



LWB1 to LWB3

Public Safety Management Plan

May 2016



DOCUMENT CONTROL

DOCUMENT DETAILS	Title	LWB1 to LWB3 Public Safety Management Plan		
	Reference	LWB1 to LWB3 Public Safety Management Plan		
	Document Status	Final		
APPROVAL DATE	Revision	Revision Details	Prepared	Approved
9/5/16	0	Original document	D Lee G Mulhearn	Tony Sutherland

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1 INTRODUCTION

Austar Coal Mine Pty Ltd (Austar), a subsidiary of Yancoal Australia Limited (Yancoal), owns Austar Coal Mine, an underground coal mine located approximately 10 kilometres south of Cessnock in the Lower Hunter Valley in NSW. The mine is an aggregate of the former Ellalong, Pelton, Cessnock No.1 and Bellbird South Collieries and is located in the South Maitland Coalfields. These operations, including coal extraction, handling, processing and transport, collectively form the Austar Mining Complex.

A modification to the Bellbird South development consent (DA29/95 MOD6) was approved under delegated authority of the Minister for Planning on 29 January 2016. The modification extends the Bellbird South consent area and permits the transfer of coal from three conventional longwall panels (Longwalls B1 to B3) within the Ellalong Colliery and Bellbird South Colliery areas to existing infrastructure for processing and transport of coal. The modification also extends the development consent expiry for five years to allow the longwall panels to be extracted.

Since the modification was approved, Austar obtained further information on the location and nature of geological structures near the commencing and finishing positions of Longwalls B2 and B3. Austar was approved by the nominee for the Secretary of the Department of Planning and Environment on 29 April 2016 to shorten Longwall B2 and Longwall B3, and the extent of those shortened panels has been used in all diagrams and subsidence predictions in the preparation of the Extraction Plan.

The location of Austar's mining areas, and previous mining is shown with the Austar Mine Complex in **Figure 1**.

1.1 SCOPE & OBJECTIVE

This Management Plan describes the process developed, including identification of key risks and proposed management strategies, to manage Public Safety in any surface areas that may be affected by subsidence arising from longwall mining within the **Extraction Plan Area** as defined by the predicted 20mm subsidence contour from secondary extraction of LWB1 to LWB3 as shown in **Figure 2**.

The objective of this Plan is to outline the management measures to minimise surface safety risks to the public during mining within the Extraction Plan Area such as:

- monitoring of areas posing safety risks;
- erection of warning signs and possible entry or use restrictions;
- backfilling of surface cracks and/or re-profiling of humps and swales on tracks and roads in conjunction with the Mine Subsidence Board (MSB);
- infilling of subsidence pot holes;
- securing of potentially unstable structures and rockmasses;

- identification of potential flood-related impacts that may pose a risk to public safety; and
- provision of regular updates regarding mining progress to the community where management of public safety is a significant issue.

Required actions and responsibilities are defined to ensure detection and timely remediation of any potential public safety hazards from mining induced subsidence.

2 RESPONSIBILITIES AND RESOURCES

The Regional Technical Services Manager is responsible for monitoring the implementation of this plan.

The Austar Operations Manager is responsible for ensuring that sufficient resources are available to implement the requirements of this Plan.

Each of the management strategies developed to manage subsidence allocates responsibilities in relation to their implementation. Relevant personnel will be provided with a copy of appropriate documents. Training will be provided.

3 BACKGROUND

3.1 AUSTAR HISTORICAL PUBLIC SAFETY PERFORMANCE RELATING TO SUBSIDENCE

Austar has successfully undertaken mining using the LTCC mining method for Stage 1 (LWA1 to LWA2), Stage 2 (LWA3 to LWA5a) and Stage 3 (LWA7 to LWA8) over the period of 2006 to 2015 (refer to **Figure 1**).

Austar's experience during that period has indicated no reactive public safety management actions have been required at any time. This is due to the high depth of covers, with minimal observed surface impact. Consequently risks to public from secondary extraction in the Extraction Plan Area are also expected to be very low. This is supported by the subsidence assessment for Longwalls B1 – B3 (MSEC833, 2016).

3.2 SURFACE FEATURES, LAND OWNERSHIP AND PUBLIC ACCESS TO LAND

Land ownership within the Extraction Plan Area is shown in **Figure 3**. Land within the Extraction Plan Area is overlain by a combination of private landholdings, crown land and public roads. The private landholdings include residential dwellings and farm infrastructure (sheds, dams, etc).

The topography of the Extraction Plan Area is generally characterised by low undulating hills and creek flats associated with an un-named tributary of Quorrobolong Creek. Elevations within the area range from approximately 130 metres to 160 metres (AHD).

Austar has a comprehensive consultation program to facilitate access for monitoring and potential remediation activities within the Extraction Plan Area, and has already secured access to significant areas of land subject to this plan prior to any potential impacts from subsidence occurring. In particular, Austar has secured access to all properties that are within the 20mm subsidence affectation area caused by extraction of Longwall LWB2 which is planned for extraction during Q3 2016.

Austar is significantly progressed in securing access to further private lands beyond LWB2 in order to meet Austar's obligations of DA29/95 in relation to subsidence management. This will significantly assist in identification of public safety issues to be managed by this plan.

It is important to note that Austar may not undertake any works (including inspections) on land outside of Austar's ownership described in this plan without landowner permission.

4 APPROACH TO PUBLIC SAFETY MANAGEMENT

The Mine's overall strategy to ensure Public Safety relating to the surface areas that may be affected by subsidence arising from the extraction of coal using conventional longwall mining methods is:

1. **Measure Baseline Information** - Establish background data for the surface above the mining area by inspection and in certain areas also subsidence survey.
2. **Regular Monitoring of the effects of mining** – Continue monitoring and inspection of identified key positions relating to the extraction process.
3. **Regularly assess and interpret monitoring and inspections** – Monitoring and inspection data is analysed to identify any variations from predictions, unexpected anomalies, visual impact or items presenting potential impact in Public Safety.
4. **Implement Immediate Responses** – If potential impact on Public Safety is observed or reported implement an immediate response including notification to the landowner.
5. **Re-assess any impacts** – Where variations and/or impacts are greater than predictions made in the Extraction Plan, as nominated in the Trigger, Action and Management Response Plan, additional assessment/investigation of impacts will be undertaken. This will be carried out by specialist consultants, Austar personnel and appropriate stakeholders where required.
6. **Identify and implement remedial actions** – If impacts require mitigation and/or remedial action, these actions will be implemented in conjunction with the landholder and appropriate relevant stakeholder.

5 PERFORMANCE MEASURES

The performance measures in relation to public safety will be based around reducing risk to members of the public to as low as reasonably practical. **Table 1** indicates the performance measures in relation to Public Safety for the Extraction Plan Area.

Table 1 Public Safety Performance Measures

Subsidence Impact	Performance Measure
Surface Cracking	Surface cracking or deformation remediated where required in accordance with the Land Management Plan (LMP) to not impact on public safety
Dams	Impacts to dam walls monitored and maintained to minimise risk of failure in accordance with individual Built Features Management Plan (BFMP) and Water Management Plan (WMP)
Public roads and tracks	Public roads and tracks remediated to not impact on public safety in conjunction with the MSB
Steep slopes and unstable ground/structures	Exclusions established where risk to public identified. Remedial measures implemented to remove risk
Flooding and access	Access to and from private properties established to maintain safe passage.

6 IDENTIFICATION OF RISKS

It is not expected that mining of LWB1 to LWB3 in the Greta seam will pose a significant risk to public safety as there are no areas of shallow depth of cover (less than 80 metres). As part of the Extraction Plan process a Risk Assessment was conducted to examine the potential impact by subsidence on the surface above the Extraction Plan mining area. A copy of the risk assessment is included as an appendix to the main Extraction Plan document. No public safety risks in the extreme risk category were identified. One risk was identified in the high risk category, having a potentially major consequence. All risks identified had either existing controls or additional controls / further actions which have been implemented or are available to identify, control or remediate these risks.

The possible Public Safety risks are listed below for the Extraction Plan Area.

- Injury to road user on Sandy Creek Road and Barraba Lane due to impact of mine subsidence (addressed in Built Features Management Plan);
- Damage and or loss of clearance to 11kV Ausgrid powerlines;
- Damage and/or loss of Telstra communication cables;
- Damage (cracking) to internal property access tracks;
- Damage (cracking) to general surface;
- Damage (cracking) to buildings;
- Damage to fences; and
- Damage to dams

Controls, monitoring and remedial action, identified as core items have been addressed in this Management Plan including:

- Regular monitoring of areas posing potential safety risks;
- Erection of warning signs along public roads – to include mine contact numbers to report damage and be installed prior to longwall extraction;
- Entry restrictions – identified as part of management actions and remedial measures in Public Safety Risk identified;
- Backfilling of dangerous surface cracks – noted as remedial measure if identified;
- Remediation of any areas with adverse grade impacts or potential ponding (deformation);
- Provision of timely notification of mining progress to the landholder, community and any other stakeholders where management of Public Safety is required – noted as part of management actions.

Further detail regarding subsidence predictions is contained in the subsidence reports MSEC833 (MSEC, 2016).

7 NOTIFICATION, MONITORING AND INSPECTION SCHEDULE

The subsidence from mining in the Extraction Plan Area is not expected to have a major impact on the general surface though there may be impact on Sandy Creek Road which will require actions and are addressed in the Built Features Management Plan. Management of Public Safety is largely controlled by programmed and targeted inspections as well as reviewing predicted subsidence against actual subsidence.

7.1 NOTIFICATION

Notifications to any landholders, the general public, relevant stakeholders and appropriate authorities either have or will be provided. These include:

- Newspaper advertisement relating to LWB1 – B3 modification application
- Notification of Extraction Plan approvals to relevant parties
- Signposting of mining area

7.2 SUBSIDENCE MONITORING

A description of the surface, relevant features and improvements above the Longwall panels is contained in **Section 3** with locations of these items shown in the attached plan.

Monitoring is conducted as per the various Management Plans and Monitoring Programs submitted, consisting of a combination of subsidence surveys, surface and underground monitoring and inspections and monitoring of ecological conditions.

These Plans and Programs generally focus on intensive monitoring in the initial stages of Longwall extraction and the long term monitoring of subsidence effects that may develop over time.

7.3 SUBSIDENCE INSPECTIONS

Inspections are to be conducted as per the various Management Plans and Monitoring Programs submitted, consisting of a combination of visual and photographic inspections as detailed in the Management Plans and programs and referenced in **Table 2**.

7.4 SCOPE AND FREQUENCY OF INSPECTIONS

Regular inspections at frequencies detailed in the Management Plans and Programs are to be initially concentrated on the current mining area, mining location and subsidence area (based on 26.5 degrees angle of draw). Inspections are concentrated on items identified in the initial pre-mining survey.

Inspections are carried out by experience persons and follow an inspection checklist to include the items above.

At the completion of mining in each Panel a full surface inspection will be conducted and results included in the Annual Environmental Management Report / Annual review.

Table 2 below list a schedule of inspections and subsidence survey frequencies of areas of potential Public Safety risk.

8 ACTIONS AND REMEDIAL MEASURES

Austar will install appropriate warning signage, positioned along public roads prior to the commencement of longwall extraction, advising of the potential for subsidence impacts. The objective of the signage is to ensure users of public roads and the surrounding area are aware of the potential hazards resulting from subsidence. Mine contact details shall be included to enable any damage to be reported.

Visual inspections will identify impacts on natural features. Inspections and monitoring noted in the relevant monitoring plans will identify impacts on infrastructure and improvements.

8.1 PUBLIC SAFETY ISSUES IDENTIFIED DURING INSPECTIONS OR MONITORING

If these inspections reveal any Public Safety issue (see **TARP**) that requires remedial works to ensure Public Safety the person conducting the inspection shall:

- Immediately notify the Mining Engineering Manager and/or Environmental Manager of the findings;
- Erect “NO ROAD” or barrier tape and warning signs (e.g. traffic control signs, traffic controllers as appropriate) if immediate remediation is not possible; and
- The manager of Mining Engineering shall immediately notify the District Inspector of Coal Mines, landholder and any infrastructure owner.

8.2 REMEDIATION OF PUBLIC SAFETY ISSUES

Following completion of the above, the Manger of Mining Engineering or his nominee shall:

- Arrange inspections of the area at regular intervals including installation of appropriate barriers if required, until remediation works are carried out; and
- Arrange for remediation works as detailed in the **TARP**. This will require consultation with the Department of Industry, Resources and Energy, landholder, possibly Mine Subsidence Board, infrastructure owner, specialist consultants and appropriate stakeholders, as noted in the current Management Plans and Programs, to prepare appropriate remediation plan relating to the particular item. Notification to the general public may form a part of the remediation plan.

8.3 ADAPTIVE MANAGEMENT

It is unlikely based on subsidence predications and previous mining impact observed in Stages 1, 2 and 3 this far that any adaptive management will be required. If however continued impact outside that expected occurs due to mining subsidence, Austar is committed to reviewing options with landholders, the MSB and service/infrastructure providers to put measures in place to prevent on-going reoccurrence.

8.4 CONTINGENCY PLANS

Where any unexpected and uncontrolled public safety risk presents itself, Austar will provide on-going resources to prevent access to the affected area until such time a remediation plan can be enacted. If this prevents members of the public access to their residence Austar will assist in making alternative arrangements including temporary accommodation.

9 TRAINING

All personnel who conduct Subsidence Monitoring Program inspections will be trained in the requirements of this Public Safety Management Plan. Training will be conducted on the identification of the various subsidence impacts and the associated public safety risks.

10 REPORTING

The results of inspections will be documented with the Subsidence Monitoring Program. The effectiveness of the Longwalls B1 to B3 Public Safety Management Plan in managing public safety risks will be reported where relevant in the Extraction Plan Stakeholder Reporting process and the Annual Review / Annual Environmental Management Report.

Additionally notification will be provided to relevant authorities of any incident or occurrence as detailed in the Triggers Action and Management Responses.

11 REVIEW

This plan will be reviewed as necessary including:

- In the event that the Director Mine Safety Operations raises issues that necessitate a review;
- In the event that any landholders or infrastructure owners raise issues that necessitate a review; and
- Inspections or monitoring demonstrates that the impacts are such that a review is warranted.

Any review will be conducted in consultation with the Director Mine Safety Operations. In the event of the management plan being changed a copy will be sent to the relevant agencies.

Table 2 Inspection and Survey Schedule

Area of Influence	Visual Inspection Frequency	Visual Inspection by	Photographic Monitoring Frequency	Photographic Monitoring by	Subsidence Survey Frequency	Subsidence Survey By
Private Properties requiring an individual BFMP (including dams, access tracks, fences, other structures etc)	Pre and post mining plus fortnightly while in active mining zone (frequency increased to daily if triggers exceeded as per TARP)	Technical Services Representative	Pre and post mining plus if changes noted on visual inspections	Technical Services Representative	As detailed in Subsidence Monitoring Program and individual BFMP	Austar survey staff or external survey contractor
Infrastructure – Ausgrid Power Lines	Refer to the Built Features (Ausgrid) Management Plan					
Infrastructure – Cessnock Council Public Roads	Refer to the Built Features (Public Roads) Management Plan					
Infrastructure – Telecommunication cables	Refer to the Built Features (Telstra) Management Plan					

Figures

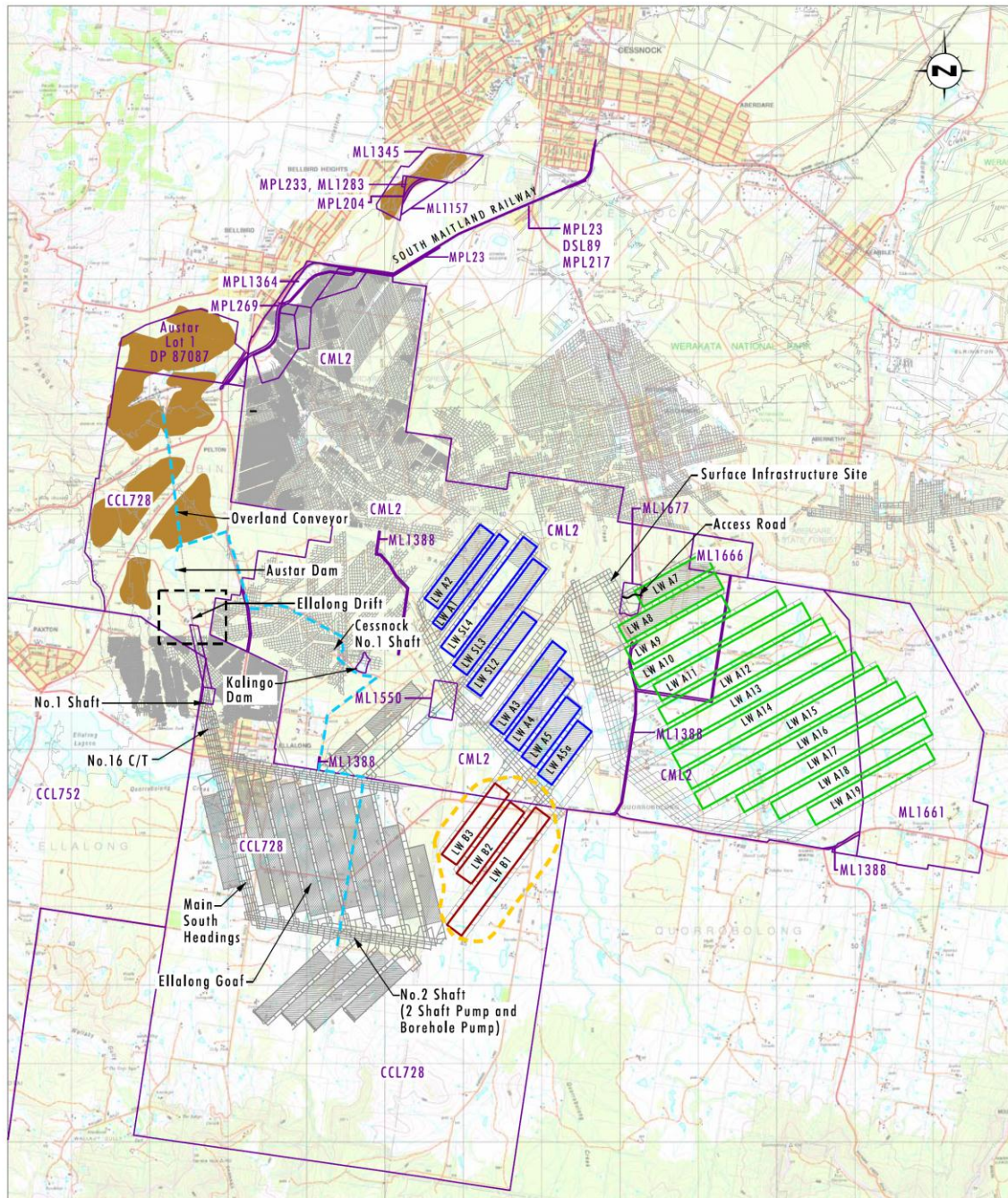


Image Source: LPI NSW (2009)
Data Source: Austar Coal Mine (2015)

0 1 2 3 km
1:70 000

- Legend**
- ▭ Completed Bellbird South Stage 1, Stage 2 and Southland Longwall Panels (DA 29/95)
 - ▭ Stage 3 Longwall Panels (PA08_0111) (In Progress)
 - ▭ LWB1-B3 Extraction Plan Longwall Panels
 - ▭ LWB1-B3 Extraction Plan Area
 - ▭ Approved Reject Emplacement Areas
 - ▭ Completed Underground Workings
 - ▭ Mining Lease Boundary
 - ▭ Austar owned CHPP Land
 - Water Pipeline

File Name (A4): 3542_193.dgn
20160316 13.50

FIGURE 1.1
Austar Coal Mine Complex

Figure 1 Austar Coal Mine Complex

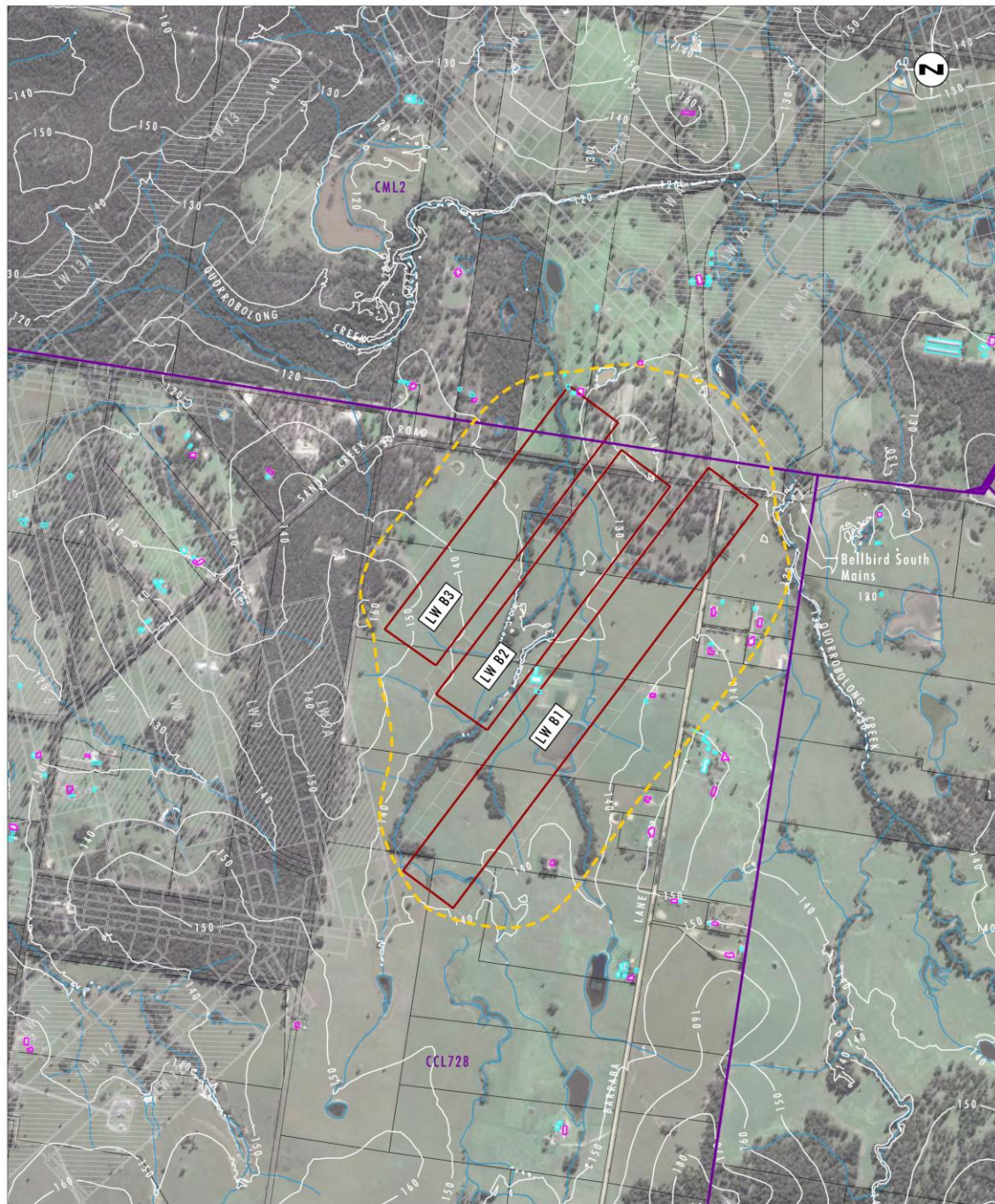










Image Source: Google Earth (2014)
 Data Source: Austar Coal Mine (2015)
 Note: Contour Interval 10m

Legend

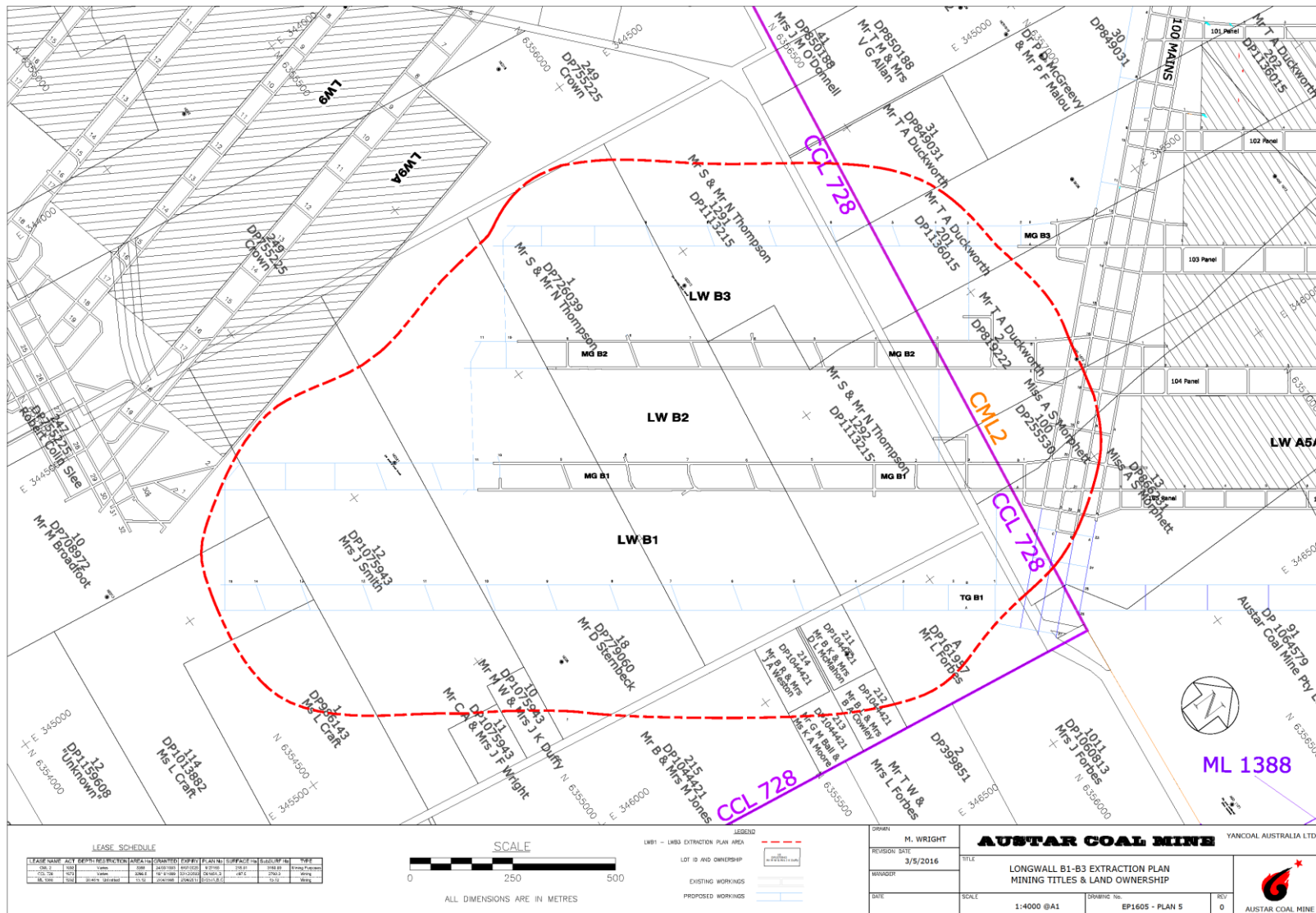
-  LWB1-B3 Extraction Plan Longwall Panels
-  LWB1-B3 Extraction Plan Area
-  Completed Underground Workings
-  Mining Lease Boundary
-  Drainage Line
-  Contour
-  Dwelling
-  Other Structure

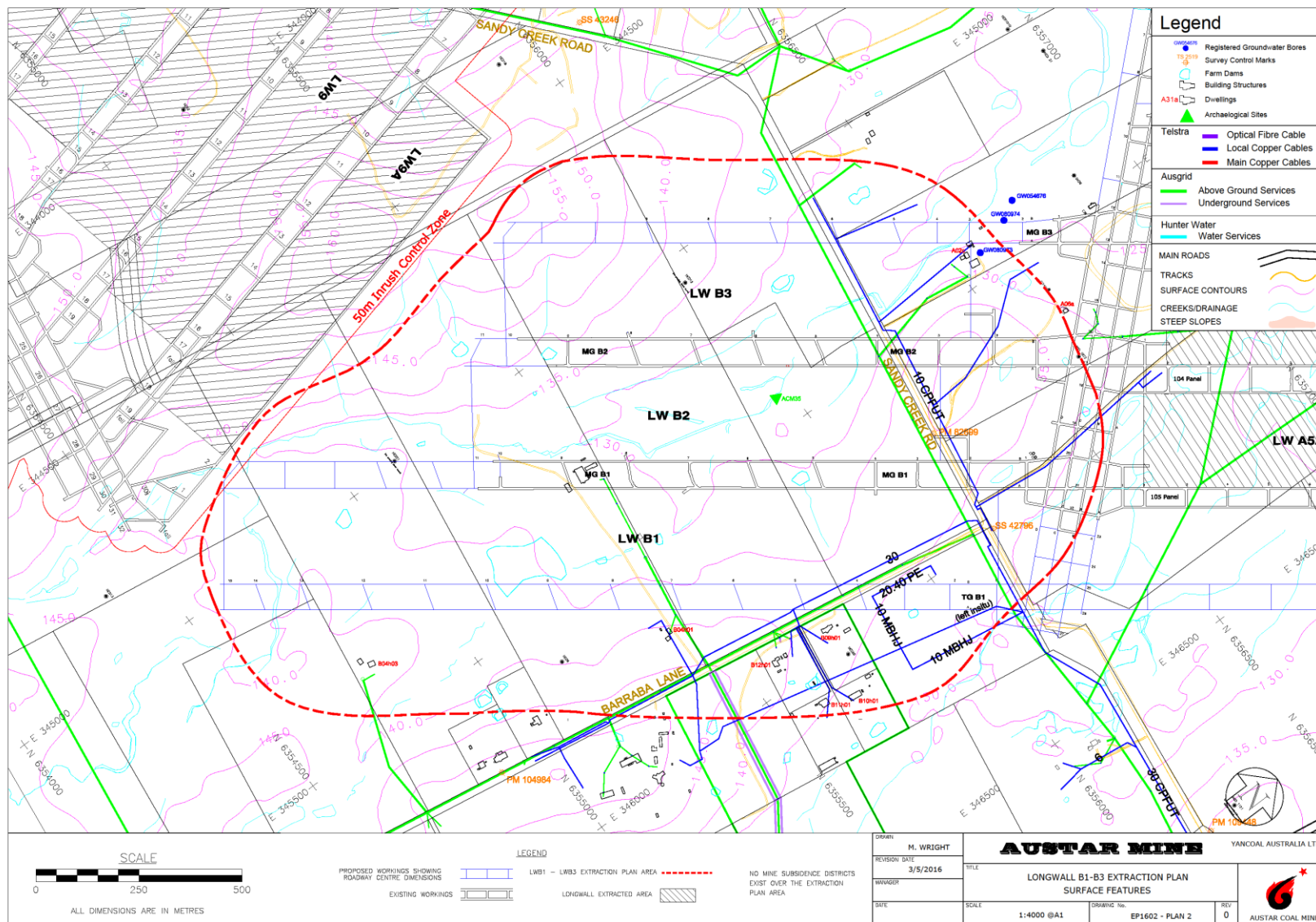
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FIGURE 1.2
 LWB1-B3 Extraction Plan Area

Figure 2 Extraction Plan Area


Figure 3 Land Ownership


Figure 4 Surface Features

Appendices

Appendix A

Stakeholder Contact Details

Austar Coal Mine LWB1 to LWB3 Extraction Plan Stakeholder List

Position	Name	Phone
AUSTAR		
Mine Manager	Brian Wesley	4993 7356
Technical Services Manager	Tony Sutherland	4015 1105
Environment and Community Manager	Gary Mulhearn	4993 7334
Mine Surveyor	Matthew Wright	4993 7206
Austar After Hours	Control Room	4993 7220
GOVERNMENT		
MSB District Manager	Troy Atkin	6572 4344
Cessnock City Council After Hours Contact Number (Emergency)	-	4940 7816
Cessnock City Council Operations – Works Delivery Manager	Geoff Bent	4993 4284
Cessnock City Council Strategic Asset Planning Manager	Stephen Long	4993 4251
DPI-Crown Land	Melanie Osborne	4937 9332
Ausgrid – Manager of Customer Supply, Planning and Reliability, Lower Hunter	Pat Boyle	4910 1701
Telstra – Senior Technical Specialist	Mark Schneider	8851 2297
Land and Property Information - Senior Surveyor, Hunter Survey Infrastructure & Geodesy,	Joel Edwards	4925 9983
LANDHOLDERS	Refer to Austar internal contact register	

Appendix B

Timing for BFMP

Development and Actions for

Public Safety Management

Asset	Description	Ownership	Specific Management Plan	Timing for preparation of BFMP	Safety Actions
Public Roads	Sandy Creek Road (sealed)	Cessnock City Council	Public Safety Management Plan BFMP – Cessnock Council	Prior to LWB2 impacting	Erect subsidence warning signage and contact details
	Barraba Lane (unsealed)	Cessnock City Council	Public Safety Management Plan BFMP – Cessnock Council	Prior to LWB1 impacting	Erect subsidence warning signage and contact details
Electricity Transmission Lines	11 kV Transmission Line Local Distribution lines	Ausgrid	BFMP – Ausgrid	Prior to LWB2 impacting	Inspections as per the Ausgrid BFMP
Telecommunications infrastructure	Local Copper Cables	Telstra	BFMP – Telstra	Prior to LWB2 impacting	Inspections as per the Telstra BFMP
Private properties with dwelling in Extraction Plan Area	Features may include: House Water tanks Poultry sheds Rural sheds Dams Private access roads Fences	Smith – 12/1075943 (B04h03) Sternbeck – 18/779060 (B02h01) Duckworth – 2/819222 (A06a) Duckworth – 201/1136015 (A02c) Duffy – 10/1075943 (B04h01) Weston – 214/1044421 (B12h01) Ball & Moore – 213/1044421 (B11h01) McMahon – 211/1044421 (B09h01) Cowley – 212/1044421 (B10h01)	Individual landholder specific BFMPs	Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB1 impacting Prior to LWB1 impacting Prior to LWB1 impacting Prior to LWB1 impacting	As per the individual property BFMP
Private properties without dwelling in Extraction Plan Area	Features may include: Rural sheds Water tanks Dams Groundwater bores Private access roads Fences	Thompson – 1/726039 Thompson – 1292/1113215 Thompson – 1291/1113215 Morphett – 100/255530 Morphett – 13/866231 Crown Lands – 249/755225 Duckworth – 31/849031 Broadfoot – 10/708972 Smith – 114/1013882 Smith – 1/986143 Wright – 11/1075943 Jones – 215/1044421	Individual landholder specific BFMPs	Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB2 impacting Prior to LWB3 impacting Prior to LWB3 impacting Prior to LWB1 impacting Prior to LWB1 impacting Prior to LWB1 impacting Prior to LWB1 impacting Prior to LWB1 impacting	As per the individual property BFMP

Asset	Description	Ownership	Specific Management Plan	Timing for preparation of BFMP	Safety Actions
		Forbes – A/161957		Prior to LWB1 impacting	
Survey Marks	Survey marks: PM 82899 SS 42796	NSW Land and Property Information	BFMP – Survey Control Marks	Prior to LWB2 impacting	Notify the Land and Property Information as the per the Surveyor General’s Directions No. 11 Preservation of Survey Infrastructure