



Longwalls 205 to 208

Telstra Asset Management Plan

October 2020



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Originator	Jeff Peck	Position Registered Surveyor Ashton Coal Operations Pty Ltd	Signed	Date
Reviewed	Tony Sutherland	Position Technical Services Manager Ashton Coal Operations Pty Ltd	Signed	Date
Approved	Mark Schneider	Position Project Specialist Telstra	Signed	Date

REVISIONS

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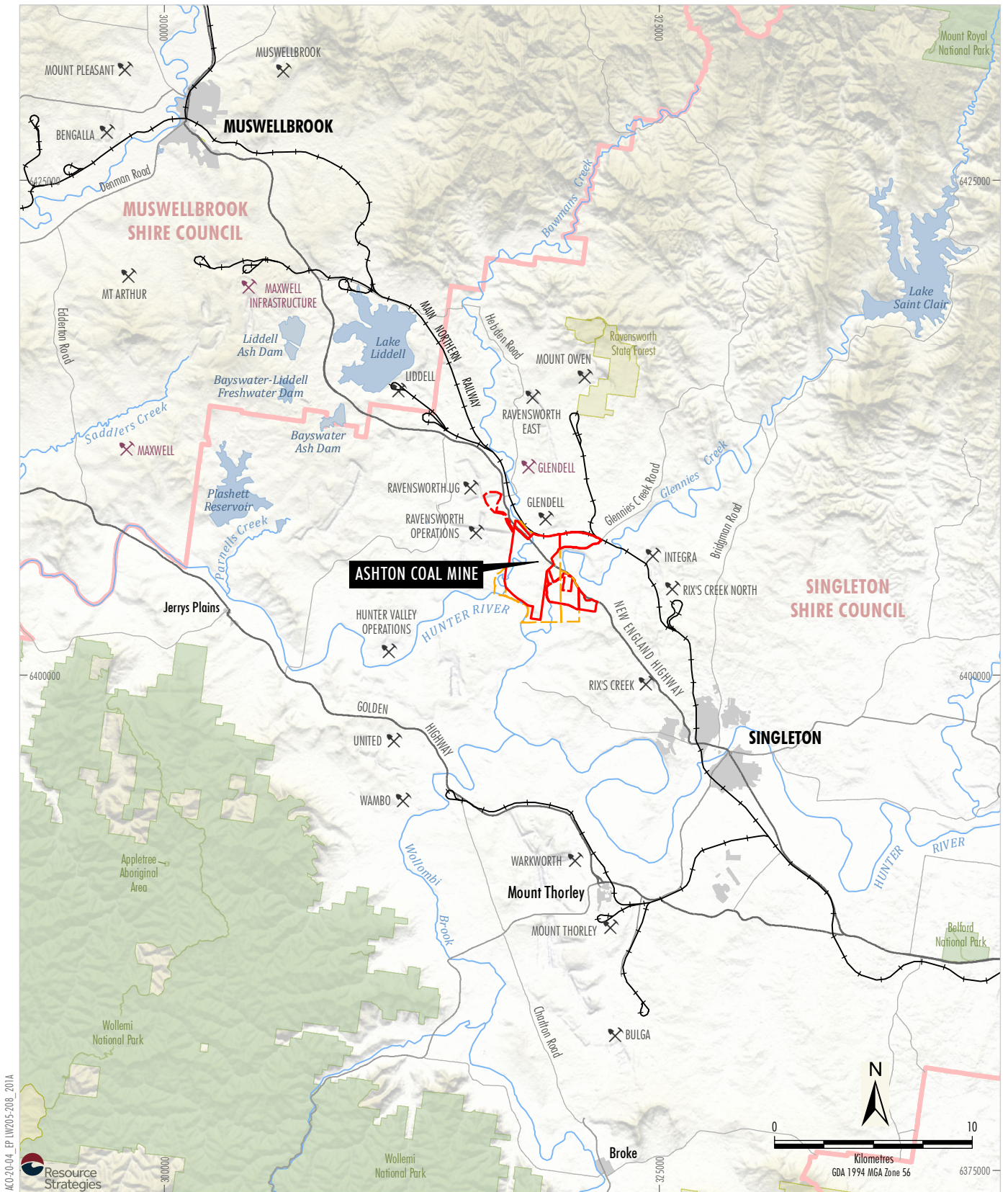
1 INTRODUCTION

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.



AKO-20-04-EP-LW2015-208_2014
Resource Strategies

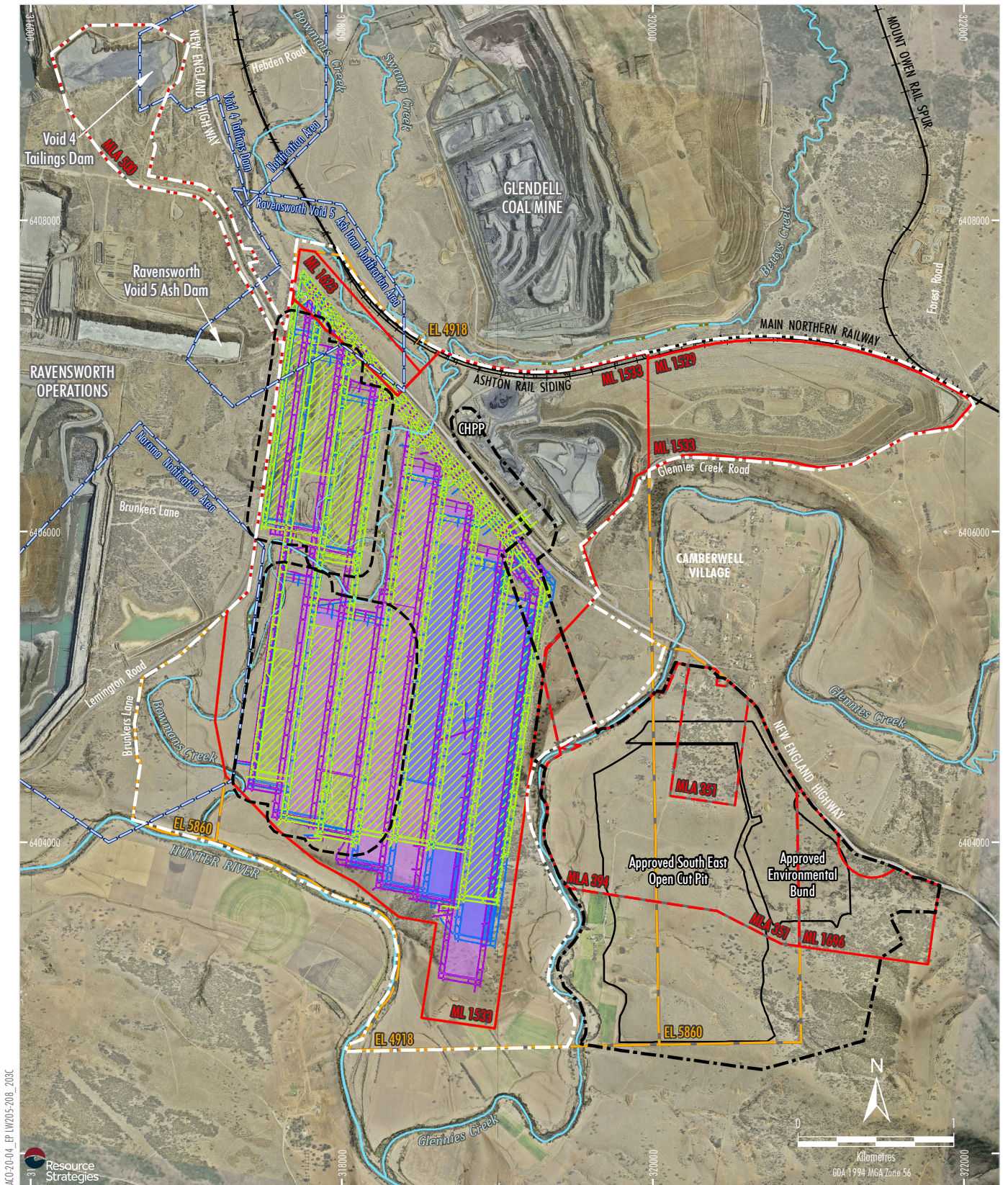
Source: NSW Spatial Services (2020)



- 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

YANCOAL
 宏业澳洲大煤业有限公司
ASHTON COAL MINE
 Regional Location

Figure 1



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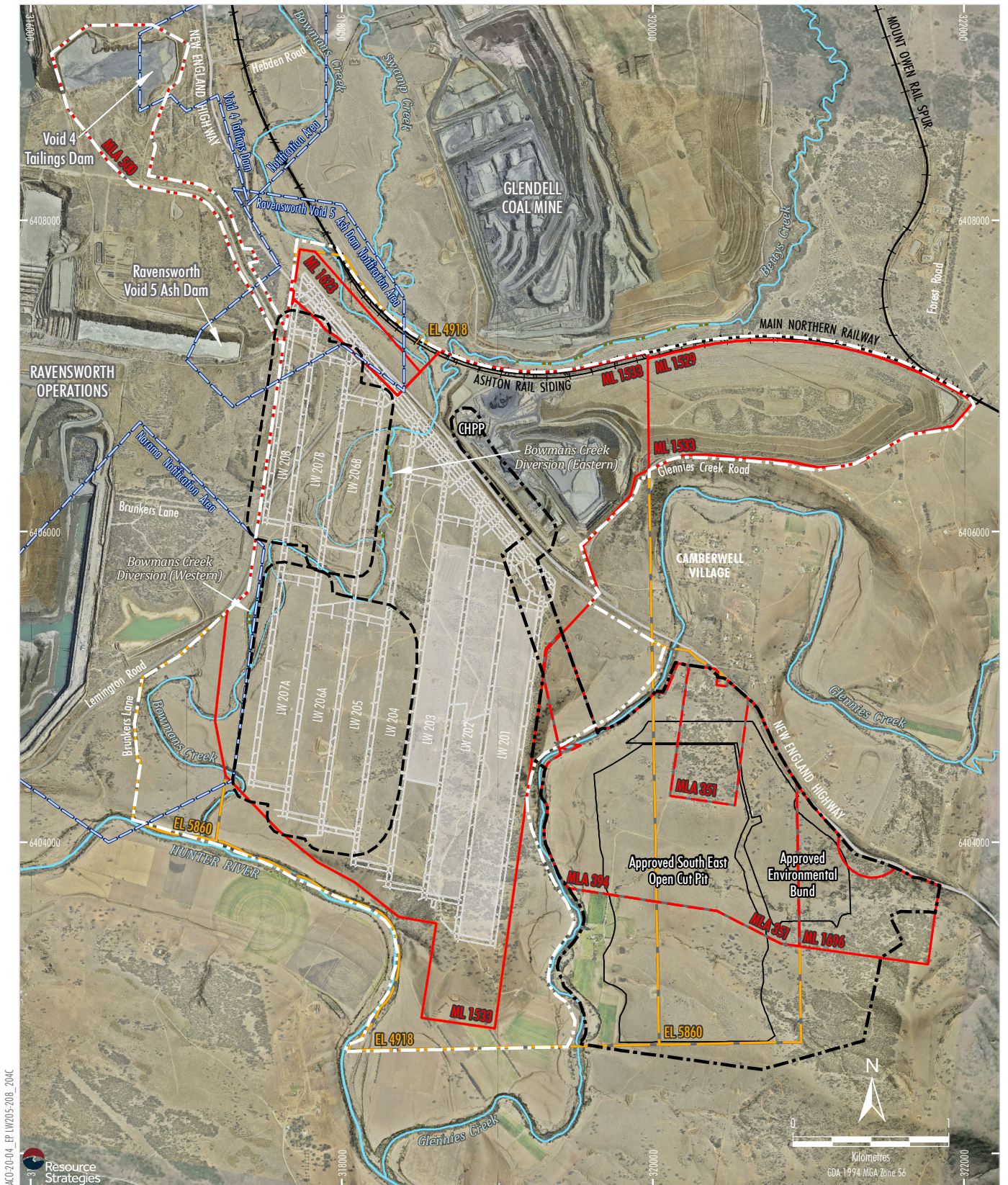


- LEGEND**
- Exploration Licence Boundary
 - Mining Lease Boundary
 - Mining Lease Application Boundary
 - Prescribed Dam Notification Area
 - Project Approval Boundary
 - South East Open Cut Approval Boundary
 - Pike's Gully Seam Longwall
 - Upper Liddell Seam Longwall
 - Upper Lower Liddell Seam Longwall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

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


 ASHTON COAL MINE
 General Arrangement

Figure 2



AKO20-04-EP LW205-208_2014C



- 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)



ASHTON COAL MINE
 Upper Lower Liddell Seam Longwall Layout

Figure 3

2 SCOPE AND OBJECTIVE

This Asset Management Plan has been developed to manage risks associated with the potential subsidence impacts on Telstra 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 Telstra infrastructure whilst mining is in progress.

Telstra infrastructure of relevance to the Extraction Plan area has been identified as a buried copper wire telephone cable and a buried fibre optic cable that run along Lemington Road (**Figure 4**).

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

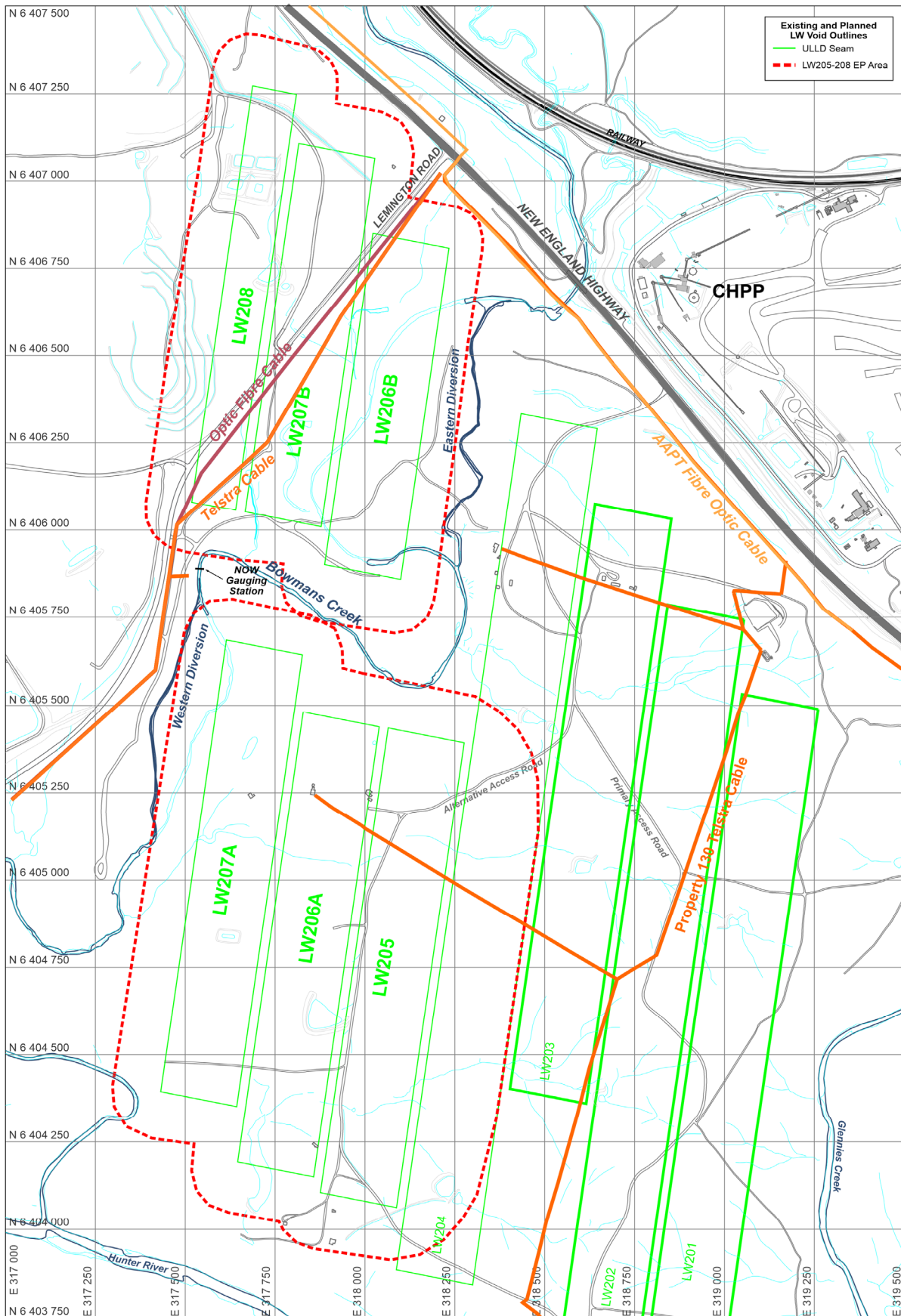


Figure 4: Plan Showing Location of Telstra Infrastructure in the Vicinity of Longwalls 205 to 208

3 ASSETS AND IMPACTS

The buried copper wire Telstra cable runs alongside Lemington Road and passes through areas above Longwalls 207B and 206B including stacked goaf edges at the northern end of Longwall 206B. This cable is understood to service subdivided blocks associated with Ravensworth Operations (Glencore) and the NSW Office of Water Gauging Station located on Bowmans Creek (**Figure 4**).

The fibre optic cable also runs alongside Lemington Road and services Ravensworth Operations (Glencore) (**Figure 4**). This cable was installed as part of the Ravensworth North Project and it is not ACOL's responsibility to repair any damage to this cable. Notwithstanding, potential impacts have been considered in this Asset Management Plan.

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 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 (i.e. PG Seam and 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 IMPACTS

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

3.3.1 Copper Cable

The cable passes through areas of stacked goaf edges at the northern end of Longwall 206B where maximum cumulative strains of 78 mm/m are forecast. These strains significantly exceed the expected nominal 20mm/m capacity of buried copper cables (SCT,2020). The cable also passes over stacked goaf edges above Longwalls 207B and 208 where strains of 77 mm/m and 52 mm/m are forecast (SCT, 2020).

Subsidence impacts are expected to affect the serviceability of the cable without mitigation and remediation works being conducted.

3.3.2 Fibre Optic Cable

Mining of Longwalls 206B, 207B and 208 is expected to compromise the serviceability of this fibre optic cable (SCT, 2020).

The cable passes through areas of stacked goaf edges at the northern end of Longwall 206B where maximum cumulative strains of 78 mm/m are forecast. These strains are expected to exceed the tolerance of a buried fibre optic cable. The cable also passes over stacked goaf edges above Longwalls 207B and 208 where strains of 77 mm/m and 52 mm/m are forecast (SCT, 2020).

3.4 PROPOSED MONITORING/MANAGEMENT MEASURES

If the copper cable is required to remain serviceable throughout the period of mining in the ULLD Seam, options include:

- using mobile phone technology; and
- rerouting the line alongside the 330 kilovolt transmission line where ground movements are within the tolerance of buried cable telecommunication systems.

If the fibre optic cable is required to remain serviceable throughout the period of mining in the ULLD Seam, options include:

- exposing the fibre optic cable so that high strain zones can be accommodated without causing the cable to be damaged;
- relocating the cable to the low subsidence corridor alongside the 330 kilovolt transmission line;
or
- decommissioning the cable and using a different technology (e.g. mobile).

4 PERFORMANCE MEASURES

ACOL will aim to ensure that all built features owned by Telstra within the Extraction Plan area are always maintained as safe and serviceable. Any subsidence damage from ACOL’s mining activities will be repaired as necessary, or else replaced and/or fully compensated or dealt with under the terms of an access or compensation agreement.

The subsidence impact performance measures relevant to TELSTRA 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	
Other built features, including other public infrastructure.	<ul style="list-style-type: none"> • Always safe. • Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. • Damage must be fully repaired or replaced, or else fully compensated.
Public Safety	
Public safety.	No additional risk due to mining.

Table 3. Telstra Asset Management Objectives

Objective	Performance Measure
<ul style="list-style-type: none"> • To minimise telecommunications disruptions. 	<p>Copper Telephone Cable:</p> <ul style="list-style-type: none"> • Predicted impacts of subsidence are identified prior to subsidence occurring and alternatives/protective measures identified where required to maintain current services. • Telecommunication services are maintained (through nearby NBN tower) and individuals are not placed at increased risk as a result of ACOL mining activities.
<ul style="list-style-type: none"> • To minimise telecommunications disruptions. 	<p>Fibre Optic Cable:</p> <ul style="list-style-type: none"> • Predicted impacts of subsidence are identified through subsidence monitoring. • It is not the responsibility of ACOL to undertake any repairs as a result of subsidence impacts on the fibre optic line as this was built as part of the Ravensworth North Project. ACOL will however inform Glencore of any subsidence impacts on the cable.

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. Telstra Asset Monitoring and Management

Item	Feature	Action/Response	Trigger/Timing
1.0	Monitoring		
1.01	Underground Copper Cable	Subsidence monitoring within the Extraction Plan area will be undertaken.	Overall subsidence monitoring within the Extraction Plan area – pre, during and post active subsidence.
1.02	Fibre Optic Cable	Subsidence monitoring within the Extraction Plan area will be undertaken.	Overall subsidence monitoring within the Extraction Plan area – pre, during and post active subsidence.
2.0	Management		
2.01	Fibre Optic Cable	It is not the responsibility of ACOL to undertake any repairs as a result of subsidence impacts on the fibre optic line as this was built as part of the Ravensworth North Project.	ACOL to inform Glencore if subsidence impacts have been identified.
3.0	Incident Response		
3.01	Underground Copper Cable	Engage a suitably qualified communications engineer/technician (in consultation with Telstra) to test and repair telecommunications infrastructure damaged by subsidence. Repairs will be undertaken in consultation with Telstra and the affected stakeholder (Glencore).	If liaison with Glencore indicates either total loss, degraded quality or intermittent access of communications in the subsurface cables.
4.0	Reporting		
4.01	Item 1.01 and 1.02	Notify Telstra and provide copies of monitoring results.	If subsidence monitoring results are greater than predicted or if potential impacts are identified.
4.02	Item 2.01	Notify Telstra and Glencore.	If subsidence impacts have been identified.
4.03	Item 3.01	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 every three days when the longwall face is within 50 m of the cable, until the completion of subsidence.

The inspections will be carried out to identify any impacts on the ground surface directly coinciding with, or adjacent to, the cable alignments. Observed impacts on the ground surface may indicate impacts to the cables. 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;
- damage to poles, conductors, powerlines, pipelines and cables;
- reduce ground clearances of conductors;
- tilting of poles, increased/decreased tension in conductors; and
- bent crossarms or insulators.

5.1.2 Public and/or Infrastructure Safety Issue 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 Asset Safety Issues

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 Telstra and advise the identified impact;
- arrange for Telstra to implement immediate repairs if necessary; and
- liaise with Mine Management and Subsidence Advisory NSW to arrange long term repairs.

5.2 CONTINGENCY PLANS

Should interruption of communications to a user occur as a result of or suspected to be related to subsidence impact to the network, ACOL will attempt to provide support services to affected users where the interruption cannot be immediately repaired or if there is a medical or safety reason the user needs continued communications.

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 Telstra; and
- liaise with officers of Telstra 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 Technical Services Manager and/or the Environment & 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 Technical Services Manager.

6.6 TELSTRA

Telstra must arrange repairs as necessary through consultation between Telstra and ACOL.

6.7 PAYMENT OF COSTS IN RELATION TO REPAIRS

ACOL will liaise with the Subsidence Advisory NSW in relation to payment for any necessary repairs such that no cost will be borne by Telstra.

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 Telstra 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 Telstra 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 Telstra; and
- following each audit.

9 REFERENCES

Strata Control Technology (2020) *Subsidence 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 to 208 Extraction Plan Stakeholder List

Position	Name	Phone
ASHTON		
Operations Manager	Aaron McGuigan	6570 9104
Technical Services Manager	Tony Sutherland	4015 1105
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
TELSTRA		
Telstra – Project Specialist	Mark Schneider	8842 5185
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; and
- 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.
- 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 are required these will be undertaken by Telstra.