Longwalls 205 to 208

Singleton Council Asset Management Plan

October 2020

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Reviewed	Tony Sutherland	Position Technical Services Manager Ashton Coal Operations Ltd	Signed	Date
Approved	Mark Ihlien	Position Director Planning and Infrastructure Singleton Council	Signed	Date

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1 INTRODUCTION

Ashton Coal Operations Pty Ltd (ACOL), a subsidiary of Yancoal Australia Limited (Yancoal), owns the Ashton Coal Project (ACP), an underground coal mine located approximately 14 kilometres north-west of Singleton in the Hunter Valley in New South Wales (NSW) (**Figure 1**).

The ACP was granted consent on 11 October 2002 by the Minister of Planning pursuant to the provisions of the Environmental Planning and Assessment Act 1979 (DA 309-11-2001-i). The Mine is approved to produce up to 5.45 million tonnes per annum (Mtpa) of run of mine (ROM) coal and operate until 2024. The consolidated Development Consent has been modified on ten occasions, with the most recent amendment approved on 20 June 2016.

The underground mine is approved for multi-seam longwall extraction, targeting four coal seams in descending order (Pikes Gully (PG), Upper Liddell (ULD), Upper Lower Liddell (ULLD) and Lower Barrett (LB)) (**Figure 2**). Development of the underground mine commenced in December 2005 and is accessed through the southern wall of the Arties Pit under the New England Highway.

ACOL has subsequently prepared an Extraction Plan for mining of Longwalls 205 to 208 in the ULLD Seam of the Ashton Underground Coal Mine, varying between 185 metres and 255 metres below the surface. Proposed mining of Longwalls 205 to 208 (the **Extraction Plan Area** – refer **Figure 3**) is due to commence in March 2021 and is planned to take place over a three-year period.

ACO-20-04_EP LW205-208_201A

Resource Strategies

LEGEND

- Mining Operation
- Proposed Mining Operations (Application Lodged)
- Local Government Area
- State Forest
- National Parks and Wildlife Estate
- Exploration License Boundary
- Mining Lease Boundary
- Mining Lease Application Boundary

Source: NSW Spatial Services (2020)

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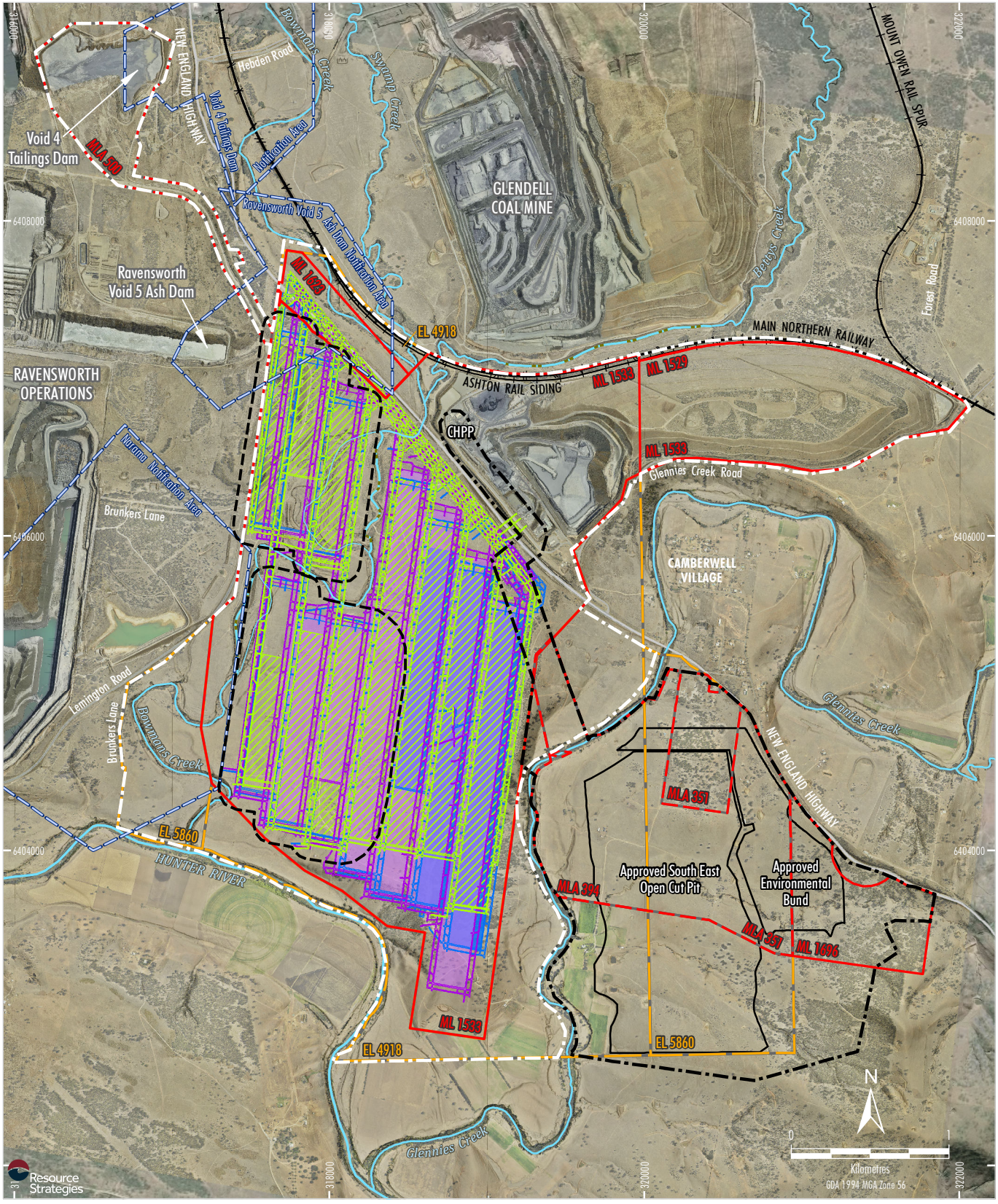
ASHTON COAL MINE

Regional Location

Figure 1



LEGEND

- Exploration Licence Boundary
- Mining Lease Boundary
- Mining Lease Application Boundary
- Prescribed Dam Notification Area
- Project Approval Boundary
- South East Open Cut Approval Boundary
- Pike's Gully Seam Longwall
- Upper Liddell Seam Longwall
- Upper Lower Liddell Seam Longwall
- Extraction Plan Application Area

Source: NSW Spatial Services (2020)
Orthophoto: Ashton Coal (Dec 2019); NSW Spatial Services (2019)

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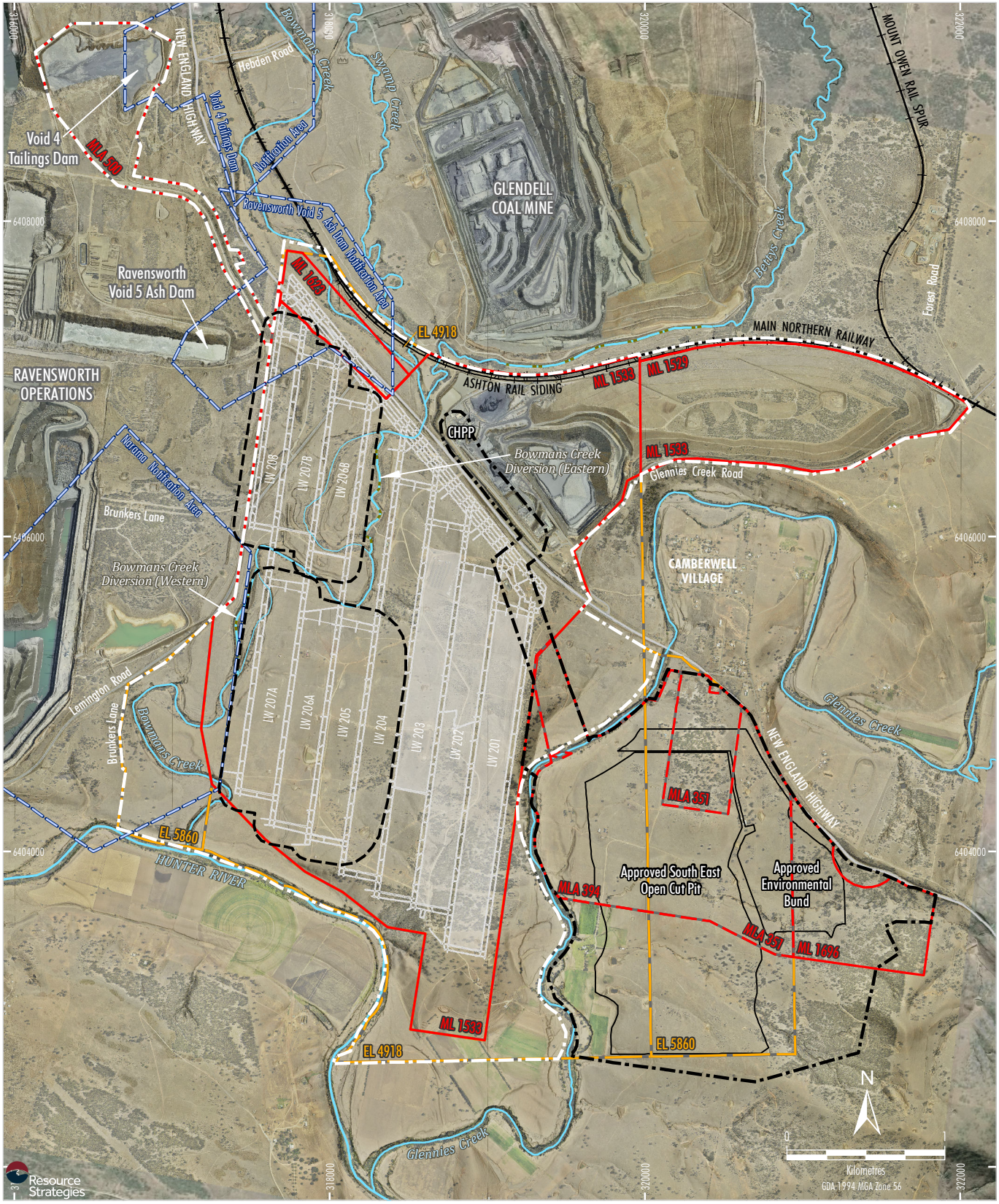
ASHTON COAL MINE

General Arrangement

Figure 2



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LEGEND

- Exploration Licence Boundary
- Mining Lease Boundary
- Mining Lease Application Boundary
- Prescribed Dam Notification Area
- Project Approval Boundary
- South East Open Cut Approval Boundary
- Upper Lower Liddell Seam Longwall
- Extraction Plan Application Area

Source: NSW Spatial Services (2020)
Orthophoto: Ashton Coal (Dec 2019); NSW Spatial Services (2019)

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ASHTON COAL MINE

Upper Lower Liddell Seam Longwall Layout

Figure 3

2 SCOPE & OBJECTIVE

This Asset Management Plan has been developed to manage risks associated with the potential subsidence impacts on Singleton Council infrastructure in the vicinity of the Longwalls 205-208 Extraction Plan area as a result of the secondary extraction of Longwalls 205-208 within the ULLD Seam.

This management plan provides a mechanism through which the potential subsidence impacts from longwall mining can be managed to maintain the safety and serviceability of the Singleton Council infrastructure whilst mining is in progress.

Singleton Council infrastructure of relevance to the Extraction Plan area includes Lemington Road and associated road infrastructure (e.g. culverts). Lemington Road is a two-lane sealed road with Longwalls 206B, 207B and 208 planned to mine below some 850 m (**Figure 4**).

This Asset Management Plan forms part of the Ashton Longwalls 205 to 208 Extraction Plan and should not be read in isolation.

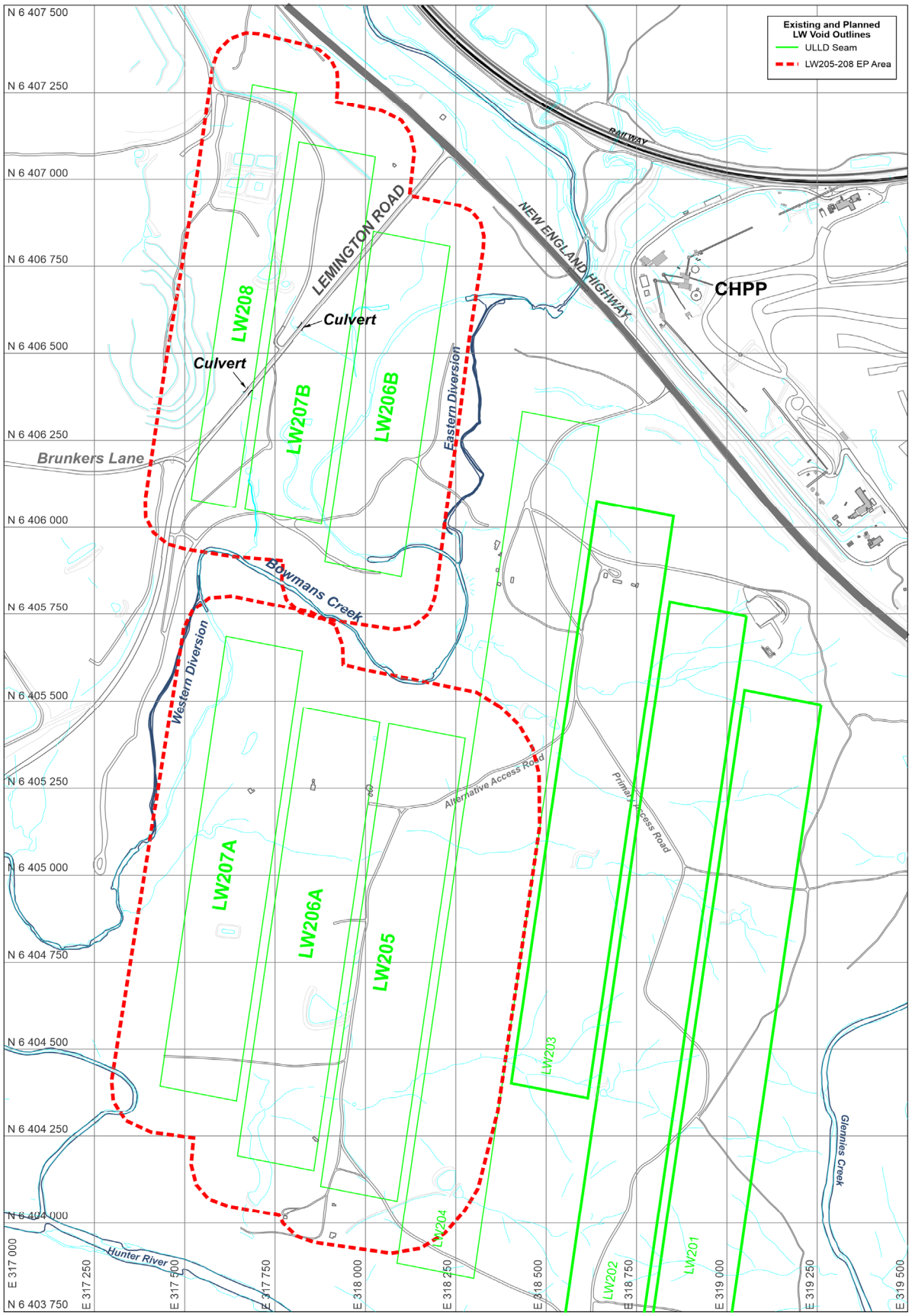

Figure 4: Plan Showing Location of Singleton Council Infrastructure in the Vicinity of Longwalls 205 to 208

3 ASSETS AND IMPACTS

Lemington Road was diverted and reconstructed during and following mining of Longwalls 7B and 8 in the PG Seam as part of the Ravensworth North Open cut Mine Project. **Plate 1** shows the road looking south from a position above Longwall 207B. Longwall 6B in the PG Seam subsequently mined below a small section of the new road causing low level subsidence above the corner of the panel and minor cracking along the edge of the road.

Plate 1: Lemington Road looking South

The section of Lemington Road planned to be undermined by the ULLD Seam longwalls is approximately 850 m long and extends from just north of the Brunkers Lane intersection in the south to approximately 300 m south of the intersection with the New England Highway.

There are also two culverts that allow drainage from the north-western side of Lemington Road to the south-eastern side. **Plate 2** shows one of the concrete culverts which is located just north of the AGL Macquarie south access road above the centre of Longwall 207B and provides the main drainage pathway to Bowmans Creek in this area. A similar structure is located between the southern access road and Brunkers Lane above Longwall 208 and the Longwall 207B chain pillar.

Plate 2: Lemington Road northern Culvert

3.1 SUBSIDENCE PARAMETER DEFINITIONS

Subsidence, tilt and strain are the subsidence parameters commonly used to define the extent of surface movements that will occur as mining proceeds.

Subsidence is the vertical distance (usually measured in millimetres) that the ground surface lowers as a result of mining, and depends on the depth of the coal seam, the thickness of the seam, the width of the extraction area and the characteristics of the overburden.

Tilt is calculated as the change in subsidence between two points divided by the distance between those points (i.e. change in slope of the surface landform as a result of mining). The maximum tilt, or the steepest portion of the subsidence profile, occurs approximately 50 metres from the edge of the longwall panel. Tilt is usually expressed in millimetres per metre.

Strain results from horizontal movements in the strata. Strain is determined from monitoring survey data by calculating the change in the horizontal length of a section of a subsidence profile and dividing this by the initial horizontal length of that section. If the section has been extended, the ground is in tension and the change in length and resulting strain are both positive. If the section has been shortened, the ground is in compression and the change in length and strain are both negative. Strain is usually expressed in millimetres per metre.

3.2 MAXIMUM PREDICTED SUBSIDENCE

Table 1 below describes the maximum predicted subsidence estimates detailed in the subsidence assessment for Longwalls 205-208 (SCT Operations, 2020). Subsidence impacts have been categorised as:

- Incremental Subsidence: Subsidence as a direct result of mining in the ULLD Seam; and
- Cumulative subsidence: Combined subsidence as a result of mining the ULLD seam and previously mined seams e.g. ULD seam.

Table 1. Maximum Predicted Subsidence Parameters for ULLD Seam Longwall Panels

ULLD Seam Longwall Panels (depth range in brackets [m])		Longwalls 205-208 Forecast						
		ULLD Subs (m)	ULLD Strain (mm/m)			ULLD Tilt (mm/m)		
			General	Stacked Edges	Undercut Edges	General	Stacked Edges	Undercut Edges
Incremental Subsidence Parameters								
LW205	(185-225)	2.8	30	53	N/A	53	106	N/A
LW206A	(205-240)	2.8	27	48	N/A	48	96	N/A
LW206B	(175-210)	2.5	29	50	N/A	56	100	N/A
LW207A	(220-260)	2.6	24	41	47	45	83	95
LW207B	(190-225)	2.5	26	46	53	52	92	105
LW208	(210-240)	2.2	21	37	N/A	33	73	N/A
Cumulative Subsidence Parameters								
LW205	(185-225)	5.8	47	110	N/A	94	219	N/A
LW206A	(205-240)	5.8	42	99	N/A	85	198	N/A
LW206B	(175-210)	3.9	33	78	N/A	67	156	N/A
LW207A	(220-260)	4.4	30	70	80	60	140	160
LW207B	(190-225)	4.2	33	77	88	66	155	177
LW208	(210-240)	3.1	22	52	N/A	44	103	N/A

3.3 PREDICTED SUBSIDENCE IMPACTS

The following sections describe predicted subsidence impacts to Singleton Council infrastructure as a result of mining Longwalls 205-208.

3.3.1 Lemington Road

Longwalls 206B, 207B and 208 are planned to undermine approximately 850 m of Lemington Road.

The subsidence impacts are expected to be of a similar nature, magnitude and frequency, to those forecast for ULD Seam mining originally planned in the area and for which approval was given. The ULLD Seam mining is the first mining below Lemington Road since the upgrade and realignment was undertaken.

Figure 5 shows the estimated road surface profiles along the centre of Lemington Road from current, after subsidence from ULLD Seam longwalls.

The subsidence movements are expected to occur gradually as mining progresses and are expected to move along the road affecting a section up to 100-150 m long at any given time. Impacts are expected to occur incrementally in response to mining geometry rather than suddenly. However, with normal longwall retreat rates of 70-100 m per week, the impacts at any one location may develop to their maximum over a few days and be substantially complete within one to two weeks.

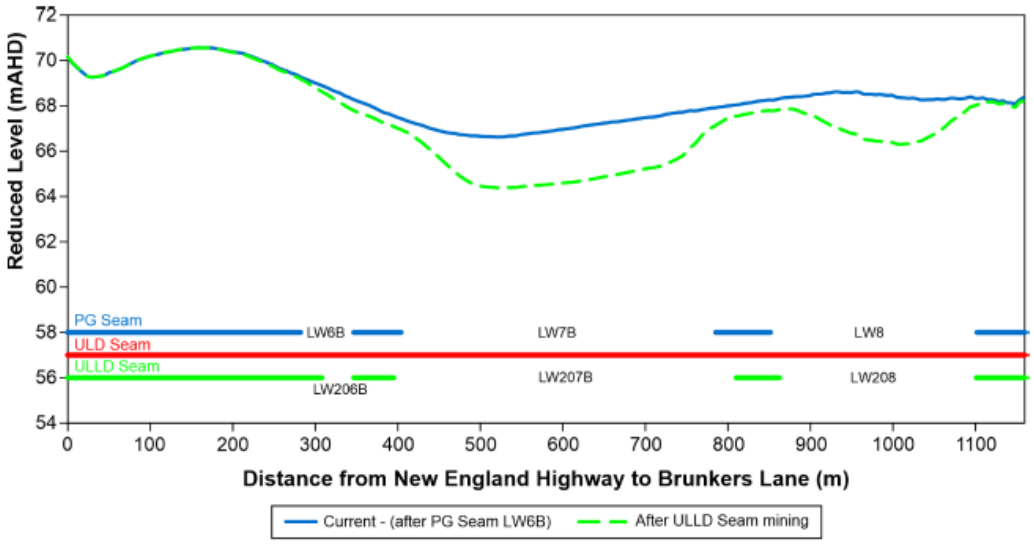

Figure 5: Lemington Road – estimated profiles after subsidence

Longwall 206B is expected to impact only a short section of Lemington Road with impacts likely to be limited to an area smaller than that impacted during mining of Longwall 6B. The cracks that occurred on the eastern side of the road during mining of Longwall 6B are likely to be reopened as Longwall 206B finishes. These cracks are expected to be permanent and require minor remediation. Specific traffic management is unlikely to be required, but regular inspections and maintenance when needed are recommended.

Longwall 207B is expected to impact a section of Lemington Road that is up to approximately 500 m long. Approximately 150-200 m of the road is expected to be affected at any given time. Impacts include changes in grade from tilting of the road surface and the appearance of cracks in the pavement. The tilting and cracks are expected to start above the longwall face and reach their maximum at about 50-70 m behind the face. The grade is expected to flatten again and cracks to substantially close again by 150 m behind the face with some ongoing changes out to 200 m. The changes in grade and cracks are expected to be permanent where the road passes over the panel edges and transitory in the section above the centre of the panel. A cross grade is also expected to develop because of the angle that the longwall panels cross Lemington Road but the change in cross grade will be small by comparison with the grade changes along the road.

Maximum incremental subsidence of 2.5 m is expected above the centre of the panel. Lemington Road was constructed after Longwalls 7B and 8 in the PG Seam were finished so cumulative subsidence is not significant. In the central part of the panel, maximum strains of 26 millimetres per metre (mm/m) and maximum tilts of 52 mm/m are expected to develop.

The eastern and western edges of Longwall 207B are stacked or slightly undercut respectively with the PG Seam. Maximum strains of up to 53 mm/m and maximum tilts up to 105 mm/m are expected. Existing goaf edge fractures formed during mining in the PG Seam are expected to reopen along the western edge of the panel causing one or more cracks up to 300 mm wide sub-parallel to the goaf edge. Sharp changes of grade are expected where these cracks develop.

Longwall 208 is expected to impact a section of Lemington Road that is approximately 500 m long and includes a 150 m section located above Longwall 207B. The impacts are expected to be generally less than those predicted over Longwall 207B because of the narrower panel width. Behaviour similar to that observed over Longwall 207B is expected to develop when Longwall 208 first mines under Lemington Road. As the longwall retreats, the subsidence behaviour is expected to move to a more general lowering of the surface when the longwall face approaches the chain pillar between Longwalls 207B and 208. This later stage lowering is likely to be characterised by closing of permanent cracks from Longwall 207B and a general softening of the grades above the chain pillar.

Maximum incremental subsidence of 2.2 m is expected above the centre of the panel. In the central part of the panel, maximum strains of 21 mm/m and maximum tilts of 33 mm/m are expected.

The western and eastern edges of Longwall 208 are stacked in two seams. Maximum strains of 37 mm/m and maximum tilts of 73 mm/m are expected to develop at these stacked goaf edges. Existing subsidence fractures caused by mining in the PG Seam are expected to reopen along the stacked edge causing cracks up to 200-300 mm wide. Sharp changes of grade are expected where these cracks develop.

3.3.2 Lemington Road Culverts

Longwall 207B is expected to cause vertical subsidence in the range of 2.0-2.5 m at the northern culvert. Incremental strains and tilts are likely to be at general background levels with transient levels up to 25 mm/m and 45 mm/m respectively. Subsidence effects at the southern culvert are expected to be less, but permanent, due to this culvert being located close to a chain pillar.

Ground movements have the potential to damage the Lemington Road Culverts potentially leading to failure of the road base and impacts to the road surface. Mitigation and remediation works are expected to be effective in maintaining the integrity and functions of the culverts. A program of monitoring the response and integrity of these structures is recommended with remediation measures taken as necessary (SCT, 2020).

3.4 PROPOSED MONITORING/MANAGEMENT MEASURES

The comprehensive subsidence management plan required by the Lemington Road Subsidence Deed for mining the ULD Seam longwalls is expected to be suitable to use for the ULLD Seam longwalls and would be expected to maintain serviceability of the road whilst safeguarding road users and the general public.

The Lemington Road Subsidence Deed (Deed) has been prepared to outline responsibilities for the monitoring, management and reporting of subsidence impacts from the ACP on Lemington Road. The Deed was made on 20 December 2013 between ACOL, Ravensworth Operations and Singleton Council.

Key requirements for management of Lemington Road are summarised in Section 5.1 of the Deed and include:

- ACOL to affect the monitoring, maintenance and repairs for any subsidence impact to Lemington Road during extraction of the seams to the extent that the extraction undermines Lemington Road or may otherwise cause subsidence impacts to the new road.
- Condition 46 of the Deed requires Ravensworth Operations to pay ACOL's reasonable costs of undertaking the monitoring and maintenance works.
- The monitoring and maintenance works are intended to address any repairs or other management efforts required to keep the surface of Lemington Road in a serviceable and safe condition during and immediately after subsidence events caused by extraction of each seam until the subsidence effects on Lemington Road have stabilised. The maintenance works are not intended to address any longer term measures designed to prepare Lemington Road to withstand any subsequent subsidence events caused by later extraction of other Seams.
- Ravensworth Operations and ACOL are to commission an Independent Engineer to prepare an additional report, which recommends whether any reinstatement works are required to re-establish Lemington Road to a standard that is capable of withstanding the subsidence impacts from the extraction of the subsequent seams, subject to only minor remediation works being necessary to ensure Lemington Road remains in a safe and trafficable condition.

In effect, ACOL must return the road to a trafficable condition, while Ravensworth Operations is responsible for costs and returning the road to its pre-mining condition. Any reinstatement works must be carried out to the relevant standards to the reasonable satisfaction of Singleton Council.

The Deed was finalised in 2013 following the mining of Longwall 6B below a small section of the road and the completion of an independent review report on the alignment of Lemington Road (GHD 2013). GHD (2013) reports that Ravensworth Operations and ACOL have indicated a preference for the current alignment to be retained as the final alignment and, as such, the current alignment be reinstated (repaired) after each episode of subsidence. Development consent conditions require a review of subsidence impacts, monitoring and management measures following extraction of each seam including any continuing need to realign Lemington Road. GHD (2013) is consistent with these development consent conditions.

The mining plan depicted in GHD (2013) does not coincide with the actual mining layout currently approved and planned for ULLD Seam, especially now that no mining in the ULD Seam is planned below Lemington Road. The impacts from mining the PG and ULLD Seams only are expected to be similar to those for mining the PG and ULD Seams only. Both are considered manageable using the same risk control measures.

The experience of the planned ULLD Seam mining is expected to provide a benchmark for the management of subsidence impacts to Lemington Road associated with future mining of the LB Seam.

4 PERFORMANCE MEASURES

ACOL will aim to ensure that all built features owned by Singleton Council within the Extraction Plan area are always maintained as safe and serviceable. Any subsidence damage from ACOL's mining activities will be managed consistent with the Development Consent conditions and the signed Deed.

The subsidence impact performance measures relevant to Singleton Council assets under Schedule 3, Condition 29 of DA 309-11-2001-i are summarised in **Table 2**, while more specific objectives and performance measures, developed by ACOL, are listed in **Table 3**.

Table 2. Subsidence Impact Performance Measures

Built Features	
Lemington Road and Brunkers Lane.	In accordance with recommendations of the report prepared under condition 36.
Public Safety	
Public safety.	No additional risk due to mining.

Of relevance, Schedule 3, Conditions 36 and 37 of DA 309-11-2001-i state:

36. *The Applicant must, together with the owner of the Ravensworth Operations Project, if directed by the Secretary, commission and implement additional reports following extraction of each seam that the Applicant is permitted to extract. Each such additional report must review the impacts of previous subsidence on Lemington Road/Brunkers Lane, review existing measures to monitor and manage subsidence impacts (including any continuing need to realign Lemington Road), to the satisfaction of the Secretary.*

    The Applicant must fund 50% of the costs of the reports prepared under this condition and must implement any recommendations of such reports, to the satisfaction of the Secretary.

    Any dispute over the interpretation or implementation of reports prepared under this condition shall be determined by the Secretary, whose decision shall be final.

    Notes:

    - *Stacked or offset panel alignments for the Upper Liddell, Upper Lower Liddell and Lower Barrett seams are shown in the plans in Appendix 2.*
    - *The owner of the Ravensworth Operations Project will be expected to fund the other 50% of report costs and to have similar responsibilities regarding implementation.*

37. *The Applicant must be responsible for implementing controls to ensure road traffic safety (including monitoring, maintenance and repairs of subsidence impacts) during any longwall extraction which may cause subsidence impacts to Brunkers Lane/Lemington Road.*

    Note: This responsibility for implementing controls exists notwithstanding that funding of these controls may come from other parties, such as the owner of the Ravensworth Operations Project or the MSB.

Table 3. Singleton Council Asset Management Plan Objectives

Objective	Performance Measure
• To prevent public safety hazards resulting from subsidence damage to Lemington Road. • To consult with Ravensworth Operations and Singleton Council so that ACOL can remediate subsidence induced impacts to roads.	• Always safe. • Management as per the Lemington Road Subsidence Deed. • To consult with Ravensworth Operations and Singleton Council so that Ravensworth Operations can ensure all subsidence related damage is identified and remediated as soon as practicable to prevent public safety hazards resulting from subsidence damage to Lemington Road. ACOL to repair immediate subsidence impacts (make road serviceable), with Ravensworth Operations responsible for 100% of the costs associated with the repairs.

5 MONITORING AND MANAGEMENT

The management actions that ACOL undertakes to satisfy the performance measures outlined in Section 4 are outlined in Table 4. These actions include monitoring, management and incident reporting.

Table 4. Singleton Council Monitoring, Management and Incident Reporting

Item	Feature	Action/Response	Trigger/Timing
1.0	**Monitoring**		
1.01	Lemington Road	Pre-mining condition assessment to document pre-subsidence condition of the road, including photographic records of any observed records of any observed existing pavement fatigue or failure or similar existing damage. Monitoring in accordance with the Deed.	Prior to commencement of longwall mining in Longwall 206B.
1.02		Visual inspection of the road to identify any subsidence impacts that could affect the safety of vehicles. Subsidence monitoring in accordance with the Subsidence Effects Monitoring Program and the Deed.	Daily during active subsidence.
1.03		Post-mining condition assessment of the road to confirm that any perceptible subsidence impacts have ceased and document the post-subsidence status of the road.	Once active subsidence has ceased.
1.04	Lemington Road Culvert	Pre, during and post mining subsidence monitoring. Regular inspections.	Pre, during and post subsidence.
2.0	**Management**		
2.01	Lemington Road	Erection of signage warning of potential subsidence impacts and providing ACOL contact number. Management as per the Deed.	Prior to commencement of longwall mining in Longwall 206B.
2.02		Onsite road crew ready to make subsidence repairs to Lemington Road on a short term basis. Management as per the Deed.	• During active subsidence; and • Until no subsidence impacts are recorded.
2.03		Maintain access to Lemington Road in accordance with the Deed in place between ACOL, Ravensworth Operations and Singleton Council.	Following subsidence impacts until permanent repairs of road are complete.
2.04	Lemington Road Culverts	Maintain condition in accordance with the Deed in place between ACOL, Ravensworth Operations and Singleton Council.	Following subsidence impacts until permanent repairs of the culvert are complete.

Item	Feature	Action/Response	Trigger/Timing
2.05	Traffic Management Plan	A Traffic Management Plan will be prepared to cover Lemington Road. This management plan will include outlining the implementation of the following: • community interface and notification protocols; • relevant contacts including ACOL, Ravensworth Operations, Singleton Council; and • responsibility/hand over milestones.	To be completed in consultation with Singleton Council and signed off by Singleton Council prior to commencement of mining of Longwall 206B.
3.0	**Incident Response**		
3.01	Lemington Road	Repair road in accordance with the Deed between ACOL, Ravensworth Operations and Singleton Council.	As required due to subsidence impacts (i.e. if identified during daily visual inspections).
3.02	Lemington Road Culverts	Repair culverts and drainage in accordance with the Deed between ACOL, Ravensworth Operations and Singleton Council.	As required due to subsidence impacts (i.e. if identified during daily visual inspections).
4.0	**Reporting**		
4.01	Item 1.01	Provide a copy of the pre-mining condition assessment to Ravensworth Operations and Singleton Council.	Once completed.
4.02	Items 1.02 to 1.04	Notify Ravensworth Operations and Singleton Council and provide copies of monitoring results.	If subsidence monitoring results are greater than predicted or if potential impacts are identified.
4.03	Items 2.01 to 2.04	Report status of management measures to Ravensworth Operations and Singleton Council.	If required.
4.04	Item 2.05	Reporting as per the Traffic Management Plan.	Reporting as per the Traffic Management Plan.
4.05	Items 3.01 and 3.02	Notify stakeholders. Notify Resources Regulator if deemed a reportable incident.	Reporting as per Extraction Plan requirements.

5.1 SUBSIDENCE INSPECTIONS

Subsidence inspections will be carried out by mine staff pre mining and daily during active subsidence.

The inspections will be carried out to identify any impacts on the ground surface directly above the undermined areas particularly in the vicinity of Lemington Road and the associated culverts. The inspection checklist used for this task is shown in **Appendix B**.

5.1.1 Scope of Inspections

Regular surface inspections will cover a zone defined as being 200 m behind and 100 m in front of the current face position. The inspections will cover the full subsidence bowl out to the 45 degree angle of draw. Inspections will be carried out by trained persons and will follow the inspection checklist. Inspections will identify the following subsidence impacts:

- surface cracking – edges of extraction void and start and travelling abutments particularly in rock outcrop areas;
- surface humps (compression) – near centre of extracted panels and travelling abutment;
- step change in land surface – associated with cracking; and
- road deformation as a result of subsidence.

5.1.2 Public Safety Issues Identified During Inspections

If any public safety issue is identified during inspections the person conducting the inspection shall:

- immediately notify the Technical Services Manager and/or Environment & Community Superintendent;
- erect “NO ROAD” or barrier tape and warning signs if immediate remediation is not possible; and
- the Operations Manager shall immediately notify the NSW Resources Regulator, landholder and the infrastructure owner (contact details in Appendix A).

5.1.3 Remediation of Lemington Road Safety Issue

If any public safety issue is identified during inspections or other public safety issue is identified during assessment of monitoring or inspection results that person shall:

- immediately contact Singleton Council and advise the identified impact;
- arrange for immediate repairs if necessary; and
- liaise with Mine Management, Ravensworth Operations, Singleton Council and Subsidence Advisory NSW to arrange long term repairs.

5.2 CONTINGENCY PLANS

Should vehicle movements be interrupted on Lemington Road as a result of subsidence impacts, ACOL will implement appropriate road management actions to repair the road and restore serviceability as soon as practicable.

5.3 REPORTING

The results of inspections will be recorded and filed. Monitoring results will be reported annually in the Annual Review (AR) where relevant. Other communications will be as detailed in the Public Safety Management Plan.

6 RESPONSIBILITIES

6.1 ASHTON OPERATIONS MANAGER

The Operations Manager must:

- promptly notify the Resources Regulator of any identified public safety issue via telephone to the central reporting number 1300 814 609; and
- complete a written notification using the online incident notification form via the Regulator Portal at https://www.resourcesregulator.nsw.gov.au/safety-and-health/notifications/incident-or-injury.

6.2 TECHNICAL SERVICES MANAGER

The Technical Services Manager must:

- authorise the Plan and any amendments;
- ensure that the required personnel and equipment are provided to enable this Plan to be implemented effectively;
- inform the Operations Manager of impacts requiring notification to the NSW Resources Regulator and/or Singleton Council; and
- liaise with officers of Singleton Council and remediation consultants and contractors as required.

6.3 ASHTON ENVIRONMENT & COMMUNITY SUPERINTENDENT

The Environment & Community Superintendent must:

- inform the landholders of impacts requiring remediation; and
- report monitoring results in the AR.

6.4 ASHTON REGISTERED MINING SURVEYOR

The Registered Mining Surveyor must:

- ensure that subsidence inspections are conducted to the required schedule and that the persons conducting the inspection are trained in the requirements of this plan and understand their obligations;
- review and assess subsidence monitoring results and inspection checklists; and
- promptly notify the Technical Services Manager and/or the Environment and Community Superintendent of any identified public safety issue.

6.5 ASHTON TECHNICAL SERVICES TEAM

The Ashton Technical Services Team members must:

- conduct the subsidence inspection within the applicable subsidence zone to the standard required and using the subsidence inspection checklist;
- take actions to remediate any public safety issue identified during inspections; and
- where actions are beyond their capabilities immediately attempt to notify the landowner or infrastructure owner and the Technical Services Manager.

6.6 SINGLETON COUNCIL

Singleton Council must be available to consult with ACOL and Ravensworth Operations regarding any potential issues.

6.7 PAYMENT OF COSTS IN RELATION TO REPAIRS

ACOL will liaise with Ravensworth Operations, Singleton Council and the Subsidence Advisory NSW in relation to payment for any necessary repairs such that no cost will be borne by Singleton Council.

7 TRAINING

All personnel who conduct inspections will be trained in the requirements of the Ashton Longwalls 205-208 Built Features Management Plan, Longwalls 205-208 Subsidence Monitoring Program and the Longwalls 205-208 Singleton Council Asset Management Plan.

Training will be conducted on the identification of the various subsidence impacts detailed in the Public Safety Management Plan and will include any safety aspects of those inspections.

8 AUDIT AND REVIEW

8.1 AUDIT

The requirements of the Longwalls 205 to 208 Singleton Council Asset Management Plan are to be audited as required.

8.2 REVIEW

A review of this plan will be undertaken:

- if the mine design criteria are changed;
- if subsidence impacts are greater than predicted;
- if required by Singleton Council; and
- following each audit.

9 REFERENCES

Strata Control Technology (2020) S*ubsidence Assessment for the Extraction Plan for Longwalls 205 – 208 in the Upper Lower Liddell Seam*, Report Number ASH4927.

Appendices

Appendix A

Stakeholder Contact Details

Longwalls 205-208 Extraction Plan Stakeholder List

Position	Name	Phone
ASHTON		
Operations Manager	Aaron McGuigan	6570 9104
Technical Services Manager	Tony Sutherland	6570 9110
Environment and Community Superintendent	Phillip Brown	6570 9219
Mine Surveyor	Jeff Peck	6570 9125
Senior Mining Engineer	Ben Tockuss	6570 9124
After Hours	Ashton Control Room	6570 9166
GOVERNMENT		
Subsidence Advisory NSW	Newcastle Office	4908 4300
Resources Regulator		1300 814 609
SINGLETON COUNCIL		
Singleton Council – Director Planning and Infrastructure	Mark Ihlien	
General Contact	NA	6578 7290
LANDHOLDERS		
Refer to Ashton internal contact register.		

Appendix B

Subsidence Inspection Checklist

SUBSIDENCE INSPECTION CHECKLIST		
Longwall Panel		
Date		
Face Position		
Subsided Inspection Zone		
Pre-Subsidence Inspection Zone		
Area Inspected by (Print Name and sign)		
INSPECTION ITEM	**CHECKED**	**COMMENTS**
Surface cracking		
Surface humps (compression)		
Hunter River, Mine Water and Gas drainage pipelines		
Access roads and tracks		
Fences, gates, cattle grids		
Damage to Power-poles, Cross-arms, Insulators and Conductors. e.g. leaning poles, increased sag in conductors, reduced ground clearance		
Dams		
Structures (houses, outbuildings)		
Other		

SUBSIDENCE INSPECTION CHECKLIST

Where to Inspect

200 metres behind and 100 metres in front of the current face position.

Cover the full subsidence bowl out to the 45 degree angle of draw.

What to look for

- surface cracking - edges of extraction void and start and travelling abutments particularly in rock outcrop areas and topographic high;
- surface humps (compression) - near centre of extracted panels, the travelling abutment and topographic lows if adjacent to steep terrain;
- step change in land surface - associated with cracking;
- slope, boulder and tree instability;
- surface slumping, erosion;
- serviceability of access tracks;
- changes to creeks, ponding, sediment load;
- general vegetation condition (in particular dieback of vegetation);
- change in conditions of 'right-of-way' access track or surrounding verges including drainage culverts and water flows as well as road cutting stability; and
- power poles and wires – adverse tilts on poles and ground clearances for wires, especially when crossing access tracks.

Actions if there is damage to non-ACOL infrastructure:

Immediately notify the:

- Operations Manager;
- Technical Services Manager and/or Environment & Community Superintendent; and
- relevant infrastructure owner/operator.

If repairs or remediation work is required these will be undertaken or organised by Singleton Council.