mining system with concurrent pre-stripping, overburden removal, coal extraction, void backfilling and rehabilitation activities. Reshaping and rehabilitation work at the site have been completed in accordance with the DCMP.
CMA 10	Melville CMA Area	1990	2017/8	The Melville REA was approved for emplacement of coarse rejects from the CPP from the 1990's including backfill against the Melville underground entry seals; in 2002 approval for emplacing reject from the Whitehaven CHPP was received. Disposal of rejects to the REA ceased in 2017/8 with significant landform reshaping completed to meet the final landform and facilitate capping. Rehabilitation of the Melville REA is being undertaken in accordance with the DMCP.

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES AND LICENCES

A Closure Obligations Register has been developed for CCL701 (To identify and document all the historic consents and approvals, authorisations, leases and licences held for the CCL701 project area as well as the requirements of other relevant statutory controls. (Refer to the DMCP, Appendix C).

The identified statutory controls that regulate the rehabilitation and mine closure activities within CCL701 are summarised in **Sections 1.3.1 to 1.3.4.**

For the purpose of this RMP, CCL701 has been considered to be a State Significant Development (SSD) in accordance with Clause 8 and Schedule 1 (Item 5) of the NSW State Environmental Planning Policy (State and Regional Development) 2011 and therefore it is considered to be a Level 1 Mine as specified in ESG3 (DRG, 2013).

a. Development Consents

The preparation of the Closure Obligations Register identified the following historical project approvals and development consents which are relevant to CCL701:

- 1977 Development Application – Gunnedah Colliery Coal Preparation Plant;
- 1984 Approval to Commence Open Cut Operations – Melville Open Cut (superseded);
- 1985 Development approval for shaft construction and fan installation at No. 5 Entry Ventilation Shaft;
- 1985 Development approval for erection of building for miners working at No. 5 Entry and supplying support facilities;
- 1985 Approval to Continue Operations – Melville Open Cut (superseded);
- 1988 DA 65/88 – Coal Loader (amended in 1991);
- 1988 Application to Extend Open Cut Operations – Melville Open Cut (superseded);
- 1991 Application to Extend Open Cut Operations – Melville Open Cut;
- 1991 DA 65/88 – Coal Loader; (amended);
- 1995 Extension of Open Cut Operations Consolidated Coal Lease No.701 – Melville Open Cut;
- 1995 Approval Under Section 125 CMRA – Emplacement Area (tailings dams No. 1 and No. 2 adjacent to the CPP including redirection of water course) (refer **Section 1.4.3**);
- 1996 DA No. 96033 – Brickworks (open cut mining);
- 1996 DA No. 96040 – No. 3 Entry Rehabilitation (Springfield);
- 2 March 1999 Approval to Conduct Auger mining Operations Within Brickworks Paddock Open Cut;
- 2001 Notice of Determination of a Development Application, Demolition of a Chimney DA 0023.2001;
- 2002 DA 0079.2002 – Whitehaven Coal Handling and Preparation Plant (including old coal loader);
  - 2011 Notice of Modification DA 0079.2002;
  - 2015 Notice of Modification DA 0079.2002;
- 2004 DA 67158 – Train Loading Facility;
- 2011 DA 550138 – Rehabilitation of Brickworks Open Cut Pit (reject emplacement) (lapsed); and
- 2012 Modification of Consent 618929 – Rehabilitation of Brickworks Open Cut Pit.

b. Mining Authorisations

The *Mining Act 1992* regulates environmental protection, rehabilitation and closure conditions included in all mining leases.

CCL701 was granted on 16 March 1989 under the former *Coal Mining Act 1973* and was renewed on 6 May 2009 with all conditions being amended to be subject to the Mining Lease Conditions 2008 and the *Mining Act 1992.* Several additional surface mining leases issued under the *Mining Act 1992* relate to the CCL701 area including ML1403 (expired), ML1404 (expired) and ML1680. These mining leases were granted after the consolidation of CCL701 and relate to the rehabilitation activities at Springfield and the Brickworks Paddock Open Cut.

CCL701 conditions relevant to the preparation of this RMP have been summarised in **Appendix A.**

c. Other approvals, licenses, and authorisations

EPBC

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires consideration of the potential for a "significant impact" to be imposed by an activity on a 'matter of national environmental significance'. In the event that such an impact is likely to be imposed, the activity must be referred to the Commonwealth for determination as to whether it constitutes a "controlled action". Where a development activity does constitute a controlled action, approval from the Australian Government Minister for the Environment is required.

No specific EPBC Act approvals are held for CCL701 sites.

Environmental protection licences

CCL701 is regulated by Environment Protection Licence (EPL) 1863 issued under the *Protection of the Environment Operations Act 1997* (POEO Act). EPL 1863 allows for the application of coal washery rejects to land and defines noise limits and blasting conditions. EPL 1863 was issued on 11 May 2001 and is renewed annually on 3 June.

In addition, EPL 3637, for the current Whitehaven Coal Handling and Preparation Plant (CHPP), partially covers the Old Coal Loader area of CCL701. EPL 3637 allows operation as a "coal works" with a nominated maximum throughput of 5 million tonnes per annum (Mtpa). The licence nominates required environmental monitoring and thresholds for noise, dust and water quality. EPL 3637 was issued on 7 August 2000 and is renewed annually on 1 April.

Other licences

In addition to EPLs, two licences granted under Section 34 of the *Crown Lands Act 1989* apply to CCL701.

- LI 502799 - granted on 28 September 2012 in relation to Crown public road under Enclosure Permit 36276 to DJ Fordham, South of Lots 482-483 DP755503 (excluding Council Road), Lot 7315 DP1145822 & Lot 485 DP755503, Crown land compromising Part Lot 7001 DP96588 (being part Reserve 79282 for Environmental Protection), South of Lot 1 DP603422, Lot 33 DP755503 & Lot 182 DP755503, and Crown public road separating Lot 121 DO755503 from Lot 14 DP755497 (8.1ha); and

- LI 303876 – granted on 29 May 1997 in relation to parts of Crown roads west of Lot 392 DP755503 and south of Lot 113, DP755503 containing bore, pump site, pipeline and powerline (2180m2).

The groundwater bore survey undertaken in September 2017 identified two licenced groundwater bores GW98392 located on the ML border at Sunnyside, and GW026465.

No radiation licences have been identified within CCL701.

Applicable guidelines

In addition to the regulatory requirements identified above, this Plan has been prepared with consideration for the following guidelines, standards and policies:

- *Form and way: Rehabilitation Management Plan (large mines);*
- *Form and way: Rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan for large mines;*
- *Guideline: Rehabilitation risk assessment;*
- *Guideline: Rehabilitation objectives and rehabilitation completion criteria;*
- *Planning for Integrated Mine Closure Toolkit (ICMM, 2008);*
- *Mining Amendment (Standard Condition of Mining Leases – Rehabilitation) Regulation 2021;*
- *Strategic Framework for Mine Closure (ANZMEC 2000);*
- *Leading Practice Sustainable Development Program for the Mining Industry – Mine Closure and Completion, Mine Rehabilitation (Commonwealth Department of Industry, Tourism and Resources);*
- Best Practice Environmental Management in the Mining Industry Series;
- *Enduring Value (Mineral Council of Australia 2015); and*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP).*

1.3 LAND OWNERSHIP AND LAND USE

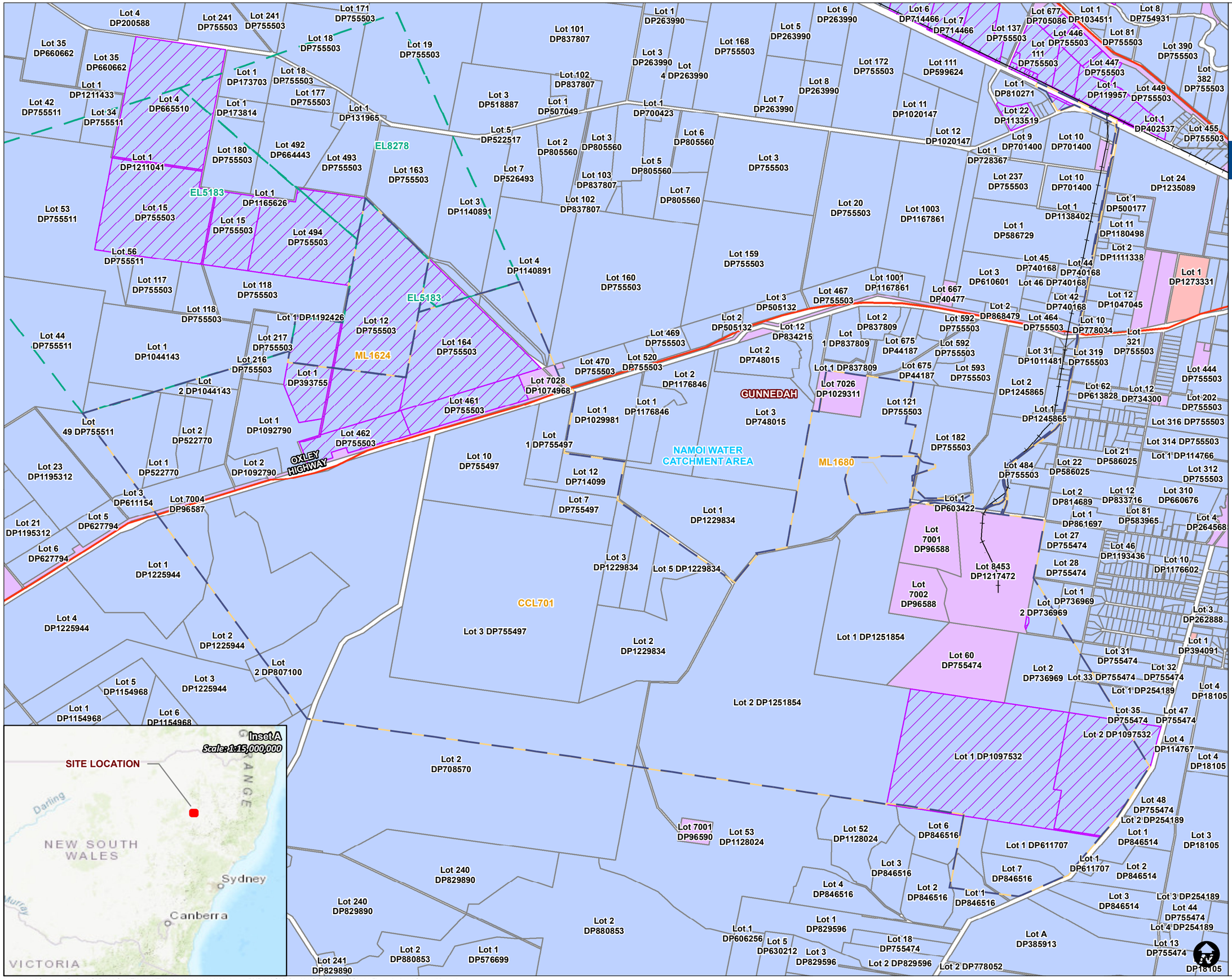
Land ownership within the bounds of CCL701 is shown on **Figure 1-3, Figure 1-4 and Figure 1-5** with a schedule of lands provided in **Appendix B.** The majority of the land within CCL701 is Crown Land, privately owned freehold land, or land owned by Whitehaven.

1.3.1 LAND ONERSHIP AND LAND USE FIGURE

WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FIGURE 3
LAND OWNERSHIP



LEGEND

- Railway
- Major Road
- Project Approval Boundary
- Exploration Licence
- Mining Lease
- Local Government Area
- Property Boundaries
- Whitehaven Owned Land

Land Ownership

- Crown
- Freehold
- Local Government Authority
- Unknown

Data Sources:
NSW Spatial Information Exchange
DoR NSW Exploration and Mining Leases
NSW LPI Land Status Cadastre & Ownership

0 250 500 m

Coordinate System:	GDA2020
Scale:	1:50,000 at A3
Project Number:	630.30268
Date:	25-Jul-2022
Drawn by:	LC
Annual Reporting Period:	2021

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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FIGURE 4
LAND USE AND CONTOURS

LEGEND

- Railway
- Major Road
- Current Landform Contours (5m AHD)
- Project Approval Boundary
- Exploration Licence
- Mining Lease
- Local Government Area
- Property Boundaries

Land Use

- 1.1.0 Nature conservation
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 4.5.0 Irrigated seasonal horticulture
- 5.3.0 Manufacturing and industrial
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.6.0 Utilities
- 5.7.0 Transport and communication
- 5.8.0 Mining
- 5.9.0 Waste treatment and disposal
- 6.2.0 Reservoir/dam
- 6.3.0 River
- 6.4.0 Channel/aqueduct
- 6.5.0 Marsh/wetland

Data Sources:
NSW Spatial Information Exchange
DoR NSW Exploration and Mining Leases
ESRI Basemap world imagery 2022
NSW LPI Land Status Cadastre & Ownership
NSW DPE Landuse 2017

0 250 500 m

Coordinate System:	GDA2020
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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

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FIGURE 5
VEGETATION COMMUNITIES

EL8278
EL5183
EL5183
ML1624
OXLEY HIGHWAY
KAMILAROI HIGHWAY
GUNNEDAH
NAMOI WATER CATCHMENT AREA
ML1680
CCL701

LEGEND

- Railway
- Major Road
- Project Approval Boundary
- Exploration Licence
- Mining Lease
- Local Government Area
- Property Boundaries

Plant Community Type

- No Data
- 0 - Non-Native
- 1 - Candidate Native Grasslands
- 27 - Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion
- 78 - River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion
- 113 - Ooline closed forest (dry rainforest) on sandstone and conglomerate rises and hills in the Brigalow Belt South Bioregion
- 204 - Water Couch marsh grassland wetland of frequently flooded inland watercourses
- 393 - White Box shrubby woodland of the western Liverpool Range, Warrumbungle Range and south-west Pilliga forests, Brigalow Belt South Bioregion
- 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion
- 434 - White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion

Data Sources:
NSW Spatial Information Exchange
DoR NSW Exploration and Mining Leases
NSW LPI Land Status Cadastre & Ownership
NSW Seed OEH Board Rivers Gwydir/Namoi regional native vegetation map v2 2015

0 250 500 m

Coordinate System:	GDA2020
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a. Historic and Current land use

CCL701 lies within the Namoi River Basin in an area representative of the transition from the higher broken country to the northeast and south associated with the Nandewar, Great Dividing and Liverpool Ranges and the open plains to the west in the Wee Waa and Coonambleo areas (see **Figure 1-1)**.

The western portion of CCL701 has been cleared and is generally a land use of mixed grazing and cropping. Much of this area would have originally been covered by Plains Woodland.

The eastern portion of CCL701 is dominated by Black Jack Mountain which rises to an elevation of 625 m with slopes in excess of 45 degrees being recorded. The eastern portion remains largely uncleared due to the steepness of the terrain.

There are no active extraction areas within CCL701. Rehabilitation at the site has been undertaken to various degrees across the area with a number of the previous active mining areas sold by Namoi Mining in 2006.

b. Future land use

The post mining land use goal is to provide a low maintenance, geotechnically stable and safe landform that is commensurate with the land use of the surrounding area.

It is intended that the final landform will maintain the existing land use which has been established by landholders since the completion of mining, such as agricultural activities, infrastructure or bushland. Where existing landowners have proposed, and where documented in existing or future agreements, former mining infrastructure will be retained for post mining use. Where required, buildings, access roads, hardstands and other infrastructure will be made safe with mitigation of mining related legacies appropriate to the post mining land use. Redundant mining related infrastructure such as old building footings, former pipelines, and unused tanks will be demolished and removed.

Where vegetation is to be re-established, it will generally comprise vegetation communities which are commensurate with surrounding land uses. The post mining land use has been determined through consultation and agreement with landowners and relevant stakeholders.

Table 1-2 summarises the proposed final land use and lists key infrastructure present for within each CMA.

Table 1-2: Summary of Proposed Future Land Use by CMA

CMA #	Proposed Final Land Use	CCL701 Key Infrastructure Present
1 – Black Jack / Melville Underground	Existing land use (weather station, tracks, biodiversity offset, etc.) Bushland Grassland	Historic underground mine entries and remnant infrastructure Historic quarry Gunnedah Quarry biodiversity offset and associated infrastructure

CMA #	Proposed Final Land Use	CCL701 Key Infrastructure Present
2 – No. 2, No. 4 and No. 5 Underground	Existing land use (cropping, residences, roads and track, etc.) Retained infrastructure Retained water management infrastructure Grassland rehabilitation	Mining infrastructure including workshops, bathhouse, tanks, access tracks No. 2 Entry dams 1 and 2 No. 4 Entry dams 1 and 2 No. 5 Entry box cut Private landholdings (infrastructure including housing, sheds, access tracks, dams, etc.)
3 – Melville Open Cut	Retained infrastructure Water management (final void) Grassland rehabilitation	Melville Southern Void Melville Open Cut dams 1, 2 and 3 Private landholdings (housing, sheds, access tracks, etc.)
4 – CPP	Grassland and Grassland rehabilitation Retained water management infrastructure Woodland and woodland rehabilitation	Tailings Storage Facility (TSF) CPP Dams 1, 2, 3 and 4 and SD dams 1, 6 and 8 Tip area Northern Cut Access Road (part)
5 – Tramway and Old Coal Loader	Existing land use (asset storage) Grassland rehabilitation Retained water management infrastructure Woodland rehabilitation	Old weighbridge facility Historic coal loader dam
6 – Other Lands	Existing land use (residences, dams, tracks, cropping, quarrying etc.)	Springfield – Melville haul road Private landholdings (housing, sheds, access tracks etc.) Historic clean water dam Brickworks water dams
7 – Road Corridor	Existing land use (roads)	Road corridor (Oxley Highway, Bushs Lane, Coocooboonah Road, etc.)
8 – Springfield Rehabilitation Plan Area	Retained water management Existing land use (water tanks and associated infrastructure) Grassland rehabilitation Woodland rehabilitation	Water tanks and associated infrastructure
9 – Brickworks CMA Area	Grassland rehabilitation Retained water management Retained infrastructure (roads)	No mining related infrastructure is present in the CMA outside of the road (in use) and dams

CMA #	Proposed Final Land Use	CCL701 Key Infrastructure Present
10 – Melville CMA Area	Retained water management Grassland rehabilitation Existing land use (residence, workshop etc.)	Melville Reject Emplacement Area (REA) Access roads Melville Maintenance/Surface Facilities Dams and water management

2 PART 2 - FINAL LAND USE

2.1 REGULATORY REQUIREMENTS FOR REHABILITATION

The regulatory requirements specific to post mining land use, rehabilitation and closure outcomes at CCL701 are summarised in **Table 2-1.**

Table 2-1 Rehabilitation and Closure Commitments found within CCL701

Condition	Requirement	Domain	Timing	Section Addressed
Consolidated Coal Lease 701				
Part 2 Standard Conditions Division 1 Condition 4	Prevent or minimise harm to the environment.	All	Ongoing	Section 3
Part 2 Standard Conditions Division 1 Condition 5	Rehabilitate land and water as soon as reasonably practicable after disturbance occurs.	All	Ongoing	Section 6.1
Part 2 Standard Conditions Division 1 Condition 6	Achieve the approved final land use for the mining area as set out in the: • rehabilitation objectives statement; • rehabilitation completion criteria statement; and • final landform and rehabilitation spatial plan (large mines only).	All	Prior to relinquishment	Section 2.3
Part 2 Standard Conditions Division 2 Condition 7	Undertake a rehabilitation risk assessment and implement measures to eliminate, minimise or mitigate risks to achieving the final land use.	All	Complete/ Ongoing	Section 3
Part 2 Standard Conditions Division 3 Condition 10	Prepare and implement a rehabilitation management plan (large mines only).	All	Complete	This document
Part 2 Standard Conditions Division 3 Condition 13	Prepare an annual rehabilitation report which describes the progress of rehabilitation over the annual reporting period.	All	Ongoing	Section 6

Condition	Requirement	Domain	Timing	Section Addressed
Part 2 Standard Conditions Division 3 Condition 13	Prepare a forward program which includes the schedule of mining and rehabilitation activities for the next three years demonstrating how rehabilitation will occur as soon as reasonably practicable after disturbance.	All	Ongoing	Section 6
Note: A Closure Obligations Register (DMCP, Appendix C) has been developed to document all legal and regulatory obligations applicable to the rehabilitation and closure of CCL701.				

2.2 FINAL LAND USE OPTIONS ASSESSMENT

This section is not applicable to the CCL701 RMP as the final land use is specified in the DCMP.

2.3 FINAL LAND USE STATEMENT

The post mining land use goal is to provide a low maintenance, geotechnically stable and safe landform that is commensurate with the land use of the surrounding area.

The final landform will maintain the existing land use which has been established by landholders since the completion of mining, such as agricultural activities, infrastructure or bushland. Where existing landowners have proposed and where documented in existing or future agreements (Whitehaven or other infrastructure owners), former mining infrastructure will be retained for post mining use. Buildings, access roads, hardstands and other infrastructure will be made safe with mitigation of mining related legacies appropriate to the post mining land use where relevant. Redundant mining related infrastructure such as old building footings, former pipelines, and unused tanks will be demolished and removed.

Where vegetation is to be re-established, it will generally comprise woodland or grassland communities which are commensurate with surrounding land uses.

The post mining land use has been determined through consultation and agreement with landowners and relevant stakeholders.

2.4 FINAL LAND USE AND MINING DOMAINS

2.4.1 Final land use domains

The Final Land Use names and codes have been provided by the NSW Resources Regulator. These must be adhered to when preparing the RMPs. **Table 2-2** details the specific final land use domain titles and the relevant codes applicable to CCL701.

Table 2-2: Final Land Use Domains

FINAL LAND USE DOMAIN	CODE
Native Ecosystem	**A**
Agricultural – Grazing	**B**
Agricultural – Cropping	C
Rehabilitation Biodiversity Offset Area	D
Industrial	E
Water Management Areas	**F**
Water Storage (Excluding Final Void)	**G**
Heritage Area	H
Infrastructure	**I**
Final Void	**J**

2.4.2 Mining domains

The mining domain names and codes have been provided by the NSW Resources Regulator. These must be adhered to when preparing the RMPs. **Table 2-3** details the specific mining domain titles and the relevant codes applicable to CCL701.

Table 2-3: Mining Domains Relevant to each CMA

MINING DOMAIN	CODE
Infrastructure Area	**1**
Tailings Storage Facility	**2**
Water Management Area	**3**
Overburden Emplacement Area	**4**
Active Mining Area (Open Cut void)	**5**
Underground Mining Area (SMP)	**6**
Beneficiation Facility	7
Other (Stockpiled Material)	8

3 PART 3 - REHABILITATION RISK ASSESSMENT

a. Summary of Risk Assessment

Multiple risk assessments have been completed historically for the rehabilitation works associated with CCL701. **Table 3-1Table 3-1** summarises the completed rehabilitation risk assessments.

Table 3-1: Summary of Risk Assessments

Date	Risk Assessment	Details
28 August 2017	Closure MOP Risk Assessment	A risk assessment was undertaken during the preparation of the former Closure MOP to address risks to rehabilitation and closure at CCL701.
October 2020	Gunnedah Open Cut Qualitative Risk Assessment	Determine the environmental aspects of the Gunnedah Open Cut Operations, rehabilitation and closure activities, products and services that it can control and those that it can influence and their associated environmental impacts.
2021	Gunnedah Open Cut Broad Brush Risk Assessment (BBRA)	BBRA review to review material risks and controls.
2021	Gunnedah Open Cut Bowtie Risk Assessment	Bow Tie assessment for closed mine environmental risks.
February 2022	RMP Risk Assessment	A risk assessment was conducted to identify the key issues that presented a risk to achieving satisfactory rehabilitation at the CCL701 siteand inform the preparation of the RMP. This risk assessment was conducted in accordance with Resources Regulator's Guideline: Rehabilitation Risk Assessment to satisfy the standard rehabilitation conditions introduced on Mining Leases in July 2021.

b. Rehabilitation Risk Assessment

Conditions of a mining lease granted under the Mining Act 1992 require the lease holder to conduct a rehabilitation risk assessment and implement measures to eliminate, minimise or mitigate the risks in accordance with the Resources Regulator's *Guideline: Rehabilitation risk assessment.*

An initial closure risk assessment for CCL701 was undertaken on 28 August 2017 with a further mid-point risk assessment from 8 to 9 May 2018. A final risk assessment was undertaken from 3 to 4 June 2019 following the completion of the majority of the required technical studies.

A risk assessment workshop was undertaken on 24 February 2022. The workshop was used to identify the key issues that presented a risk to achieving satisfactory rehabilitation at CCL701.

The risk assessment included key Whitehaven and SLR personnel and was undertaken in accordance with AS/NZS ISO 31000:2018 Risk Management – Guidelines and the Risk Management Handbook for the Mining Industry (MDG1010). Whitehaven's Risk Matrix was used to calculate the consequence and likelihood of an event and to evaluate the subsequent risk level (risk rank).

The risk assessment has been used to inform the preparation of this Plan. The objectives of the risk assessment were to:

- Identify the risks associated with rehabilitation and closure of CCL701 sites to achieve the approved post mining land uses;
- Identify knowledge gaps in Whitehaven's current understanding of the risks to rehabilitation;
- Identify the investigations/controls/action plans necessary to effectively mitigate risks and/or realise opportunities and to close any identified knowledge gaps;
- Inform the development of this RMP, to provide a basis to determine additional investigations and/or project works to be undertaken; and
- Provide the framework to satisfy relevant internal and government guidelines, requiring implementation of a risk-based approach to closure.

The risk workshop assessed a total of 60 key rehabilitation risks, which are summarised as:

- 0 risks were ranked as not applicable;
- 57 risks were ranked as low;
- 2 risks were ranked as moderate;
- 0 risks were ranked as significant;
- 1 risk was ranked as high; and
- 0 risks were ranked as extreme.

Rehabilitation risks, controls and proposed controls will regularly be reviewed and revised (as required).

c. Specific Risks Relating to Rehabilitation

The key risks (including significant, high and extreme risks) to successful rehabilitation and associated risk controls identified within the February 2022 workshop have been summarised in **Table 3-2.** The outcomes of the risk assessment workshop have been used to inform the preparation of this Plan.

Table 3-2: Key Rehabilitation Risks and Identified Controls

Risk Rating	Key Risk	Key Controls	Sections Addressed
High	Surface water and carbonaceous material runoff reporting off site (Marshmead)	Desilting of Marshmead dam.	Section 6.2.3
		Clean water diversion.	Section 6.2.3
		CPP surface water design revised to prevent reporting off site.	Section 6.2.3

Risk Rating	Key Risk	Key Controls	Sections Addressed
		Lease in place for topsoil storage.	Section 6.2.4
		Rehabilitation materials balance include rehabilitation of this area.	Section 6

d. Further studies/action plan

A number of proposed controls and further studies were identified during the risk assessment workshop. **Table 3-3** presents an action plan for implementation of the additional risk controls (including significant, high and extreme risks).

Table 3-3: Further Studies/Action Plan

Risk Rating	Risk	Proposed Control / Study	Timeframe
High	Surface water and carbonaceous material runoff reporting off site (Marshmead)	Determine and execute interim strategies including erosion and sediment controls to prevent water from running off-site away from the LDP.	December 2022

4 PART 4 - REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

The main rehabilitation objectives to meet the post mining land use and landscape goals are:

- To provide a low maintenance, geotechnically stable and safe landform, which blends and /or is consistent with surrounding landforms and is commensurate with the re-establishment of the pre-mining or an alternative land use (as agreed with the relevant landholder);
- To stabilise all earthworks, drainage lines and structures and other areas of disturbance in a manner which minimises erosion and sedimentation;
- To establish vegetation communities that are, or are developing towards, self-sustaining ecosystems;
- Where practicable, including consideration of relevant landholder requests, the post-mining landform (including infrastructure) will be retained to benefit the landowners and future land uses; and
- To produce a rehabilitated landform, to a standard acceptable by the relevant authorities facilitating lease relinquishment.

Domain rehabilitation objectives

The key rehabilitation objectives for each of the domains are defined in **Table 4-2.**

Completion Criteria

The proposed rehabilitation completion criteria for CCL701 are listed in **Table 4-2, Table 4-3 & Table 4-4.**

4.1 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

Completion criteria are objective target levels or values assigned to a variety of indicators (e.g., slope, species diversity, percent groundcover), which can be measured to demonstrate progress and ultimate success of rehabilitation. As such, they provide a defined end point, at which point in time rehabilitation can be deemed successful and the lease relinquishment process can proceed.

The overall rehabilitation completion criteria and performance criteria for CCL701 are listed in **Table 4-2**. Additional rehabilitation completion criteria and performance specific to individual CMAs are presented where relevant in the DMCP (Section 10 to Section 20).

These completion criteria will be utilised to demonstrate achievement of rehabilitation objectives. It is noted that the completion criteria may be subject to refinement as rehabilitation progresses, including as a result of ongoing consultation with the relevant stakeholders, studies yet to be completed and continuous improvement process informed by rehabilitation monitoring results. The achievement (or otherwise) of the completion criteria will be monitored and reported as required.

Closure criteria have been informed by the following information:

- Detailed Mine Closure Plan;
- The Department of Regional NSW – Mining, Exploration & Geosciences (DRNSW – MEG) rehabilitation guideline documents including:
- Form and way: Rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan for large mines;
- Guideline: Rehabilitation objectives and rehabilitation completion criteria;
- Completion criteria from the previously approved CCL701 Closure MOP;
- Similar rehabilitation projects; and
- Specific information collected to date during detailed planning investigations.

Table 4-1: Rehabilitation Objectives and Draft Completion Criteria

Final Land Use Domain	Mining Domain	Rehabilitation Objective	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Validation Method *(evidence that the benchmark has been achieved)*
Native ecosystem (A)	Infrastructure area (1) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Ecological rehabilitation** The **vegetation composition** of the rehabilitation is recognisable as woodland rehabilitation of PCT 435	Native plant species recorded from monitoring plots are characteristic of the target vegetation community (e.g., target PCT)	Rehabilitation monitoring verifies that native ecosystem indicators have achieved the completion criteria targets listed in **Table 4-4**.	Before and after photos, rehabilitation monitoring reports, independent ecological reports that validate rehabilitation completion criteria have been met.
Native ecosystem (A)	Infrastructure area (1) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Ecological rehabilitation** The **vegetation structure** of the rehabilitation is recognisable as, or is trending towards (based on ongoing monitoring data) the target woodland rehabilitation (PCT 435).	Cover and abundance of plant growth forms recorded from monitoring plots are characteristic of the target vegetation community (e.g., PCT), or an ongoing trend toward becoming characteristic is evident from the monitoring data	Rehabilitation monitoring verifies that native ecosystem indicators have achieved the completion criteria targets listed in **Table 4-4**.	Before and after photos, rehabilitation monitoring reports, independent ecological reports that validate rehabilitation completion criteria have been met.
Native ecosystem (A)	Infrastructure area (1) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Ecological rehabilitation** Levels of **ecosystem function** have been established that demonstrate the rehabilitation is self-sustainable.	Indicators of nutrient cycling are suitable for sustaining the target vegetation community (e.g., PCT(s))	▪ Rehabilitation monitoring verifies that native ecosystem indicators have achieved the completion criteria targets listed in **Table 4-4**. ▪ Established species survive and/or regenerate after disturbance. ▪ Species are capable of setting viable seed, flowering or otherwise reproducing.	Rehabilitation monitoring reports, which demonstrate long-term function of rehabilitated landform
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Bushfire** The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented similar to surrounding land management on similar vegetation communities	Rehabilitation monitoring reports. site aerial image
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Groundwater** Groundwater quality is similar to, or better than the pre-disturbance Groundwater quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000	Water quality generally consistent with ANZECC guidelines for specific environment. Independent hydrological assessment report.	Independent hydrological assessment report

Final Land Use Domain	Mining Domain	Rehabilitation Objective	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Validation Method *(evidence that the benchmark has been achieved)*
Infrastructure area (I)					
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Groundwater** Groundwater Regime: Impacts to groundwater regime are within range as predicted in pre-mining environmental assessment	Groundwater levels and flows	If there were any impacts to groundwater levels, groundwater flow these would be generally consistent with development consent(s) (including associated Management Plans).	Independent hydrological assessment report.
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Land contamination** There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. Any contamination has been appropriately remediated in accordance with legislative requirements for the intended final land use. Retained dams are decontaminated in accordance with regulatory requirements. Surface layer is free of any hazardous materials	Contamination reports. Written statement. Photographic records Waste facility receipts.
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Landform stability** The final landform is stable for the long-term and does not present a risk of environmental harm downstream / downslope of the site or a safety risk to the public/stock/native fauna.	Visual/ measured/ modelled evidence of erosion/ landform stability.	Survey or remote sensing of the rehabilitated landforms shows an absence of erosion that could compromise stability. Any erosion is minimal with no ongoing management works.	Survey or remote sensing monitoring, visual inspection records, photograph series from photo points, Specialist consultant assessment reports.

Final Land Use Domain	Mining Domain	Rehabilitation Objective	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Validation Method *(evidence that the benchmark has been achieved)*
Infrastructure area (I)					
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Landform stability** Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Minimal active erosion	There are no gully or tunnel erosion features and there is an absence of rilling (> 300 mm deep).	Survey or remote sensing monitoring, visual inspection records, photograph series from photo points, Specialist consultant assessment reports.
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Removal of Infrastructure** All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials	No external services connected to site (generator and mobile communication tower used)	NA	NA
			Demolition and removal of all surface infrastructure that is not required for the final land use.	Infrastructure removed.	Statement provided Demolition records As-constructed final landform
			Removal of all concrete footings, foundations and pavements	All concrete footings, foundations and pavements have been removed	Demolition records Surveyed verification and marked on the as-constructed final landform plan. Disposal records/waste receipt
			Surveying and sealing of all drill holes and exploration boreholes in accordance with departmental guidelines and relevant standards.	Sealing completed and verified.	Engineering report/statement that verify complete to departmental guidelines and relevant standards.
Native ecosystem (A) Final void (J)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5)	**Surface Water** Runoff water quality from mine site meets the requirements of the relevant development consent(s) / Environment Protection Licence and does not present a risk of environmental harm.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or Environment Protection Licence	Runoff water quality from rehabilitation areas represents an acceptable level of change from a defined reference condition (refer to Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000). Water quality in retained dams and/or voids is suitable for the final land use.	Water quality sampling and analyses as per the approved *Water Management Plan*

Final Land Use Domain	Mining Domain	Rehabilitation Objective	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Validation Method *(evidence that the benchmark has been achieved)*
Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Underground mining area (SMP) (6)				
Native ecosystem (A) Final void (J) Water management areas (F) Water storage (G Agricultural – grazing (B) Infrastructure area (I)	Infrastructure area (1) Tailings storage facility (2) Water management area (3) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Management of waste and process materials** Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended final land use.	Quality assurance records for the location of rejects and depth of capping material. Records of contamination.	▪ There are no visible signs of contamination following the removal of plant, equipment and materials. ▪ All rubbish/ waste materials have been removed from site. ▪ Any carbonaceous material has been removed from the footprint of the infrastructure areas and disposed of in the void, with at least 3m cover.	▪ Statement provided and before/after photos. ▪ Waste disposal records ▪ Photographs, Rehabilitation monitoring reports, as-constructed surveys, quality assurance records Test pit records
Agricultural – grazing (B)	Infrastructure area (1) Tailings storage facility (2) Overburden emplacement area (4) Active mining area (open cut void) (5) Underground mining area (SMP) (6)	**Agricultural revegetation** Revegetation is sustainable for the long-term and only requires maintenance that is consistent with the intended final land use.	vegetation health, Species composition and regeneration	▪ Rehabilitation monitoring verifies that species in pasture rehabilitation areas comprise a mixture of grasses representative of pasture vegetation. ▪ Rehabilitation monitoring verifies that vegetation health is comparable to reference sites (within 20%). ▪ Rehabilitation monitoring verifies that species in pasture rehabilitation areas comprise a mixture of grasses representative of pasture vegetation. ▪ Established species survive and/or regenerate after disturbance ▪ Species are capable of setting viable seed, flowering or otherwise reproducing.	vegetation health, Species composition and regeneration
Agricultural – grazing (B)	Infrastructure area (1) Tailings storage facility (2) Overburden emplacement area (4) Active mining area (open cut void) (5)	**Agricultural revegetation** Land use capability is capable of supporting the target agricultural land use.	Native plant species recorded from monitoring plots are characteristic of pasture species suitable for grazing.	▪ Rehabilitation monitoring verifies that species in pasture rehabilitation areas comprise a mixture of grasses representative of pasture vegetation. ▪ Pasture areas are assessed to have a Rural Land Class VI or better (capable of	Rehabilitation monitoring records. Agricultural/Grazing/Economic assessments

Final Land Use Domain	Mining Domain	Rehabilitation Objective	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Validation Method *(evidence that the benchmark has been achieved)*
	Underground mining area (SMP) (6)			sustaining grazing), consistent with the final landform ▪ Area of land rehabilitated to pasture is commensurate with the Project Approval and RMP	
Water management areas (F) Final void (J) Water storage (G)	Water management area (3) Active mining area (open cut void) (5)	**Water approvals** Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the Water Management Act 2000) and where required ensure sufficient licence shares are held in the water source(s) to account for water take.	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform.	Water approvals / licences are granted by relevant NSW Government Agency.	Confirmation from relevant Government Agency that relevant water approvals / licences can be granted.
Water storage (G)	Water management area (3)	**Surface Water** **Water quality** non-polluting and appropriate for conservation end land use.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or Environment Protection Licence	Runoff water quality from rehabilitation areas represents an acceptable level of change from a defined reference condition (refer to Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000). Water quality in retained dams and/or voids is suitable for the final land use.	Upstream and downstream water quality monitoring records. Water quality monitoring records.
Infrastructure (I)	Infrastructure area (1)	**Retention of infrastructure** All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community. All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	Potential hazards (e.g., electrical, mechanical) have been effectively isolated and secured. Hazards isolated and secured.	Potential hazards (e.g., electrical, mechanical) have been effectively isolated and secured. Hazards isolated and secured.	▪ Statement provided by suitably qualified engineer. ▪ Records of remaining infrastructure for future land use. ▪ Closure Plan assesses infrastructure remaining as no risk to the community.

Table 4-2: Rehabilitation Completion Criteria – Phase – Ecosystem and Land Use Establishment

Phase – Ecosystem and land use Establishment (Rehabilitation areas Woodland)*		Methodology	Benchmark	Initial establishment monitoring (12 to 24 months)	2 to 10 years	Justification Validation Method *(evidence that the benchmark has been achieved)*	Comment
Woodland rehabilitation revegetation for PCT 435	(1) Native Species Abundance	will target an acceptable range	acceptable range (individual species) minimum: 29 maximum: 45	(At least 29 individuals per 20x20 plots)	(At least 29 Individuals per 20x20 plot)	rehabilitation monitoring records	Targets are set to allow for ecosystem and land use establishment phase to be achieved within 10 years of initial seeding
	(2) Abundance of species that will contribute to Native over-storey	will target an acceptable range	acceptable range (species) mimimum: 1 maximum: 4	At least 1 species per 20x20 plots	At least 1 species per 20x20 plots	rehabilitation monitoring records	
	(3) Number of native stems that will contribute to over-storey cover	will target an acceptable range	Acceptable range (individuals) mimimum: 6 maximum: 20	At least 6 individuals per 20x20 plots	At least 6 individuals per 20x20 plots	rehabilitation monitoring records	
	(5) Abundance of species that will contribute to Native mid-storey	will target an acceptable range	acceptable range (species) minimum: 2 maximum: 6	At least 2 species per 20x20 plots	At least 2 species per 20x20 plots	rehabilitation monitoring records	
	(4) Number of native stems that will contribute to mid-storey cover	will target an acceptable range	Acceptable range (individuals) mimimum: 20 maximum: 77	At least 20 individuals per 20x20 plots	At least 20 individuals per 20x20 plots	rehabilitation monitoring records	
	(4) Native vegetation cover (Grasses)	will target an acceptable range	acceptable range (%) minimum: 9 maximum: 68	(At least 9% Native vegetation cover from grasses)	At least 9% Native vegetation cover from grasses	rehabilitation monitoring records	
	(5) Native vegetation groundcover	will target an acceptable range	acceptable range (%) minimum: 16 maximum: 72	(At least 16% Native vegetation cover)	At least 16% Native vegetation cover	rehabilitation monitoring records	

* Targets set based on three (3) consecutive years of analogue data.

Table 4-3: Rehabilitation Completion Criteria– Phase – Ecosystem and Land Use Development

Phase - Ecosystem and Land use Development*		Methodology	Benchmark*	Local Reference (Analogue acceptable range - 10th and 90th Percentile)	(evidence that the benchmark has been achieved)	Comment
Woodland rehabilitation revegetation for PCT 435	(1) Native Species Abundance	will target an acceptable range	10th Percentile	29	rehabilitation monitoring records	Targets are set to allow for ecosystem and land use establishment phase to be achieved within 10 years of initial seeding
			90th Percentile	45		
	(2) Abundance of species that will contribute to Native over-storey	will target an acceptable range	10th Percentile	1	rehabilitation monitoring records	
			90th Percentile	4		
	(3) Number of native stems that will contribute to over-storey cover	will target an acceptable range	10th Percentile	6	rehabilitation monitoring records	
			90th Percentile	20		
	(4) Abundance of species that will contribute to Native mid-storey	will target an acceptable range	10th Percentile	2	rehabilitation monitoring records	
			90th Percentile	6		
	(5) Number of native stems that will contribute to mid-storey cover	will target an acceptable range	10th Percentile	20	rehabilitation monitoring records	
			90th Percentile	77		
	(6) Native vegetation cover (Grasses)	will target an acceptable range	10th Percentile	9	rehabilitation monitoring records	
			90th Percentile	68		
	(7) Native vegetation groundcover	will target an acceptable range	10th Percentile	16	rehabilitation monitoring records	
			90th Percentile	72		
* Targets set based on three (3) consecutive years of analogue data.						

4.2 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA – STAKEHOLDER CONSULTATION

a. Stakeholder Engagement Plan

Whitehaven has prepared a Stakeholder Engagement Plan (SEP) and Engagement Register for CCL701 closure execution. These documents detail Whitehaven's CCL701 stakeholders and the strategies used to involve or communicate with them and provide the foundation for working with stakeholders prior to and during the closure process. The SEP and Engagement Register will be regularly revised to reflect the outcomes of technical investigations, the ongoing development and execution of this RMP and the outcomes of ongoing engagement.

Since the commencement of closure planning for the CCL701, Whitehaven has consulted with regulatory authorities including RR as well as relevant landholders as summarised in **Table 4-5**.

b. Relevant Statutory Authorities

Whitehaven has consulted with and will continue to consult with the following regulatory bodies in relation to the CCL701 closure and rehabilitation:

- DPE;
- BCSD - Biodiversity Conservation and Science Directorate Division within the Department;
- DPI – Water;
- Department of Industry;
- Transport for New South Wales;
- Gunnedah Shire Council.
- DPE - Crown lands

c. Other Key stakeholders

- CCL701 has consulted with and will continue to consult with a number of community groups and landholders in relation to the CCL701 closure and rehabilitation, including:
- Association of Mining Related Council;
- Aboriginal stakeholder groups;
- Local community and affected landowners;
- Community groups; and
- Staff, contractors and unions.

d. summary of stakeholder engagement completed to date

Whitehaven routinely engages with stakeholders regarding rehabilitation and mine closure.

Table 4-5Table 4-5 presents a high-level summary of the key consultation undertaken for the project to date.

Table 4-4: Consultation Summary for Mine Closure Project to Date

Stakeholder	Date	Issues Raised
DPIE-RR	23 November 2016	On 1 September 2016 Whitehaven submitted the "Old Gunnedah Colliery Closure Mining Operations Plan" (Whitehaven, 2016) to the DPIE-RR. The MOP was approved on 23 November 2016 for the period until 4 December 2017 with regard to the rehabilitation objectives, completion criteria, and the schedule of rehabilitation activities. The MOP approval listed specific items which DPIE-RR required to be addressed within the next MOP. These requirements were addressed in the preparation of the 2017 CCL701 MOP and have continued to be considered in the preparation of this document.
DPIE-RR	7 February 2017	On 7 February 2017, the DPIE-RR's Environmental Sustainability Unit undertook an inspection of the Old Gunnedah Colliery and Melville Reject Emplacement Area. The *Notice of Inspection Findings* was issued on 22 February 2017 and identified specific items which were addressed in the preparation of the 2017 CCL701 MOP.
Landholders and Gunnedah Shire Council	29 June 2017	A stakeholder information session was held where Whitehaven and SLR presented a brief overview of the CCL701 site history and closure planning project and received questions and feedback. This meeting was attended by landholders with property within the Study Area including the Gunnedah Shire Council.
Gunnedah Shire Council	26 July 2017	A meeting on closure planning and the site visit works underway was held with Gunnedah Shire Council at their office in Gunnedah attended by Whitehaven and SLR representatives.
Landowners	Various	Subsequent to the stakeholder information session, Whitehaven undertook one-on-one meetings with relevant landholders where access would be required for the closure investigations and/or phone calls to other landholders related to CCL701. This allowed landholders to raise relevant issues and areas of concern specific to their properties. Information from the consultations has been used to inform investigations.
Landowners	24 to 28 July 2017	Between 24 and 28 July 2017, a detailed site visit was undertaken by Whitehaven and SLR technical teams involved with the various closure investigations. The site visit involved one-on-one meetings and site inspections with relevant landholders. This allowed landholders to show aspects/areas of concern and/or issues (current and historic) specific to their properties

Stakeholder	Date	Issues Raised
		and provide significant anecdotal information to the project team.
DPIE-RR	15 August 2017	Whitehaven and SLR personnel met with DPIE-RR to discuss the Closure MOP and the preparation of the 2017 MOP.
DPIE-RR	5 May 2018	On 5 May 2018 Whitehaven personnel met with DPIE-RR to provide an update on the status of the CCL701 closure studies and MOP development.
DPIE-RR	5 June 2019	On 5 June 2019, Whitehaven and SLR personnel met with DPIE-RR to provide an update on the detailed mine planning works undertaken to date including stakeholder consultation as well as to discuss the forward works including the preparation of this Closure MOP.
Landowners	Various June 2019	During June 2019, Whitehaven and SLR personnel met with the key landowners within CCL701 to discuss the key findings of the closure studies undertaken relevant to their properties and to gain agreement on the proposed rehabilitation and closure strategies.
Crown Lands	Various June 2019	During June 2019, Whitehaven and SLR personnel met with the Crown Lands to discuss the key findings of the closure studies undertaken and to gain agreement on the proposed rehabilitation and closure strategies.
DPIE-RR	19 August 2019	On 19 August 2019, Whitehaven submitted the CCL701 Closure MOP to the DPIE-RR for approval.
DPIE-RR	29 November 2019	On 29 November 2019, an extension to the 2017 CCL701 MOP was granted until 28 February 2020 to allow time for Whitehaven to respond to DPIE comments on the Closure MOP.
DPIE-RR	18 December 2019	On 18 December 2019, DPIE-RR issued a *Request for Additional Information* identifying additional requirements to be addressed in the preparation of a revised version of the Closure MOP.
DPIE-RR	28 February 2020	Whitehaven submitted the CCL701 Closure MOP to DPIE-RR. The MOP was approved on 28 February 2020 for the period until 27 November 2020 with regard to the rehabilitation objectives, completion criteria, and the schedule of rehabilitation activities. The MOP approval listed specific items which DPIE-RR required to be addressed within this MOP Amendment.
Council	24 March 2020	Whitehaven and SLR personnel provided an updated presentation to Gunnedah Shire Council on CCL701 Rehabilitation and Detailed Closure Planning outlining the investigation and assessment works undertaken and relevant outcomes as well as forward works including execution. A number of aspects were

Stakeholder	Date	Issues Raised
		identified to require Council notification including fate for mine entry with historical heritage, volumes of waste and fates, and contaminated land additions relevant to register. Consultation with landholders on the CPP near residential areas was flagged to address any potential concerns around erosion and sediment control or contamination.
Crown	26 March 2020	Whitehaven and SLR personnel provided a site visit to the CPP area and a presentation on key aspects of rehabilitation based on investigation and assessment works undertaken and forward works including execution. Considerations to be included in the DRAFT Remediation Action Plan and associated Asbestos in Soils Management Plans.
Environmental Protection Agency (EPA)	26 March 2020	Whitehaven and SLR personnel provided a presentation to the EPA on CCL701 relevant EPLs, contamination and remediation. Aspects identified as key for EPA included reduction of the EPL 3637 to exclude areas impacted and managed by other landowners (variation application recommended linked to waste deposition to land), justification for capping on asbestos to be retained in situ and encapsulated, and timing for surrender of EPL linked to groundwater sampling and landfarming.
DPIE-RR	19 June 2020	Whitehaven consulted with DPIE-RR on the appropriate format for addressing the aspects in the row above and determined the requirement for a MOP Amendment.

e. Proposed Future Consultation

Consultation will continue with stakeholders during the RMP term as required and in accordance with the SEP. **Table 4-6** presents a summary of the proposed future consultation activities key stakeholders.

Table 4-5: Summary of Proposed Future Stakeholder Engagement Activities

Stakeholder	Activities
RR	Ongoing revisions of the RMP Submission of the Annual Rehabilitation Report Detailed Mine Closure Planning
DPE	Ongoing revisions of the RMP Submission of the Annual Rehabilitation Report Detailed Mine Closure Planning
Agencies	Ongoing revisions of the RMP Submission of the Annual Rehabilitation Report Detailed Mine Closure Planning

Stakeholder	Activities
Stakeholder and Community Interest Groups	Ongoing revisions of the RMP Detailed Mine Closure Planning
Registered Aboriginal Parties	Detailed Mine Closure Planning

5 PART 5 - FINAL LANDFORM AND REHABILITATION PLAN

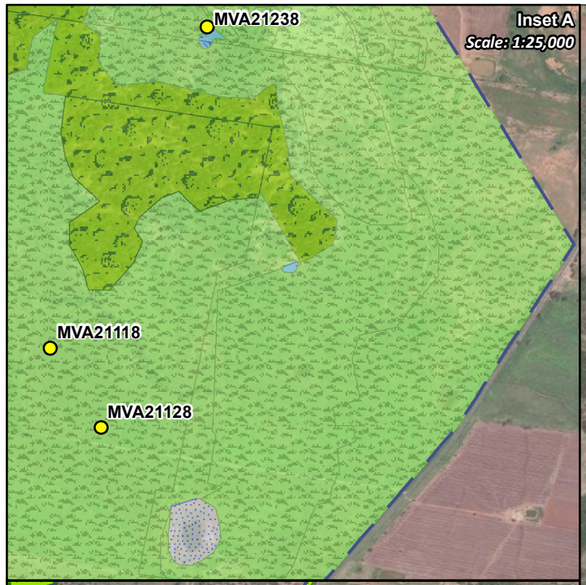
In accordance with the requirements of the *Form and Way: Rehabilitation Management Plan for Large Mines* (RR, 2021a) a *Final Landform and Rehabilitation Plan* has been prepared to show the proposed final land use and final landform of CCL701 sites (refer **Figure 5-1, Figure 5-2, Figure 5-3 and Figure 5-4**).

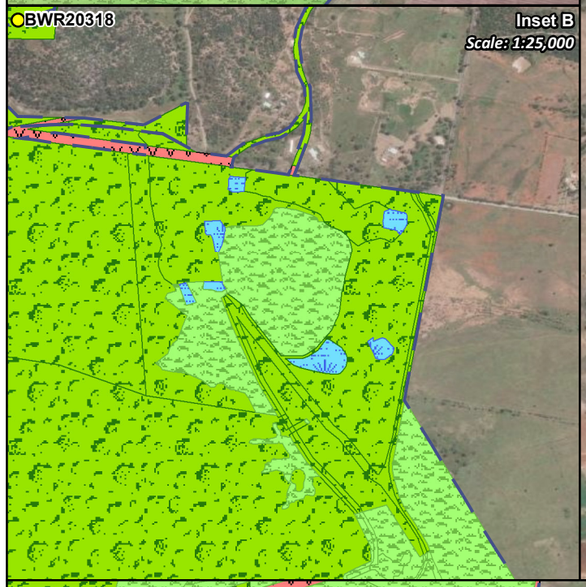
5.1 FINAL LANDFORM AND REHABILITATION PLANS

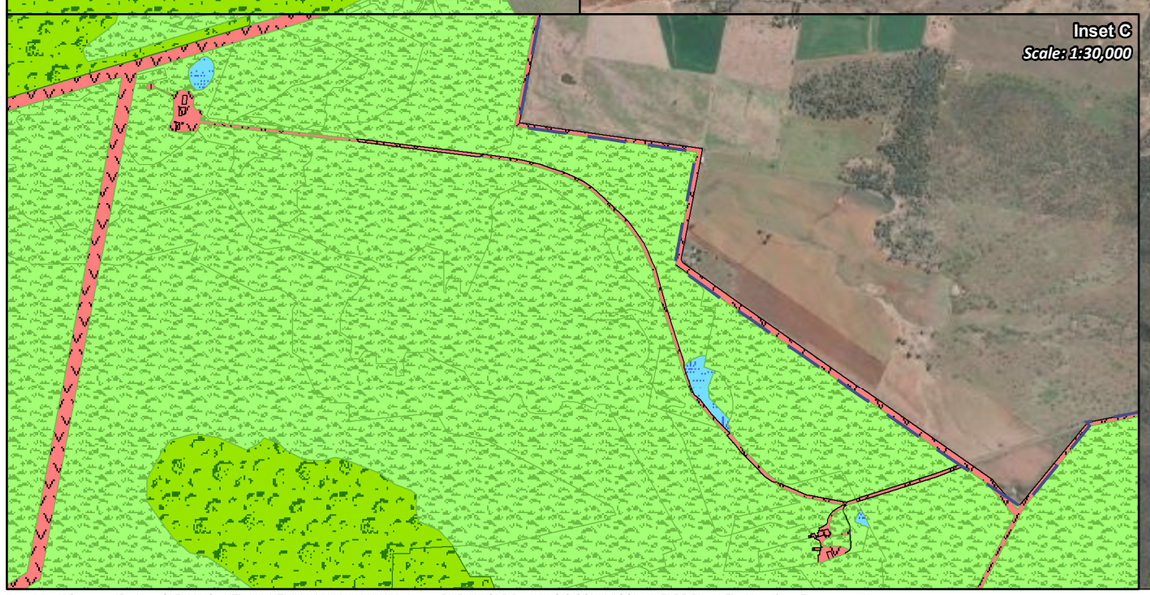
WHITEHAVEN FORWARD PROGRAM

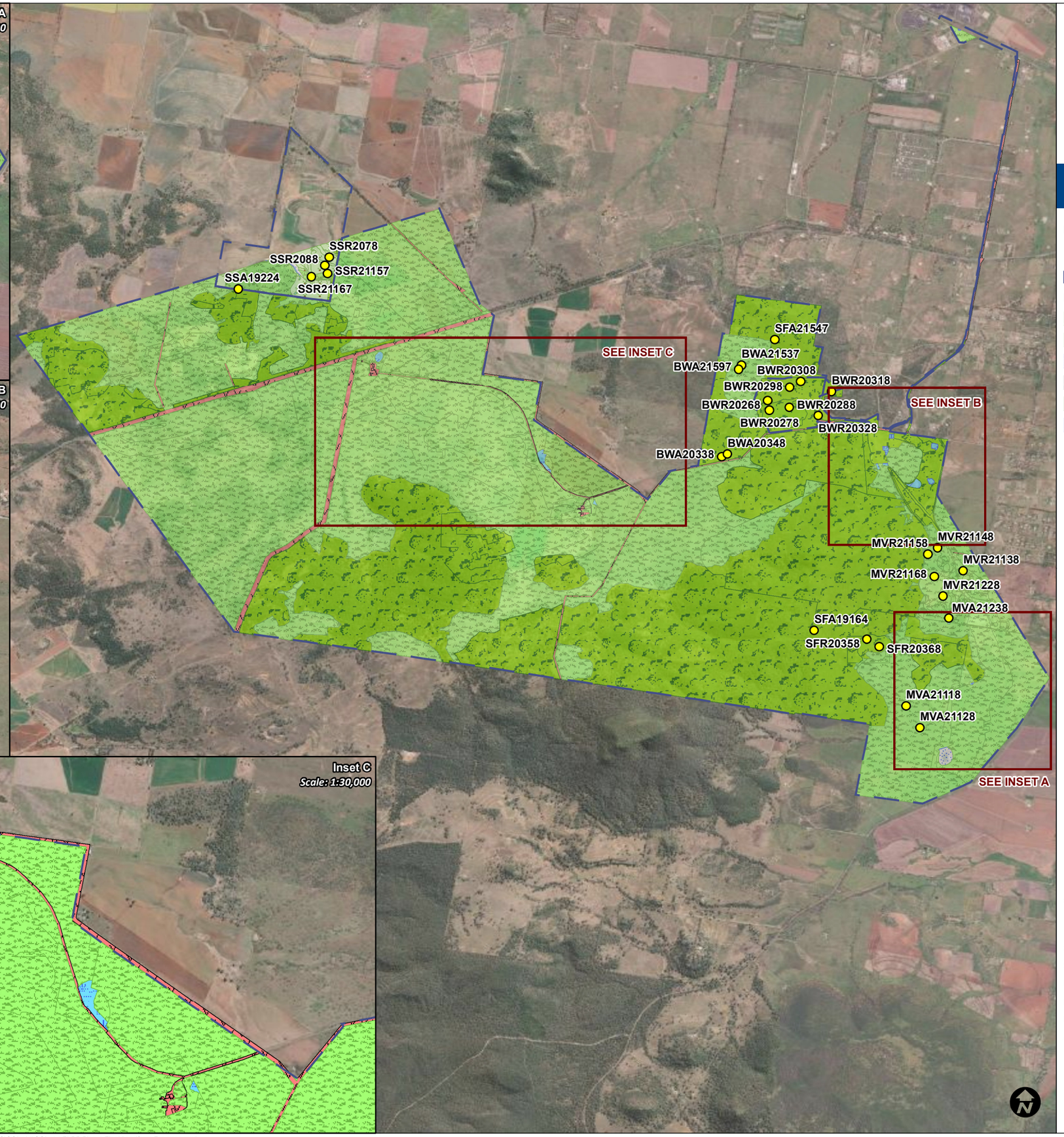
CCL701

FLRP PLAN 1: FINAL LANDFORM FEATURES









LEGEND

- Rehabilitation Monitoring Sites
- Project Approval Boundary

Final Landuse Domain

- Agricultural – Cropping
- Agricultural – Grazing
- Final Void
- Infrastructure
- Native Ecosystem
- Water Management Areas

0 1 2 Kilometers

Coordinate System:	GDA2020
Scale:	1:60,000 at A3
Project Number:	630.30268
Date:	27-Jul-2022
Drawn by:	LC
Annual Reporting Period:	2021

WHITEHAVEN COAL

UAV Image Capture Date: 30th March 2021

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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FLRP PLAN 2: FINAL LANDFORM CONTOURS

LEGEND

- Final Landform Contours (5m AHD)
- Project Approval Boundary

Data Sources:
NSW Spatial Information Exchange
DoR NSW Exploration and Mining Leases
ESRI Basemap world imagery 2022
NSW LPI Land Status Cadastre & Ownership
NSW DPE Landuse 2017

0 250 500 m

Coordinate System:	GDA2020
Scale:	1:50,000 at A3
Project Number:	630.30268
Date:	27-Jul-2022
Drawn by:	LC
Annual Reporting Period:	2021

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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FINAL LANDFORM PLAN CMA 2

ML1624

ML1624

CCL701

CCL701

OXLEY HIGHWAY

LEGEND

- Final Landform Contours (2m AHD)
- Major Road
- Mining Lease
- Project Approval

Closure Management

- CMA 2 - No. 2, No. 4 and No. 5 UG

Data Sources:
DoR NSW Exploration and Mining Leases
NSW LPI Base Map

0 0.5 1 Kilometres

Coordinate System:	GDA2020
Scale:	1:27,000 at A3
Project Number:	630.30268
Date:	27-Jul-2022
Drawn by:	JG
Annual Reporting Period:	2021

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WHITEHAVEN REHABILITATION MANAGEMENT PLAN

CCL701

FINAL LANDFORM PLAN CMA 4

LEGEND

- Final Landform Contours (2m AHD)
- Railway
- Mining Lease
- Project Approval Boundary

Closure Management

- CMA 4 - Coal Preparation Plant

ML1680

CCL701

Data Sources:
DoR NSW Exploration and Mining Leases
NSW LPI Base Map

0 50 100 Meters

Coordinate System:	GDA2020
Scale:	1:7,000 at A3
Project Number:	630.30268
Date:	27-Jul-2022
Drawn by:	JG
Annual Reporting Period:	2021

WHITEHAVEN COAL

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6 PART 6 - REHABILITATION IMPLEMENTATION

6.1 LIFE OF MINE REHABILITATION SCHEDULE

a. infrastructure

There are no further construction activities planned for key infrastructure at CCL701 sites.

Decommissioning activities will continue at CCL701 sites as apart of relinquishment.

The infrastructure fates and proposed retention or demolition requirements are presented in **Table 6-4**.Prior to lease relinquishment, the TSF within CMA 4 will be reprofiled and capped in accordance with the final TSF landform design as updated and detailed in *Tailings Storage Facility – Detailed Design of Landform Rehabilitation* (SLR 2020b).

b. mining activities

Coal extraction within CCL701 ceased in mid-2000. There is no future mining planned within the CCL701 lease area. Between July 2022 and lease relinquishment, activities will be focused on aftercare and maintenance, including.

- Demolition and removal of redundant infrastructure;
- Sealing of mine entries and boreholes;
- Remediation and/or removal of contaminated/hazardous materials;
- Minor earthworks and surface water management works;
- Rehabilitation and revegetation; and
- Rehabilitation maintenance and monitoring.

c. Mine operations (including mining purposes)

No further mining operations will be undertaken within CCL701.

d. Rehabilitation Activities

The indicative timeline of rehabilitation and decommissioning activities are shown in **Figure 6-1** and **Table 6-1.**

Table 6-1: Proposed Rehabilitation Schedule

Year	Proposed Rehabilitation Activities									
	CMA 1	CMA 2	CMA 3	CMA 4	CMA 5	CMA 6	CMA 7	CMA 8	CMA 9	CMA 10
2022	Demolition Decontamination Waste removal Borehole sealing Commence mine sealing	Demolition Decontamination Waste removal Borehole sealing Mine sealing Earthworks and subsidence repair Rehabilitation and revegetation	Borehole sealing Earthworks Rehabilitation and revegetation	Waste removal Borehole sealing	Demolition Decontamination Waste removal Borehole sealing Mine sealing Earthworks and subsidence repair Rehabilitation and revegetation	Waste removal Borehole sealing	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Earthworks Rehabilitation and revegetation Monitoring and maintenance
2023	Complete mine sealing Earthworks and subsidence repair Rehabilitation and revegetation	Demolition Decontamination Waste removal Borehole sealing Mine sealing Earthworks and subsidence repair Rehabilitation and revegetation	Earthworks Rehabilitation and revegetation	Demolition Decontamination Waste removal Borehole sealing Earthworks Rehabilitation and revegetation	Monitoring and maintenance	Rehabilitation and revegetation	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance
2024	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Earthworks and subsidence repair Rehabilitation and revegetation	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance
2024 - 2027	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance	Monitoring and maintenance

WHITEHAVEN FORWARD PROGRAM

CCL701

LOM PLAN 1

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Scale: 1:25,000

Inset B
Scale: 1:25,000

Inset C
Scale: 1:30,000

SEE INSET C

SEE INSET B

SEE INSET A

LEGEND

- Project Approval Boundary

Final Landuse Domain

- Agricultural – Cropping
- Agricultural – Grazing
- Final Void
- Infrastructure
- Native Ecosystem
- Water Management Areas

0 1 2 Kilometers

Coordinate System:	GDA2020
Scale:	1:60,000 at A3
Project Number:	630.30268
Date:	26-Jul-2022
Drawn by:	LC
Annual Reporting Period:	2021

WHITEHAVEN COAL

UAV Image Capture Date: 30th March 2021

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6.2 PHASES OF REHABILITATION AND GENERAL METHODOLOGIES

Achievement of a safe and stable landform that is commensurate with the surrounding topography will be demonstrated through the implementation of a series of conceptual rehabilitation phases. As defined by the *Form and way: Rehabilitation Management Plan (large mines)* the rehabilitation phases are presented in **Table 6-2.**

Table 6-2: Rehabilitation Phases

Rehabilitation Phase	Description
Phase 1: Active Mining	This phase is associated with active mining operations across the domains.
Phase 2: Decommissioning	This phase of rehabilitation includes activities associated with the removal of mining infrastructure, unless agreed to be retained, and the removal, remediation, or management of contaminated and hazardous materials.
Phase 3: Landform Establishment	This phase of rehabilitation consists of the processes and activities required to construct the approved final landform. In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (that is, rock raking or ameliorating sodic materials).
Phase 4: Growth Medium Development –	This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short-lived pioneer species) to ensure achievement of the approved or, if not yet approved, the proposed: - rehabilitation objectives - rehabilitation completion criteria - final landform and rehabilitation plan. This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.
Phase 5: Ecosystem and Land Use Establishment -	This phase of rehabilitation consists of the processes to establish the final land use following construction of the final landform. For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control.

Rehabilitation Phase	Description
Phase 6: Ecosystem and Land Use Development –	This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved or, if not yet approved, the proposed: - rehabilitation objectives - rehabilitation completion criteria - final landform and rehabilitation plan. For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile. This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.
Phase 7: Rehabilitation Completion (sign-off) –	The final phase of rehabilitation when a rehabilitation area has achieved the final land use for the mining area: - as stated in the approved rehabilitation objectives and the approved rehabilitation completion criteria - as spatially depicted in the approved final landform and rehabilitation plan. Rehabilitation areas may be classified as complete when the RR has determined in writing that rehabilitation has achieved the final land use following submission of the relevant application by the leaseholder.

6.2.1 Active mining phase

Coal extraction for all of the CCL701 Sites ceased between 1971 to the mid-2000's. Subsequently, the Active Mining Phase is not applicable for this RMP.

a. Soils and Materials

Active mining at the CCL701 Sites ceased between 1971 to the mid-2000's. Soils and Materials are not applicable for this RMP.

b. Flora

The CCL701 Sites are located in an area which had previously (prior to mining) been extensively cleared for agriculture. However, several threatened ecological communities (TECs) and threatened flora species have been identified within CCL701.

Subsequently no major areas of native vegetation have, or will be, cleared within the footprint of the operation. Notwithstanding this, Whitehaven has implemented flora management aspects including:

- Pre-Clearance Surveys and Approvals

- Vegetation removal Supervision/Management
- Revegetation
- Weed removed
- Targeted control of priority weeds.
- These management aspects will continue as required and in accordance with the *Biodiversity Constraints and Management Plan* (SLR 2018a) included as part of the DMCP.

Resources

Native seed collection from adjacent vegetation areas was undertaken where practicable. The remainder of seed will be collected within the Gunnedah Region and from WHC mining tenements and offset areas. Seed collection is generally undertaken by suitable experienced or qualified contractors throughout the year as required by the seeding times of target species.

Native seed utilised in rehabilitation is generally supported by seed viability testing and quality control processes to help guide application rates.

c. Fauna

The CCL701 Sites are located in an area which had previously (prior to mining) been extensively cleared for agriculture. However, one Koala (threatened fauna species) has been observed and a number of threatened fauna species (NSW and Federal) have been previously recorded within CCL701 sites.

Subsequently no major areas of native vegetation will be, cleared within the footprint of the operation. Notwithstanding this, Whitehaven has implemented fauna management aspects including:

- Pre-Clearance Surveys and Approvals
- Vegetation removal Supervision/Management
- Revegetation

These management aspects will continue as required and in accordance with the *Biodiversity Constraints and Management Plan* (SLR 2018a) included as part of the DMCP.

d. Rock/Overburden Emplacement

Active mining at the CCL701 Sites ceased between 1971 to the mid-2000's. Rock and overburden emplacement is not applicable for this RMP.

Existing out-of-pit emplacements have been rehandled and used to partially backfill the open cut areas to create a free-draining final depression.

e. Waste Management

All waste generated from decommissioning activities will be disposed of to a licence waste facility.

f. Geology and Geochemistry

A *Geochemistry and Spontaneous Combustion Report* (SLR 2018b) was completed to confirm the geochemistry of remaining coal rejects and exposed carbonaceous material within the CCL701 area and to determine the potential for Acid Mine Drainage (AMD).

The investigation focussed on identified areas of exposed carbonaceous materials and poor vegetative growth. Given that operational areas were likely to be the locations of significant disturbance with potential for AMD and spontaneous combustion, these areas were targeted in the assessment.

The majority of samples were found to be Non-Acid Forming (NAF) with characteristics typical of their surroundings and coal mining areas. A pile of unknown material at the surface at the CPP (CMA 4) was found to be Potentially Acid Forming (PAF) and four samples were identified uncertain PAF (a stockpile at No.2 Entry [CMA 2], CPP TSF subsurface [CMA 4], an unknown stockpile in the tramway [CMA 5] and subsurface at the coal loader [CMA 5]). Remediation methodologies will comprise scraping and on-site disposal, capping with inert materials, or treatment in situ.

Based on the above findings, the final risk assessment confirmed geochemistry and AMD as a low risk to rehabilitation.

g. Material Prone to Spontaneous Combustion

Some outbreaks of spontaneous combustion/heating have been experienced within CCL701 historically. In 1977, there was a recorded case of spontaneous heating within the No.4 Entry underground mine following the completion of mining and sealing of the panel. Records show that this was successfully managed and extinguished through inspections and sealing of leakages to the underground to lower the combustible gases within the goaf, among other strategies.

Spontaneous combustion has not been known to occur at any location within CCL701 over at least ten years.

Given the site's history, the risk to rehabilitation from spontaneous combustion at CCL701, both at the surface and underground, was ranked as low during the initial closure risk assessment due to the low propensity of the material for spontaneous combustion and groundwater in the underground workings.

Notwithstanding, the rehabilitation strategies for remnant carbonaceous materials will comprise:

- Scraping to the specified depth and on-site disposal to the TSF prior to capping of the final landform; or
- Scalping and placement with other material for treatment with appropriate cover and amelioration; and/or
- Treatment in-situ with appropriate cover and amelioration.

Additional measures implemented during rehabilitation and decommissioning to minimise spontaneous combustion will include:

- inspections of rehabilitation areas for signs of spontaneous combustion;
- infrared imaging of potential spontaneous combustion areas will be undertaken, as required;
- reporting spontaneous combustion incidents; and
- training in spontaneous combustion management.

h. Material Prone to Generating Acid Mine Drainage

A *Geochemistry and Spontaneous Combustion Report* (SLR 2018b) was completed to confirm the geochemistry of remaining coal rejects and exposed carbonaceous material within the CCL701 area and to determine the potential for Acid Mine Drainage (AMD).

The investigation focussed on identified areas of exposed carbonaceous materials and poor vegetative growth. Given that operational areas were likely to be the locations of significant disturbance with potential for AMD and spontaneous combustion, these areas were targeted in the assessment.

The majority of samples were found to be Non-Acid Forming (NAF) with characteristics typical of their surroundings and coal mining areas. A pile of unknown material at the surface at the CPP (CMA 4) was found to be Potentially Acid Forming (PAF) and four samples were identified uncertain PAF (a stockpile at No.2 Entry [CMA 2], CPP TSF subsurface [CMA 4], an unknown stockpile in the tramway [CMA 5] and subsurface at the coal loader [CMA 5]). Remediation methodologies will comprise scraping and on-site disposal, capping with inert materials, or treatment in situ.

Based on the above findings, the final risk assessment confirmed geochemistry and AMD as a low risk to rehabilitation.

i. Ore Beneficiation Waste Management (reject and railings disposal)

There is one Tailings Storage Facility (TSF) within the CCL701 project area located at the former CPP site (CMA 4). No active disposal of rejects occurs at the TSF.

The TSF was utilised for the emplacement if fine rejects, and it has been understood to have been progressively capped and rehabilitated at the time of closure of the CPP.

The TSF will be reprofiled and capped in accordance with the final TSF landform design as specified in the Tailing Storage Facility – Detailed Design of Landform Rehabilitation (SLR 2020b). The TSF design parameters have adopted with the following specifications:

- 1 m cover of inert material and 200 mm of topsoil; and
- Slope angles of between 1% and 17%.

j. Erosion and Sediment Control

Erosion and sediment control will be undertaken in accordance with the principles outlined in Managing Urban Stormwater: Soils and Construction (the Blue Book Volumes 1 and 2) (Landcom, 2004 and DECC, 2008). This framework for the management of erosion and sedimentation will be applied during both the closure execution and post closure phases of the works program.

Prior to any land disturbance associated with specific rehabilitation activities, erosion and sediment controls will be installed as per the Surface Water Assessment Report within the DMCP.

k. Ongoing Management of Biological Resources for Use in Rehabilitation

Biological resources are managed as detailed throughout this **Section (6.4.1)** including completed and ongoing resource recovery and soil management.

l. Mine Subsidence

A mine subsidence risk assessment has been undertaken by Ditton Geotechnical Services (DgS) (2018) to describe the underground mine workings and to assess the areas at risk of significant subsidence occurring after mine closure at existing or new surface developments. The assessment found that the site has been affected by 'trough' subsidence over total or partial pillar extraction workings, and possibly pothole subsidence above first workings areas where cover depth was < 20 m near mine entries. The majority of trough subsidence of between 1 m and 2 m has already occurred over the second workings panels (primary subsidence) with residual subsidence due to goaf consolidation likely to cause < 100 mm of further subsidence.

The assessment also found that Maximum subsidence above the mine workings due to future instability is estimated to range from <100 mm for single seam mine workings goafs and from 700 mm to 1,300 mm above multi-seam mining areas. The potential subsidence will depend on the mining method, the panel geometry and the degree of strata softening from on-going weathering of dry workings or after flooding occurs. Estimates of 'softened' roof and floor bearing capacity in both seams suggests that future subsidence is unlikely to exceed these estimates. Maximum subsidence effects over standing first and partial pillar extraction workings are assessed as 'unlikely' to exceed safe, serviceable and repairable (SSR) criteria where cover depth is > 120 m.

Subsidence remediation works will include backfilling cracks and depressions and re-establishing pre-mining drainage pathways and agricultural land use value. It may be necessary to complete several treatments of the impacted site if subsidence continues to develop. Following remediation subsidence, monitoring will be undertaken to confirm the ongoing stability of these areas.

Whitehaven will communicate with Subsidence Advisory NSW on the outcomes of the subsidence assessment and outstanding works identified for structures and infrastructure related to subsidence impacts that are landholder concerns.

Additionally, Whitehaven will communicate with landholders and/or final land users where relevant on the medium and high-risk subsidence areas for potential pillar failure (trough subsidence) and shallow mine roof collapse (pothole subsidence) and applicability related to re-zoning, construction or other relevant development.

m. Management of Potential Cultural and Heritage Issues

In October 2017, Whincop undertook an Aboriginal cultural heritage due diligence assessment of proposed rehabilitation works areas within the CCL701 project area. This due diligence assessment identified that no Aboriginal cultural heritage sites are located within the rehabilitation areas and the nearest artefact scatters are unlikely to be impacted by the proposed works.

An unexpected finds procedure and clearance protocol have been developed and will be implemented during rehabilitation works.

The risk to rehabilitation associated with Aboriginal cultural heritage was assessed to be low during the final risk assessment.

Engagement with RAPs and Heritage NSW will be undertaken as part of Stakeholder Engagement Plan, in executing the DMCP.

n. Exploration Activities

No exploration activities are expected to be undertaken.

Where borehole rehabilitation works are required, they will be carried out according to the conditions of CCL 701 and the relevant RR guidelines at the time.

6.2.2 Decommissioning

The Decommissioning Phase encompasses all works required to prepare land for rehabilitation including removal of built infrastructure, foundation and hardstand materials, services, equipment and materials including wastes and contamination.

Decommissioning, demolition, and removal of infrastructure was undertaken during the mine closure phase. Any infrastructure including dams, roads and buildings which is beneficial for future use by post mining landowners may be left in place subject to relevant landowner agreements and regulatory approvals.

Decommissioning and demolition activities have been appropriately planned and documented to ensure that appropriate approvals are in place for the works.

Remaining decommissioning activities will be reported in the Forward Program.

a. Site Security

Site security measures will be implemented during and following the decommissioning process to prevent access by members of the public and secure rehabilitation areas, including any heritage places or objects and any retained infrastructure items. Site security measures include:

- Locked gates
- Maintenance of existing security fences and signage; and
- Restricted offroad access to rehabilitated areas.

Public safety measures during CCL701 closure activities will be maintained, and additional security measures will be implemented if required

b. Infrastructure to be Removed, Demolished or Retained

Site features, services and structures to be retained or decommissioned and demolished to achieve the final land use are described in **Table 6-3**.

All demolition work will be carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures (or its latest version) and Exploration and Petroleum Drilling and Well Servicing Competencies (DISRD,2015), as applicable. Additional information can be found in the Detailed Closure Mine documentation.

Table 6-3: Infrastructure to be Decommissioned or Retained

Current Infrastructure /Asset	Use	Infrastructure Fate and Demolition / Rehabilitation Activities
CMA 1 - Black Jack / Melville Underground – 408 ha		
Concrete footings	Footings of former mine entry infrastructure – disused	Demolish
Winch house	Footings of former mine entry infrastructure – disused	Demolish
CMA 2 - No. 2, No. 4 and No. 5 Underground – 1371 ha		
Substation yard (substation already demolished)	Former mine substation infrastructure - currently in use by existing landowner.	Remove fence, flatten and apply gravel.
Offices	Former mine buildings – currently in use by existing landowner.	Retain
Bathhouse		Remove asbestos cladding and wooden frame to make safe and retain.
Workshop		Retain
Bulk store		Retain
Contractors garage area		Retain
Laydown areas	Storage of equipment – currently used by existing landowner.	Retain
Vehicle washdown area		Retain
Water pipeline	Water management and storage – currently used by existing landowner.	Retain
2 x 120,000 L water tanks (on hill)		Retain
Town water tanks		Retain
No.2 Entry water storage dams		Retain
Concrete footings of former No. 2 Entry infrastructure	Already removed	Already removed – no further action
Cable repair, stone dust, first aid/firefighting buildings	Already removed	Already removed – no further action
Water infrastructure (formerly settling tanks) west of No. 2 Entry buildings note power to shed already disconnected	Former water management infrastructure – disused.	Demolish
Underground fuel tank	Former fuel storage – disused	Demolish
Tank above bathhouse	Former water supply - disused	Demolish
Former railway steel posts with power	Remnant mine infrastructure – disused	Disconnect power and demolish

Current Infrastructure /Asset	Use	Infrastructure Fate and Demolition / Rehabilitation Activities
Previous transformer area	Former transformer area – disused	Demolish and remove chitter
Remnant above ground infrastructure at No. 2 Entry drift entrance	Remnant mining infrastructure - disused	Demolish
Remnant above ground infrastructure at No. 2 Entry conveyor drift	Remnant mining infrastructure - disused	Demolish
Remnant above ground infrastructure at No. 2 Entry ventilation shaft	Remnant mining infrastructure - disused	Demolish
Remnant above ground infrastructure at No. 2 Entry 1 m diameter (small) ventilation shaft	Remnant mining infrastructure - disused	Demolish
Access roads	Access – currently used by existing landowner	Retain
No. 4 Entry Site		
Major drainage channel to south of former coal loading bin	Water management – currently used by existing landowner.	Retain
Major drainage channel to east of former coal loading bin	Water management – currently used by existing landowner.	Repair and retain
Water pipeline	Water management – currently used by existing landowner.	Retain
No.4 Entry dam	Water storage – currently used by existing landowner	Retain
Haul road	Former No. 5 Entry Road haul road – currently utilised by existing landowner	Portion to be removed and rehabilitated.
Access roads	Access – currently used by existing landowner	Retain
Concrete footings and concrete beam	Footings and concrete beam of former No. 4 Entry infrastructure – disused	Demolish
No. 5 Entry Site		
Bathhouse		Retain

Current Infrastructure /Asset	Use	Infrastructure Fate and Demolition / Rehabilitation Activities
Workshop	Former mine buildings - currently in use by existing landowner.	Retain
Bulk store		Retain
Fire shed		Retain
Stone dust shed		Retain
Water tanks on hill	Water storage – currently used by existing landowner	Retain
Fuel farm	Former fuel storage – disused	Demolish
Supplies compound area	Storage of equipment – currently used by existing landowner	Retain
Unsealed access and laydown facilities	Storage of equipment – currently used by existing landowner	Retain
Substation and transformer	Storage of equipment – currently used by existing landowner	Retain
Sediment Dam north of No. 4 Entry	Water storage – currently used by existing landowner	Retain
Ventilation box cut	Water storage – currently used by existing landowner	Backfilled with reject in the surrounding area
No. 5 Entry Access Road	Access – currently used by existing landowner	Retain
Power supply room	Already removed	Already removed – no further action
Stone dust laydown area	Already removed	Already removed – no further action
Explosives magazine	Already removed	Already removed – no further action
Compressor shed	Already removed	Already removed – no further action
Sealed car park	Storage of equipment – currently used by existing landowner	Remove bitumen and rehabilitate with grass
Turkey's nest dam (east of ventilation box cut)	Water storage – disused	Demolish
Former dam to south of infrastructure	Former water storage – disused	Modify and retain to leave some water where it currently ponds, rehabilitate the north area.

Current Infrastructure /Asset	Use	Infrastructure Fate and Demolition / Rehabilitation Activities
Rescue shed concrete footings base	Shed already removed, concrete base currently used by existing landowner	Retain
Old footings at carport	Footings of former mine building – carport currently in use by existing landowner.	Retain
CMA 3 – Melville Open Cut – 224 ha		
Melville Open Cut Southern Void	Water storage and management – currently used as farm dam by existing landowner	Retain, remediate erosion.
Dams	Water storage – currently used by existing landowner	Retain
Access roads	Access – currently used by existing landowner	Retain
CMA 4 – CPP – 111 ha		
Remnants of old weighbridge	Former weighbridge at the gate of the CPP site – disused.	Demolish
Former hopper footings	Remnant structure from the CPP – disused	Demolish
Old rejects pipeline	Former rejects disposal - disused	Demolish
North Cut Access Road	Access – currently utilised	Retain
Dams (SD-6 Sediment Dam, FW-1 Freshwater Dam)	Water storage – currently utilised	Retain
CMA 5 – Tramway and Old Coal Loader – 7.7 ha		
Weighbridge	Former weighbridge – disused	Demolish
Old Coal Loader Bin footings	Footings of former coal loader bin – disused	Retain if agreed with ARTC
Concrete footings	Footings of former coal loader infrastructure - disused	Demolish
Dam	Water storage – currently utilised	Demolish
CMA 6 – Other Lands – 3236 ha		
No mining related infrastructure has been identified in this CMA.		
CMA 7 – Road Corridor – 110 ha		
No mining related infrastructure has been identified in this CMA.		

Current Infrastructure /Asset	Use	Infrastructure Fate and Demolition / Rehabilitation Activities
CMA 8 – Springfield Rehabilitation Plan Area – 22 ha		
Demolition and rehabilitation activities are complete in this area. No mining related infrastructure remains.		
CMA 9 – Brickworks CMA Area – 72 ha		
Demolition and rehabilitation activities are complete in this area.		
CMA 10 – Melville CMA Area – 95 ha		
Melville surface facilities	Former mine buildings - currently in use by existing landowner.	Retain
Melville surface facilities	Former fuel storage and decanting area	Demolish / remove (completed)
Stockpiles	Stockpiles - disused	Demolish / remove
Access roads	Access – currently used by Whitehaven for REA rehabilitation works	Retain as required
Dams	Water storage – currently utilised	Retain

c. Management of Carbonaceous/Contaminated Material

During decommissioning, detailed inspections and audits were undertaken within the footprint of surface infrastructure including stockpiles, access roads and haul roads to identify and remove any remaining sources of carbonaceous material.

A Geochemistry and Spontaneous Combustion Report (SLR 2018b) was completed to confirm the geochemistry of remaining coal rejects and exposed carbonaceous material within the CCL701 area and to determine the potential for Acid Mine Drainage (AMD).

The rehabilitation strategies for remnant carbonaceous materials will comprise:

- Scraping to the specified depth and on-site disposal to the #5 entry and/or TSF prior to capping of the final landform; or
- Scalping and placement with other material for treatment with appropriate cover and amelioration; and/or
- Treatment in-situ with appropriate cover and amelioration.

Following disposal of carbonaceous materials to the TSF, this landform will be reprofiled and capped to a gradient of no greater than 17%. All material will be capped below a minimum 1 m cover of inert overburden material and 0.2 m of topsoil. The capping and landform design will facilitate long-term stability, minimise oxygen ingress and/or water infiltration and uptake from a non-saline base of tailings. Some reject and carbonaceous material will be excavated and moved to the TSF prior to the final capping and rehabilitation of the area.

Identified areas of carbonaceous material are identified per CMA in the Detailed Closure Mine documentation along with the nominated rehabilitation strategy.

Contaminated Material

A Contamination Site Assessment (CSA) (SLR 2019b) was completed as part of detailed mine closure planning to establish and delineate the location and extent of contaminated soils at CCL701.

A Remediation Action Plan (RAP) has been prepared to provide a strategy for the remediation and management of known AECs during the execution of closure activities at the site. The nominated land management strategies have been determined with consideration to the proposed land use and fiscal viability, and consideration to stakeholder engagement undertaken.

Remedial actions, specific to each CMA are detailed in the DMCP.

d. Hazardous Materials Management

Hazardous materials at CCL701 will be managed in accordance with the following documentation prepared as part of the detailed mine closure process;

- A Hazardous Materials (Survey) Report (detailed Mine Closure documentation – Appendix H) prepared to present a review of current hazardous material (HAZMAT), dangerous goods and hazardous substances information for CCL701.
- An Asbestos in Soils Management Plan (refer to Detailed Closure Mine documentation - Appendix I) prepared to detail how the asbestos management requirements for soils on the site will be implemented and managed.
- An Unexpected Finds Protocol established in the event that any material suspected of containing potentially hazardous or contaminated substances is found during decommissioning and remediation works.

Additional information can be found in the DMCP.

e. Underground Infrastructure

Underground mining infrastructure at CCL701 has been completed.

Assessment of mine sealing at CCL701 will be conducted in two phases during the detailed mine closure process;

- Phase 1 (completed) – review of existing information, information gaps and requirements and scoping of Phase 2 activities (Detailed Closure Mine documentation - Phase 1 Mine Sealing Report (Appendix J)); and
- Phase 2 (currently being undertaken) – detailed design of mine sealing works by suitably experienced and qualified experts.

The Detailed Sealing Strategy will be prepared to develop the detailed design and methodology for mine sealing works to meet the overall sealing objective of providing long-term stability and complying with the requirements of MDG6001, where applicable.

6.2.3 Landform Establishment

Landform establishment has been completed at CCL701. The final landform for CCL701 is shown on the Final Landform Plan in **Section 5.**

a. Water Management Infrastructure

The key surface water management strategies relevant to water management infrastructure for the CCL701 site include:

- Clean water diversions (existing and proposed) will be used wherever possible upstream of the CCL701 disturbance areas (but within the site boundary) to redirect clean water runoff around the site into the downstream drainage lines. This would also minimise the runoff to be contained and treated (if required) within the site and the internal water management system during the closure period.
- Dirty water generated from disturbed areas within CCL701 as a result of rainfall/runoff will be captured and conveyed using dirty water conveyance channels in a manner which minimises the potential for concentrated and/or unstable overland flow. This water will be managed within the dirty water management system and treated if required to reduce the sediment load prior to water reuse or off-site release.
- Runoff that does not meet the relevant quality criteria will be contained on-site and will be treated if required to allow it to be discharged off-site. Transfer of water to other water storages at the site may also be considered for water of poor quality.
- Mine Tailing storage facilitates (TSF), will be suitably capped/covered with 1m cover of capping material and 0.2m of topsoil, utilised rock lined drains as required to safely drain water off the TSF and mitigate the potential for environmental harm as a result of contaminated surface water runoff.
- Erosion and sediment control (ESC) will be undertaken in accordance with the principles outlined in Managing Urban Stormwater: Soils and Construction (the Blue Book Volumes 1 and 2) (Landcom, 2004 and DECC, 2008). This framework for the management of erosion and sedimentation will be applied during both the closure execution and post closure phases of the works program. Erosion and sediment controls will be designed and implemented to mitigate the potential for environmental harm to nearby watercourses and the surrounding environment.
- Direct revegetation of all formed surfaces creating the final landform will reduce the volume and/or concentration of potential contaminants in runoff from disturbed areas reducing the dependence on the sediment controls and helping to improve water quality.
- Where required, water management structures will be suitably maintained (until works are suitably established) to ensure that the required design capacities provide for adequate buffering and treatment of significant rainfall events, for closure and the proposed post mining land use.
- A number of the existing dams will be retained in the final landform as clean water dams and are configured to attenuate into the landscape via geomorphological processes as water quality objectives are met, mitigating any requirement for ongoing maintenance and management.
- Water management structures will be monitored and maintained as part of the proposed surface water monitoring program.

Additional information can be found in the DMCP (Surface Water Assessment Report (Appendix R)).

b. Final Landform Construction: General Requirements

Civil earthworks and landform shaping will be undertaken to prepare the landform for rehabilitation. This included the application of fill and/or capping material and associated earthworks for the shaping the final landform to a safe, stable and non-polluting landform that is appropriate for the desired final land use and consistent with the surrounding landscape.

In general, landform establishment will be limited to minor reshaping of areas disturbed by demolition and remediation activities, repair of erosion and subsidence impacts, and construction of any required surface water management structures.

Where demolition and/or removal of materials has resulted in excavations (i.e. removal of footings, removal of contaminated materials, scalping of carbonaceous material etc), the excavations will be backfilled to surface level prior to rehabilitation to the final land use.

Table 6-4: Proposed retention or demolition requirements

CMA	Proposed Land Use	Geotechnical Constraints to Development
1 – Blackjack / Melville Underground	Existing land use – quarry, government weather station, tracks, agriculture, grassland, woodland, etc.	Suitable for proposed land uses. Private landholders should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc. Refer to subsidence report for any further constraints.
2 – No. 2, No. 4 and No. 5 Underground	Existing land use – agriculture, roads, dams, grassland, woodland, etc. Infrastructure – buildings, tanks, hardstands, roads, etc. Water management infrastructure – dams, etc. Grassland rehabilitation	Suitable for proposed land uses. Private landholders should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc. Refer to subsidence report for any further constraints.
3 – Melville Open Cut	Existing land use – roads, grassland, woodland Infrastructure – roads, tracks, etc. Water management – dams Final void – Southern Void Grassland rehabilitation	Presence of uncompacted fill makes this area generally unsuitable for infrastructure or dams etc. A detailed geotechnical investigation should be carried out should any development be proposed. Suitable for proposed land use once remediation of the void and depressions is undertaken.
4 – CPP	Existing land use – road, grassland, woodland Grassland rehabilitation Water management infrastructure – dams Woodland rehabilitation	Suitable for proposed land uses after remediation of the site (i.e. erosion, the tailings storage facility and the tip area etc.). Specific geotechnical advice should be sought should any development be proposed.

CMA	Proposed Land Use	Geotechnical Constraints to Development
5 – Tramway	Existing land use – roadway, grassland, woodland Grassland Water management infrastructure – dams	Suitable for proposed land uses. Private landholders should seek standard specific geotechnical advice for construction should they plan additional significant infrastructure (such as housing) or dams etc. A specific geotechnical investigation may be required for the historic dam, once the remediation strategy is developed. Monitoring will be required on an ongoing basis for a period of 2 years.
6 – Other Lands	Existing land use – agriculture, dams, roads, grassland, bushland, etc.	Suitable for proposed land uses. Private landholders should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc. Refer to subsidence report for any further constraints.
7 – Road Corridor	Existing land use – roads Infrastructure – roads	Suitable for proposed land uses. Private landholders and/or government and council should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc. Refer to subsidence report for any further constraints.
8 – Springfield Rehabilitation Plan	Existing land use Final void – Springfield Void	Suitable for proposed land uses, once remediation works are undertaken for the void and the rejects area. Private landholders should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc.
9 – Brickworks CMA Area	Existing land use – grassland, bushland, quarry, tracks, etc. Water management – dams Final void – Brickworks Void Infrastructure – roads, tracks	Suitable for proposed land uses, once remediation works are undertaken for the void. Private landholders should seek specific geotechnical advice should they plan additional significant infrastructure (such as housing) or dams etc. Monitoring of the rehabilitated bore area is to be completed.
10 – Melville CMA Area	Existing land use – roads, grassland, bushland Infrastructure – buildings, roads, tracks, etc.	Suitable for proposed land uses, once remediation works are undertaken for the rejects area. Private landholders should seek specific geotechnical advice should

CMA	Proposed Land Use	Geotechnical Constraints to Development
	Water management – dams Grassland	they plan additional significant infrastructure (such as housing) or dams etc.

Potential Geotechnical/geochemical erosion issues

Surface water management

c. Final Landform Construction: Reject Emplacement Areas and Tailings Dams

Landform establishment activities include the capping and shaping of the final landform of the TSF in CMA 4 and the construction of surface water management structures in this area. Specific details of these works are described in the DMCP, **Section 13.5** and will be undertaken in accordance with the parameters specified in the following documents:

- *Geotechnical Constraints Report* **(DMCP, Appendix M**)
- *Tailings Storage Facility – Detailed Design of Landform Rehabilitation* (**DMCP, Appendix N**); and
- *Surface Water Assessment Report* (**DMCP, Appendix R**).

The final TSF cover design including surface water management has been designed in Geofluv software and civil earthworks and landform establishment will be undertaken in accordance with this strategy and design.

The Melville REA in CMA 10 is complete in accordance with the *Melville REA Closure Mining Operations Plan Amendment A* (SLR 2020) and the *Melville REA Capping Assessment and Borrow Pit Investigation* (SLR 2019).

Materials for the capping of the TSF (CMA 4) and REA (CMA 10) will be sourced from the Melville Borrow Area located at the north of CMA 3 as detailed in the *Melville REA Capping Assessment and Borrow Pit Investigation* (SLR 2019).

d. Final Landform Construction: Final Voids, Highwalls and Low Walls

CMA 3

The remaining Melville South open cut void will be retained in the final landform with landholder agreement. Civil earthworks and landform establishment will include backfilling and compaction of isolated settlement depressions around the Melville Open Cut Southern Backfilled Void and along the settlement interface of the Melville South backfilled void.

The Surface Water Assessment Report (SLR 2019d) has identified erosion at the Melville Open Cut Void with several sections of large gully erosion leading down into the void.

Remediation of the eroded areas within the void will involve filling and shaping the gully erosion, ripping the soil and seeding. Appropriate erosion and sediment controls will be reinstated above the remediated areas to ensure that the void is stable in the long term.

CMA 8

The remaining Springfield void will be retained in the final landform.

CMA 9

The remaining Brickworks void will be retained in the final landform.

Overburden Emplacement

Construction of the overburden emplacement has been completed at CCL701. The characteristics of these features include:

- CMA 8 had seven historic mine entries. These drifts appear to have been covered during remediation works to fill the box cut and provide a stable landform.
- Historic issues at the Springfield property related to past rehabilitation works associated with Melville Open Cut rehabilitation west of the property boundary. Works were undertaken to fill paddock depressions with overburden to provide a level surface for agricultural and other uses at the request of a previous landowner.
- Rehabilitation of CMA 8 was completed in 2019 in accordance with the Springfield Rehabilitation Plan (SLR 2018), and detailed in Springfield Rehabilitation Report (WHC 2019)

e. Construction of Creek/River Diversion Works

The CCL 701 final landform does not include creek or diversion works. Subsequently, construction of creek/river diversion works is not applicable to CCL 701.

6.2.4 Growth Medium Development

In the context of this RMP, growth medium development encompasses activities to reinstate soils with the initial physical, chemical and biological characteristics required to establish the desired vegetation community.

Material Characterisation

Sampling will determine if the topsoil and subsoil is suitable for rehabilitation use or if it requires amelioration or selective handling and placement. If the growth medium cannot be effectively ameliorated, unsuitable subsoil and spoil, including PAF material, will be excavated and disposed of in the TSF prior to capping, in accordance with the CCL701 DMCP.

Topsoil Respreading and Amelioration

- Prior to the re-spreading of stockpiled topsoil and subsoil, an assessment of weed infestation and amelioration will be undertaken. If unsuitable soil is identified, the stockpiled material will be buried and capped. For all other stockpiled material, the following re-spreading measures will be adopted where appropriate:
- When planning soil re-spreading, sites will consider the information contained in the stockpile inventory (i.e. amount, age, type), climatic conditions, the location and distance of the stockpile from the area to be rehabilitated, the pre-mining vegetation communities (i.e. what communities were growing in the area prior to stripping), and the vegetation communities and final land use proposed for the rehabilitation area;
- Over handling of soil will be minimised to mitigate structural degradation of the soils;
- Material will be spread in even layers at an appropriate thickness and will consider the soil depth information obtained through the pre-stripping soil sampling;
- All soils will be lightly ripped prior to seeding. This will be conducted on the contour where possible and will be managed to minimise the potential for unsuitable spoil material being ripped up to the surface;

- Fertiliser application will be considered prior to seeding while the surface is being lightly scarified to create an optimal seed bed; and
- The soil testing results will be used to determine if physical and/or chemical amelioration is required, and the rates and method of application.
- Where necessary soil will typically be ameliorated using one or more of the following:
  - Manure (ie to increase nutrient levels);
  - Fertiliser (i.e. to increase nutrient levels); and/or
  - Gypsum (i.e. to treat dispersion, calcium to magnesium ratio, and improve structure and water holding capacity).

Seed Bed Preparation

Thorough seedbed preparation will be undertaken to ensure optimum establishment and growth of vegetation.

For seedings areas ripping will be undertaken along the contour, where possible and preferably when soil is moist and immediately prior to sowing to incorporate ameliorates, reduce runoff and increase infiltration.

For tree planting / tubestock areas, Tree mounds canb be established along with countor ripping well ahead of the target planting date to allow for sufficient rip line settlement, to capture rain and improve soil moisture and ongoing moisture retention.

Weed management

Weed management will be undertaken as required and will generally include the following actions:

- Weed inspection included in the monthly environmental inspection
- Weed control activities are executed by a contractor and based on the quarterly agronomist inspection report and guided also be the annual rehabilitation monitoring report. The Agronomist report details weeds found and weeds that should be taregeted in current season. While also provide chemical recommendations for target weeds.
- Treatment of entire infestations where possible through mechanical removal and/or the application of approved herbicides. The method of herbicide application will be determined on a case by case basis;
- Re-treatment of recurring infestations at regular intervals;
- Prompt rehabilitation of land post topsoil spreading disturbance;
- Cleaning of mobile equipment and vehicles prior to them entering and leaving the site;

Annual reporting of rehabilitated areas for environmental weeds that suppress rehabilitation

Seasonal considerations is discussed in section 6.2.5

Final Land use Domain B – Agricultural – Grazing

Agricultural vegetation areas encompass all pasture rehabilitation areas. These areas will be revegetated with pasture species that would be comparable to surrounding agricultural land. Areas rehabilitated with pasture species will have a Rural Land Capability Class of VI.

Soil resources for pasture rehabilitation will generally be re-spread 150 to 200 mm deep (where required)

Once soils are re-spread, ameliorants such as gypsum will be applied, and the area ripped to produce a friable soil surface that optimises water infiltration and soil – seed contact.

Once soils are spread, ameliorants such as gypsum will be applied and the area deep-ripped if required.

Final Landuse Domain A – Native Ecosystem

Native vegetation areas encompass all woodland rehabilitation areas. These areas will be revegetated with woodland species commensurate with the surrounding native vegetation.

Soil resources for native vegetation rehabilitation will generally be re-spread 150 to 200 mm deep (where required).

Once soils are re-spread, ameliorants such as gypsum will be applied, and the area ripped to produce a friable soil surface that optimises water infiltration and soil–seed contact.

6.2.5 Ecosystem and Land Use Establishment

In the context of this RMP, ecosystem and land use establishment included activities to establish the desired floristic composition (species diversity and density) and habitat features.

The phase incorporated management actions such as weed and feral pest control to achieve species establishment and growth to juvenile communities, and habitat augmentation.

Revegetation activities will be planned to occur after the completion of reshaping, topdressing with growth media and construction of drainage structures.

Each CMA will be established with either Pasture or Woodland species as set out in the CCL701 DMCP.

Seasonal Climatic Considerations for Seeding and Cover crop

Seasonal climatic variability plays a critical role in identifying windows of opportunity and/or challenge for the initial establishment of rehabilitation. Optimal rainfall conditions are conducive to the successful establishment of vegetation as periods of regular rainfall provide ideal soil moisture required for seed strike and establishment. Droughts are problematic for vegetation establishment and periods of short, intense rainfall can increase runoff, and erosion resulting in landform instability.

Seeding will occur generally between Late February to July, as this period during an average season generally provides the optimal soil moisture required for seed strike and establishment. Due reduced evaporation resulting in improved soil moisture and the required soil temperatures to germinate native seed while also providing time during May through to July for seedlings to become established prior to the historical dry months of August and September. Cover crops will be considered in conjunction with native seed to improve initial stabilisation. Cover crop density to be determined on case by case basis.

Grassland rehabilitation

The pasture species will be appropriate for the season. Typical species used for the establishment of grassland rehabilitation areas include annual and perennial grass and legume species as identified in **Table 6-5.**

Table 6-5: Recommended Pasture Species Seed Mix

Pasture Species	Rate (kg/ha)
Warm Season Grasses#	

Pasture Species	Rate (kg/ha)
Bombatsi Panic (*Panicum coloratum*)	1 – 2
Green Panic (*Panicum maximum*)	2 – 4
Purple Pigeon Grass (*Setaria incrassate*)	1 – 2
Cool Season Grasses#	
Phalaris (Sirolan) (*Phalaris tuberosa*)	1 - 2
Wallaby Grass (*Austrodanthonia bipartita*)	0.3 - 1
Legumes	
Subterranean Clover (*Trifolium subterraneum*)	4 - 5
Barrel (Sephi) Medic (*Medicago truncatula*)	2 – 4
Snail (Sava) Medic (*Medicago scutellate*)	3 – 5
Woolly Pod Vetch (*Vicia villosa*)	4 – 6
Serradella (Elgara) (Ornithopus compressus)	1 – 2
Lucerne (*Medicago sativa*)	0.5

Grasses are considered nitrogen tolerant and may be preferentially seeded over contamination remediation areas where elevated nitrogen levels have been recorded.

Woodland rehabilitation

Areas to be revegetated with woodland species will be planted to establish woodland areas commensurate with the surrounding native vegetation.

Typical species used for the establishment of Woodland rehabilitation areas are listed in **Table 6-6**

Table 6-6: Indicative Species Seed Mix for Woodland Rehabilitation Areas

Species		
Trees	**Shrubs**	**Grasses**
Eucalyptus melanophloia Silver-leaf Ironbark	*Allocasuarina luehmannii* Bull Oak	*Cymbopogon refractus* Barb-wire Grass
Eucalyptus crebra Narrow-leaf Ironbark	*Alectryon oleifolius* Rosewood	*Aristida vagans* Three-awn Speargrass
Eucalyptus albens White Box	*Callitris glaucophylla* White Cypress Pine	*Chloris truncate* Windmill Grass
Eucalyptus melliodora Yellow Box	*Geijera parviflora* Wilga	*Bothrichloa macra* Queensland Red Grass
Eucalyptus populnea Bimble Box	*Notelaea microcarpa* Native Olive	*Microlaena stipoides* Weeping Grass
Brachiton Populneus	*Acacia spp.*	*Themeda Triandra*
Angophora floribunda	*Dodonaea spp.*	*Digitaria spp.*

Weed and Vertebrate Pest Control

Ecosystem Establishment includes initial management actions to limit the introduction of weeds and vertebrate pest species in rehabilitation areas. Ongoing weed and pest management and monitoring is considered in the ecosystem and land use development phase (refer **Section 6.4.6**).

Management measures include:

- Treatment of weeds on topsoil stockpiles prior to re-spreading in rehabilitation areas;
- Ensuring all plant and equipment are weed free prior to mobilisation to rehabilitation areas;
- Maximising the retention of ground cover (cover crop stubble) when planting tubestock to minimise opportunities for weed activity;
- Installation of fauna exclusion fencing and/or tree guards for newly planted tubestock where predation by grazing herbivores represents a risk to establishment; and
- If required, an agronomist will be engaged to provide recommendations for priority weeds.

6.2.6 Ecosystem and Land use Development

For the purposes of this RMP the Ecosystem and Land Use Development phase represents those activities required to develop sustainable ecosystems that have characteristics comparable to similar undisturbed vegetation associations (analogue site) in the area.

All Domains

Activities associated with the ecosystem and land use development phase of rehabilitation are generally ongoing maintenance and land management activities and rehabilitation monitoring. Maintenance at rehabilitated areas will include, but not be limited to:

- ongoing environmental management to minimise risks to rehabilitation;
- ongoing visual observations of weeds and feral animal activity including inspections for all the nominated vertebrate pests
- comparing specific ecosystem characteristics such as soil profile development, floristic composition and structure and faunal diversity and abundance with the characteristics of appropriate analogue sites; and
- undertaking adaptive management and remedial works where characteristics of the rehabilitation are not trending toward desired outcomes.

Rehabilitation monitoring will be undertaken throughout the ecosystem and land use development phase until it can be demonstrated that rehabilitation areas have met all conditions for relinquishment. Rehabilitation maintenance activities will be identified by rehabilitation monitoring and ongoing requirements will be reported annually in the Annual Rehabilitation Report and Forward Program.

6.3 REHABILITATION OF AREAS AFFECTED BY SUBSIDENCE

Mine subsidence remediation will be undertaken at CMA 1 and 2 in accordance with The Mine Subsidence Risk Assessment (Appendix Q) of the DMCP. Subsidence remediation works should consider the soil chemistry and adopt appropriate soil conservation principles to backfill cracks and depressions and re-establish pre-mining drainage pathways and agricultural land use value. It may be necessary to complete several treatments of the impacted site if subsidence continues to develop.

Backfilling of cracks usually requires stripping and stockpiling of topsoil, ripping or tyning the affected area, before backfilling in a controlled manner, treating and applying appropriate dosage of gypsum to the soils, and re-spreading topsoil on surface.

Following remediation, subsidence monitoring will be undertaken to confirm the ongoing stability. This will comprise survey or monitoring of the following (after rehabilitation where required):

- No. 4 Entry paddock trough subsidence to the south (CMA 2);
- Pothole at Black Jack Entry 4 (CMA 1); and
- LIDAR of the areas of medium and high risk for pillar failure, trough subsidence and pothole subsidence

7 PART 7 - REHABILITATION QUALITY ASSURANCE PROCESS

A Rehabilitation Quality Assurance Process (RQAP) will be implemented throughout the Rehabilitation process. This will include details of inspections, monitoring and record keeping which will be required to ensure that:

- Rehabilitation is being implemented in accordance with the nominated methodologies; and
- Identified risks to rehabilitation are being adequately addressed at each phase of rehabilitation.

Whitehaven will implement the RQAP through every phase of rehabilitation to confirm that the rehabilitation strategies outlined in this RMP have been completed in accordance with the nominated methodologies (See **Figure 7-*1***). The RQAP will also include inspections and documentation to verify that each phase of demolition and rehabilitation has been completed and has met the completion criteria detailed in **Section 6**. Documentation to be maintained would include (but not limited to):

Phase 1 – Active Mining (Where available)

- Documentation of pre-clearance surveys and LDPs;
- Resource salvage records (soil, rocks, habitat trees)
- Dumping plans and surveys
- Detailed Landform designs

Phase 2 – Decommissioning

- Documentation of boreholes sealing and sign off by RR;
- Inspection and demolition reports to confirm all infrastructure to be demolished has been removed; and
- Validation testing to ensure any contamination has been appropriately remediated and/or removed.

Phase 3 – Landform Establishment

- Survey and preparation of as constructed drawings of final constructed slopes, landforms and water drainage structures; and
- Verification reporting to confirm the specified depth of capping has been implemented (i.e. aerial surveys).

Phase 4 – Growth Medium Development

- Maintenance of a topsoil inventory to document stripped, stockpiled and re-spread resources;
- Site records of re-spread topsoil, ameliorants, fertiliser etc.; and
- Soil testing results to confirm appropriate soil geochemical parameters for plant establishment.

Phase 5 – Ecosystem and Land Use Establishment

- Documentation of reseeding or planting activities undertaken, such as date of planting, , seeding rates and/or planting rates; and
- Site inspections and monitoring of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.
- Inspections of temporary and permanent erosion and sediment controls;
- Inspections to identify potential weed infestations;
- Documentation of Rehabilitation Monitoring

Phase 6 – Ecosystem and Land Use Development

- Inspections of temporary and permanent erosion and sediment controls;
- Inspections to identify potential weed infestations;
- Documentation of Rehabilitation Monitoring; and
- Documentation of weed and feral animal management and eradication programs and follow-up inspections.

Whitehaven have developed a Rehabilitation Quality Checklist to be signed off after each phase of rehabilitation prior to proceeding to the next phase (refer **Figure *7-1***).

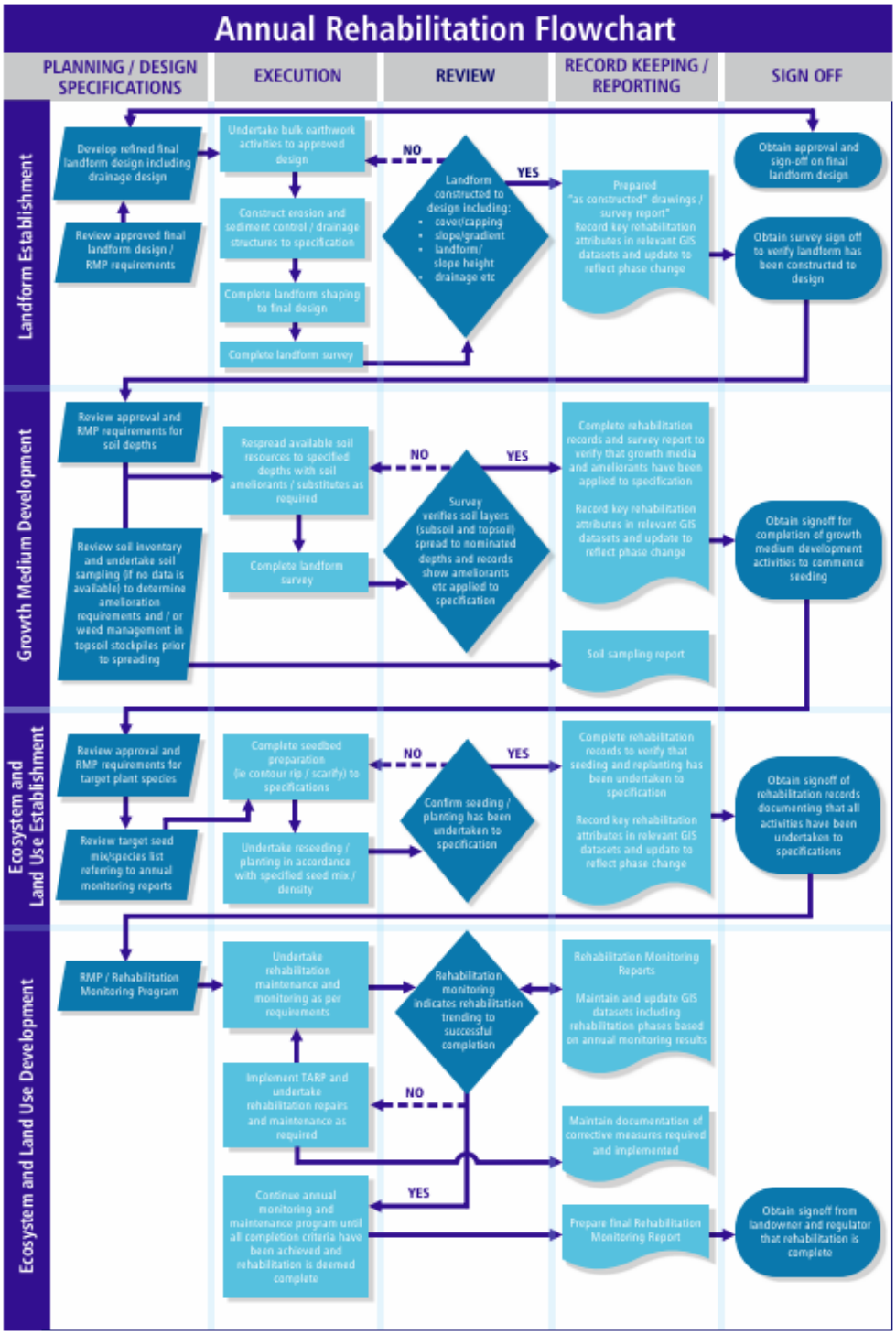

Figure 7-1 Rehabilitation Quality Assurance Process

8 PART 8 - REHABILITATION MONITORING PROGRAM

Rehabilitation monitoring is undertaken at CCL701 to measure and assess rehabilitation performance against the stated rehabilitation and closure criteria outlined in this document. The monitoring results are also used to identify the need for corrective actions for rehabilitation performance. The monitoring program incorporates the most appropriate indicators and methods that:

- Provide a measure of completion criteria to be assessed in accordance with the defined rehabilitation objectives;
- Adequately track changes to rehabilitation phases;
- Are reproducible;
- Utilise scientific recognised techniques; and
- Are cost-effective.

Monitoring is conducted by a suitably skilled and qualified person(s) at locations representative of the range of conditions on the rehabilitating areas and appropriate analogue sites. Monitoring results will inform refinements of rehabilitation methodology as required. Rehabilitation monitoring will be continued until it can be demonstrated that rehabilitation has satisfied all rehabilitation and closure criteria.

8.1 ANALOGUE SITE BASELINE MONITORING

Analogue sites in 'best-on-offer' vegetation are used to determine if the appropriate characteristics are developing or being achieved. For benchmarking purposes, there are replicate sites within each vegetation community target, and repeat monitoring to capture seasonal variation. Protocols have been established to ensure that sites are appropriately located and position, as detailed in the Whitehaven Standard Annual Rehabilitation Monitoring Methodology (WHC-STD-OC-Rehabilitation Monitoring Method).

8.2 REHABILITATION ESTABLISHMENT MONITORING

Annual Rehabilitation monitoring is undertaken each year as sites are established in rehabilitation that has been seeded since the previous monitoring event. Annual Rehabilitation Monitoring of the newly established sites will identify issues and success within developing rehab.

Annual Rehabilitation monitoring results will link with the TARP management system in **Section 10** if issues are identified during the monitoring period.

The data yielded from the monitoring program allows an adaptive management approach by providing information to inform the type and implementation of management activities and determining the status of rehabilitation performance in relation to completion criteria. This facilitates the continual improvement and refinement of rehabilitation techniques.

8.3 MEASURING PERFORMANCE AGAINST REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

a. Rehabilitation walk over inspection

Walk-through of all rehabilitated areas is undertaken internally by a suitably qualified person(s) in to assess the general progress of completed rehabilitation and to identify areas where corrective action is necessary. This assessment has simple objectives relating to vegetation establishment, weeds, erosion presence, surface water management and erosion and sediment control structures.

The walk-through assessment identifies any problems such as:

- Presence and severity of active erosion areas (e.g. rill, gully and tunnel erosion);
- Stability of slopes and landforms;
- Function and condition of existing erosion and sediment control structures and landform features, including water management structures, water ponding areas, etc. (where applicable);
- Visual assessment of ground protection and vegetation cover, vegetation health and growth rates (high level assessment);
- Areas of significant weed incursion;
- Evidence of presence/impact of vertebrate pests;
- Any other disturbance factors or features which may impact on site safety, such as presence of mine waste, track disturbance, damaged fences etc; and
- General assessment of each rehabilitation area.

Any issue identified during the walk over will be recorded and the *Annual Site Rehabilitation Plan* which is updated to include remediation or monitoring activities on the issues.

b. Annual rehabilitation monitoring

Annual Rehabilitation Monitoring is undertaken during spring each year when species are generally flowering, and more species diversity can be identified in rehabilitation areas. Annual rehabilitation monitoring is undertaken in accordance with the Whitehaven Standard Annual Rehabilitation Monitoring Methodology (WHC-STD-OC-Rehabilitation Monitoring Method).

The monitoring provides detailed (transect-based) scientific data and trends on vegetation community establishment and development and is based on the Biodiversity Assessment Methodology (BAM).

Additional monitoring sites are established as rehabilitation progress. Periodic or standalone monitoring projects are commissioned as required, and may include targeted fauna, soil, and trial studies.

Detailed analysis of the monitoring data generated by the annual rehabilitation monitoring program is undertaken to determine the trajectory rehabilitation is tracking towards to achieve the final land uses detailed above. The analysis and monitoring outcomes are documented in annual monitoring reports.

Regular visual inspections of all phases of rehabilitation are also undertaken by WHC personnel. These informal assessments facilitate early management intervention, and include:

- Success of initial germination after seeding;
- Success of tree and shrub plantings;
- Adequacy of drainage controls;
- Presence/absence of weeds; and
- General stability of the rehabilitation site.

Any issue identified during rehabilitation inspection and documented in the annual rehabilitation monitoring report is actioned in the *Annual Site Rehabilitation Plan*.

c. Rehabilitation performance

Outcomes of monitoring results as described in **Section 8.3.1** to **8.3.2** are incorporated within the *Annual Site Rehabilitation Plan* which is developed every year by the end of June to align with the budget period. The *Annual Site Rehabilitation Plan* provides additional specific detail, maps and

statistics on planned rehabilitation/closure activities and schedules for the next 12-month period. Notwithstanding this, planned activities are consistent with those in the Forward Program/LOM Plans. The *Annual Site Rehabilitation Plan* will provision for rehabilitation activities depending on the phase of rehabilitation at a particular area. The *Annual Site Rehabilitation Plan* will be the key document for tracking the progress of rehabilitation through rehabilitation phases.

9 PART 9 - REHABILITATION RESEARCH, MODELLING AND TRIALS

9.1 CURRENT REHABILITATION RESEARCH, MODELLING AND TRIALS

There are no specific rehabilitation trials or research currently being undertaken at the CCL701 sites. Rehabilitation monitoring and rehabilitation methodology records are, however, shared among Whitehaven operations to inform decision-making regarding future rehabilitation campaigns.

9.2 FUTURE REHABILITATION RESEARCH, MODELLING AND TRIALS

There are no specific rehabilitation trials or research proposed at the CCL701 sites.

10 PART 10 - INTERVENTION AND ADAPTIVE MANAGEMENT

Where rehabilitation performance is not trending toward the nominated completion criteria this may indicate that there is a potential threat to long term rehabilitation success. Threats to rehabilitation may include events such as extended periods of drought, bushfire events, or pressures from weeds and feral/pest animals.

A Rehabilitation and Closure TARP has been developed to provide a framework to manage potential key risks to rehabilitation during the mine closure and has been developed based on rehabilitation and closure risks. The Rehabilitation and Closure TARP includes:

- Identification of the principal contributing factors and impacts for each major risk to rehabilitation;
- Identification of upper limits (trigger values) for causes and impacts that are considered to represent an unacceptable level of risk; and
- Identification of appropriate responses to mitigate or remediate the causes and impacts, including a notification protocol.

The Rehabilitation and Closure TARP provides management responses for lower (first tier) and upper (second tier) trigger values. First tier trigger values identify opportunities for closer monitoring or early intervention that may mitigate potential impacts before notable impact to rehabilitation occurs. Second 60 tier trigger values identify when indicators have reached a threshold that requires more substantive or widespread remedial actions to remediate or mitigate rehabilitation failure.

Should any trigger conditions be met resulting in the requirement for intervention or adaptive management, actions will be reported in the Annual Review. Whitehaven will notify the Resource Regulator and other relevant stakeholders of any incident (such as bushfire or disease) that results in major impacts to rehabilitation that are likely to significantly impact the potential to achieve rehabilitation success.

The Rehabilitation and Closure TARP is provided in Table 10-1 and will be revised as conditions at the CCL701 site change or new risks to rehabilitation are identified.

Table 10-1: Trigger Action Response Plan

Aspect / Category	Key Element	Element Number	Trigger / Response	1st Level Trigger	2nd Level Trigger
Landform stability	Slope gradient	1	Trigger	Survey data indicates that the landform is not built to the Geofluv design.	< 55% of the rehabilitation area has slopes within the limits stipulated in the final Geofluv landform design
			Response	Check machinery guidance system on dozers and update if required Check site datum and update if required. Undertake regrading as required.	Undertake a review of the landform design and make an assessment of the stability of the landform including material characterisation. Undertake stability enhancement works including revegetation if required. Consider regrading to achieve stability.
	Erosion control	2	Trigger	Minor active gully or tunnel erosion present and / or minor rilling (up to 200 mm in depth).	Slumping and / or active gully or tunnel erosion present and / or rilling >200mm, which is compromising landform stability.
			Response	An inspection of the site will be undertaken by a suitably trained person. Investigate opportunities to improve current water management infrastructure to address erosion. Remediate as appropriate.	Engage a consultant to assist with the management of erosion and sedimentation at the site and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.
	Stability	3	Trigger	Survey or remote sensing of the rehabilitated landforms indicates settlement or slumping that could compromise stability.	Survey or remote sensing of the rehabilitated landforms indicates major settlement or slumping.
			Response	Undertake a review of the landform design to assess risks to stability and free draining design.	Engage a specialist to assist with the management of settlement and slumping and provide recommendations to appropriately remediate. Consider rehandling material and/or regrading if required.
	Water management structures	4	Trigger	Water management structures (sediment dams, channels, contour banks) exhibit minor erosion and / or scouring as determined by Landscape Function Analysis (LFA) monitoring or visual inspection by a suitably trained person.	Water management structures fail or display significant scouring / erosion as determined by Landscape Function Analysis (LFA) monitoring or visual inspection by a suitably trained person.
			Response	An inspection of the site will be undertaken by a suitably trained person. Identify remedial actions such as amelioration, revegetation or alternative scour protection.	Engage specialist consultant to develop a site-specific remediation plan and review water management structure design criteria. Provide for physical works on the basis of design review.
Water Quality	Discharge water quality	5	Trigger	Sediment basin discharge exceeds ANZECC water quality criteria as specified in the Surface Water Assessment	Progressive deterioration of discharge water quality to be consistently outside ANZECC water quality criteria as specified in the Surface Water Assessment.
			Response	Repeat sampling to confirm results exceed limits and investigate potential causes.	Review upstream water management, water structure maintenance, discharge procedures and sediment basin capacity requirements. Implement identified corrective actions.
Soil Quantity	Soil Volume	6	Trigger	Soil balance indicates insufficient identified soil resources to complete rehabilitation activities.	Soil balance indicates insufficient onsite soil resources available to complete rehabilitation activities.
			Response	Undertake continued consultation with landowners and investigation of potential onsite soil resources.	Undertake review of potential additional offsite sources/alternate application methods, growth media substitutes (ie composting manure) and seek Resource Regulator endorsement of preferred options.
Land Management	Weeds	7	Trigger	Monitoring indicates the density of weeds is >10% but < 30% of total vegetation cover.	Monitoring indicates substantial weed infestation of >40% of total vegetation cover.
			Response	Undertake weed management to control weed species. Treatment of infestations as appropriate to the species. Monitoring and review	Undertake weed management to remove weed species. Investigate management measures to reduce weeds including additional soil amelioration, establishment and retention of cover crops until weed

Aspect / Category	Key Element	Element Number	Trigger / Response	1st Level Trigger	2nd Level Trigger
					presence is at acceptable levels. Implement recommendations as appropriate.
		8	Trigger	Increasing number and cover of exotic species since last rehab monitoring and/or occurrence of newly identified exotic species.	More than 40% of domain area displaying evidence of significant weed invasions.
			Response	Engage weed management contractor to remove or spray introduced weed species.	Engage weed management contractor to remove introduced weed species. Investigate management measures to improve native plant establishment and weed suppression. Implement recommendations asappropriate.
	Pest animals	9	Trigger	Annual rehabilitation monitoring indicates that pest animal species presence and density has increased since previous monitoring campaign.	Significant numbers of pest animals causing widespread damage to rehabilitation.
			Response	Engage weed contractor to manage introduced pest species.	Consult with relevant government agencies to recommend and implement appropriate pest animal control campaign. Update to planning documents.
		10	Trigger	Annual rehabilitation monitoring indicates that pest animal species are causing damage to rehabilitation.	Continued damage to rehabilitation from pests after tree guards and fencing has been installed.
			Response	Consult with relevant government agencies to recommend and implement appropriate pest animal control campaign.	Liaise with government agencies and consider a culling program in accordance with LLS and National Parks and Wildlife Service regulations.
Rehabilitation Areas - Grassland	Grass Composition	11	Trigger	Ongoing decline in grass composition away from analogue site composition between annual rehabilitation monitoring events	Five years following revegetation to grassland less than 75% of species surveyed are representative of analogue sites.
			Response	Investigate the likely causes of unsatisfactory germination and or, growth rates. Reseed areas with unsatisfactory cover. Review seeding procedures including seasonal mixes, timing and seed rate per hectare.	Undertake analytical soil testing and evaluation. Where appropriate implement recommendations for amelioration. Implement appropriate management actions including revising rehabilitation procedures if required.
	Ground cover percent	12	Trigger	Vegetative cover continues to decline between annual rehabilitation monitoring events.	Five years following rehabilitation, a minimum of 85% vegetative cover is not present.
			Response	Investigate the likely causes of unsatisfactory germination and or, growth rates. Undertake analytical soil testing and evaluation. Where appropriate implement recommendations for amelioration. Reseed areas with unsatisfactory cover. Review seeding procedures including seasonal mixes, timing and seed rate per hectare.	Undertake analytical soil testing and evaluation; where appropriate implement recommendations for amelioration. Implement appropriate management actions including revising rehabilitation procedures if required.

Aspect / Category	Key Element	Element Number	Trigger / Response	1st Level Trigger	2nd Level Trigger
Rehabilitation Area – Woodland	Ground cover percent	13	Trigger	Five years following revegetation to woodland, bare patches are > 15% and < 35 % (excluding rocks and logs).	Bare patches are > 35% (excluding rocks and logs).
			Response	Investigate likely causes of unsatisfactory germination rates. Undertake analytical soil testing and evaluation. Where appropriate implement recommendations for amelioration. Reseed areas with unsatisfactory cover. Review seeding procedures including seasonal mixes, timing and seed rate per hectare.	Undertake analytical soil testing and evaluation; where appropriate implement recommendations for amelioration. Implement appropriate management actions including revising rehabilitation procedures if required.
	Vegetation Health	14	Trigger	Long term declining trend in vegetation health index between annual rehabilitation monitoring events.	Five years following rehabilitation <75% of trees, shrubs and/or grasses are healthy and growing.
			Response	Investigate likely causes of vegetation sickness and / or mortality rates. Reseed or replant areas with high sickness or mortality rates. Review seeding and / or planting procedures.	Engage a suitably qualified specialist to investigate causes for vegetation sickness and mortality. Implement appropriate management actions including revising rehabilitation procedures if required.
	Species Composition	15	Trigger	Ongoing decline in woodland species composition away from analogue site composition indicated by annual rehabilitation monitoring trends.	Five years following revegetation to woodland, less than 75% of species surveyed are representative of the woodland analogue sites.
			Response	Investigate the likely causes of unsatisfactory germination and or, growth rates. Reseed or plant tube stock in required areas.	Undertake analytical soil testing and evaluation. Where appropriate implement recommendations for amelioration. Implement appropriate management actions including revising rehabilitation procedures if required.
Bushfire	Fuel Load	16	Trigger	Monitoring indicates fuel loads have not been managed and fire breaks have not been maintained.	A fire on site damages rehabilitated areas.
			Response	Reduce fuel loads and maintain adequate fire breaks. Inspect water sources and confirm sufficient water is available.	Liaise with Rural Fire Service to ensure monitoring and maintenance is completed for fuel loads, access tracks, and water bodies. Undertake any required reseeding or revegetation.

11 PART 11 - REVIEW, REVISION AND IMPLEMENTATION

Review and revision of the plan

The Plan will be reviewed and if required revised in the event of the following:

- An amendment to the rehabilitation objectives, completion criteria or proposed final land use;
- Changes to risks, risk control measures or rehabilitation strategies being identified during the completion of rehabilitation risk assessment or additional investigations;
- When directed to by the RR Secretary; and
- When triggered by consent conditions (Annual Reviews, Independent Environmental Audits, Incident Reports, Modifications.

Implementation

The process for ensuring that mining and rehabilitation are conducted in accordance with the RMP is the preparation and implementation of an Annual Rehabilitation Plan. The Annual Rehabilitation Plan is prepared and managed by the site Environmental superintendents and approved by the Mine Manager.

ACCOUNTABILITIES

Role	Accountability
General Manager	Ensure adequate resources are available to the Operations Manager to complete required rehabilitation activities according to the forward plan; Ensure adequate resources are available to enable the Environment Manager/Supt to complete the required monitoring and quality control activities in this plan.
Manager	Complete rehabilitation activities according to the schedule put forward in the Forward Plan. Ensure adequate resources are made available to monitor and assure the quality during the rehabilitation process.
Technical Expert	Monitor the progress of the rehabilitation completed against completion criteria and objectives. Monitor and report on any risks to rehabilitation success and communicate those risks effectively. Provide advice to the Operations Manager on all rehabilitation matters.
All Workers	Complete any rehabilitation activities according to procedures and protocols. Advise the Environmental Supt or delegate of any issues or risks encountered during rehabilitation activities.

SUPPORTING DOCUMENTATION

The following supporting documentation which includes associated training materials may need to be consulted and, where appropriate, used when applying this Standard and/or any subordinate procedures:

WHC-PRO-GOC-Annual Rehabilitation Planning Process

Revisions	Revision Description	Who Consulted	Date
1.0	Document Developed	Environmental Manager, Ops Mgr, Env Supt, Env Officer	July 2022
2.0	Document updated to include approved ROBJs	Environmental Manager, Ops Mgr, Env Supt, Env Officer	November 2023
3.0	Document update – formatting	Environmental Manager, Ops Mgr, Env Advisor	January 2025

APPENDIX A – STANDARD MINING LEASE CONDITIONS

Refer to website: https://legislation.nsw.gov.au/view/pdf/asmade/sl-2021-360

APPENDIX B – LAND OWNERSHIP

Lot Number	Deposited Plan Label	Ownership Type
7026	DP1029311	Crown Land
1	DP1044143	Freehold
2	DP1044143	Freehold
7027	DP1074968	Crown Land
7028	DP1074968	Crown Land
7029	DP1074968	Crown Land
1	DP1092790	Freehold
2	DP1092790	Freehold
1	DP1097532	Freehold
2	DP1097532	Freehold
1	DP1140891	Freehold
2	DP1140891	Freehold
3	DP1140891	Freehold
4	DP1140891	Freehold
7313	DP1144413	Crown Land
7315	DP1145822	Crown Land
1	DP1192426	Freehold
2	DP1211041	Freehold
8453	DP1217472	Crown Land
1	DP1225944	Freehold
2	DP1225944	Freehold
1	DP1229834	Freehold
2	DP1229834	Freehold

Lot Number	Deposited Plan Label	Ownership Type
3	DP1229834	Freehold
4	DP1229834	Freehold
5	DP1229834	Freehold
1	DP239575	Freehold
1	DP254189	Freehold
1	DP393755	Freehold
1	DP522770	Freehold
2	DP522770	Freehold
12	DP542047	Freehold
1	DP551412	Freehold
1	DP603422	Freehold
3	DP611154	Freehold
1	DP611707	Freehold
2	DP708570	Freehold
12	DP714099	Freehold
1	DP736969	Freehold
2	DP736969	Freehold
32	DP755474	Freehold
33	DP755474	Freehold
34	DP755474	Freehold
35	DP755474	Freehold
60	DP755474	Freehold
1	DP755497	Freehold
3	DP755497	Freehold

Lot Number	Deposited Plan Label	Ownership Type
7	DP755497	Freehold
10	DP755497	Freehold
13	DP755497	Freehold
14	DP755497	Freehold
12	DP755503	Freehold
121	DP755503	Freehold
136	DP755503	Crown Land
155	DP755503	Freehold
160	DP755503	Freehold
164	DP755503	Freehold
216	DP755503	Freehold
217	DP755503	Freehold
461	DP755503	Freehold
462	DP755503	Freehold
485	DP755503	Crown Land
654	DP755503	Freehold
49	DP755511	Freehold
2	DP807100	Freehold
1	DP846516	Freehold
2	DP846516	Freehold
6	DP846516	Freehold
7	DP846516	Freehold
1	DP917333	Freehold
7004	DP96587	Crown Land

Lot Number	Deposited Plan Label	Ownership Type
7001	DP96588	Crown Land
7002	DP96588	Crown Land