

Proposed Subsidence Monitoring Strategy - Longwall Panels A3 – A5

Stage 2 Longwall mining consists of LW Panels A3 to A5 inclusive and is due to commence at Austar Coalmine in February 2009.

The proposed layout and monitoring details of the grid are outlined below (and on attached plan SUB 1003A and 1003B). The extraction area is beneath a rural area with privately owned lots ranging from 10 to 40 hectares and placement of subsidence marks will have to be in agreement with Land Owners with regard to minimising disturbance to their properties.

Proposed Subsidence Monitoring Program

- 1) Longitudinal Subsidence monitoring lines to be established along the central part of each of the three longwalls with survey mark spacing at nominal 25m intervals. (Lines A3-A5 on attached plan). Final line positioning to cause minimum disturbance to land owners.
- 2) A Cross lines (Cross line 1), with survey marks at 25m centres, located as centrally as possible over the combined area of Longwalls A3-A5 but positioned to cause minimum disturbance to land owners.
 - The grids will be established using “Feno” survey marks at nominal 25m intervals.
 - The grids will be monitored using Total Station techniques to measure full three dimensional movement.
 - Data will be supplied using an excel spreadsheet and the updated subsidence plan (dwg format).
 - The subsidence plan will show the face positions at the time of each survey.
 - Longwall extraction heights will be estimated with regard to LTCC extraction reports.
 - The surface area consists mainly of privately owned rural land. The extent of the proposed monitoring lines crosses some Austar Coal Mine owned land and extends 100 metres into Aberdare State Forest on the northern end of Line A3.
 - Depth of cover ranges between 485m – 535m.
 - At least 4 Residential dwellings over the subsidence area are to be monitored for subsidence where landholders agree to this being conducted.
 - Monitoring frequency as per attached table

Proposed Monitoring Program for Dwellings

Monitoring

A survey monitoring grid consisting of levelled marks at selected suitable locations around the 4 dwellings listed below is to be installed where agreement has been made with the landholder.

The Monitoring grid to be surveyed:

- Prior to mining – initial survey to be completed before Longwall Extraction is within 300 metres of dwelling based on extraction of the panel that is predicted to subside the dwelling by a total greater than 500mm based on the upperbound predictions.
- At completion of mining – by agreement with landholder.
- At other times following mining – as required by the Landholder or the Principal Subsidence Engineer.

Inspection

A pre-mining building inspection will be conducted by a suitably qualified Structural Engineer.

The inspection to be completed:

- Prior to Longwall Extraction coming within 300 metres of the dwelling.
- At completion of mining – by agreement with Landholder.

Mine personnel will also conduct surface inspections of areas that may pose a risk as per the Public Safety Management Plan.

Communication

When mining is within the “Active” subsidence zone Austar Coal Mine will contact the occupier of the dwelling affected by mining on a monthly, or other agreed schedule, to:

- Advise of mining progress.
- Determine the extent of any damage.
- Arrange rectification or remediation works as necessary.

Following mining in the “Active” subsidence zone, communication will be agreed with the occupier.

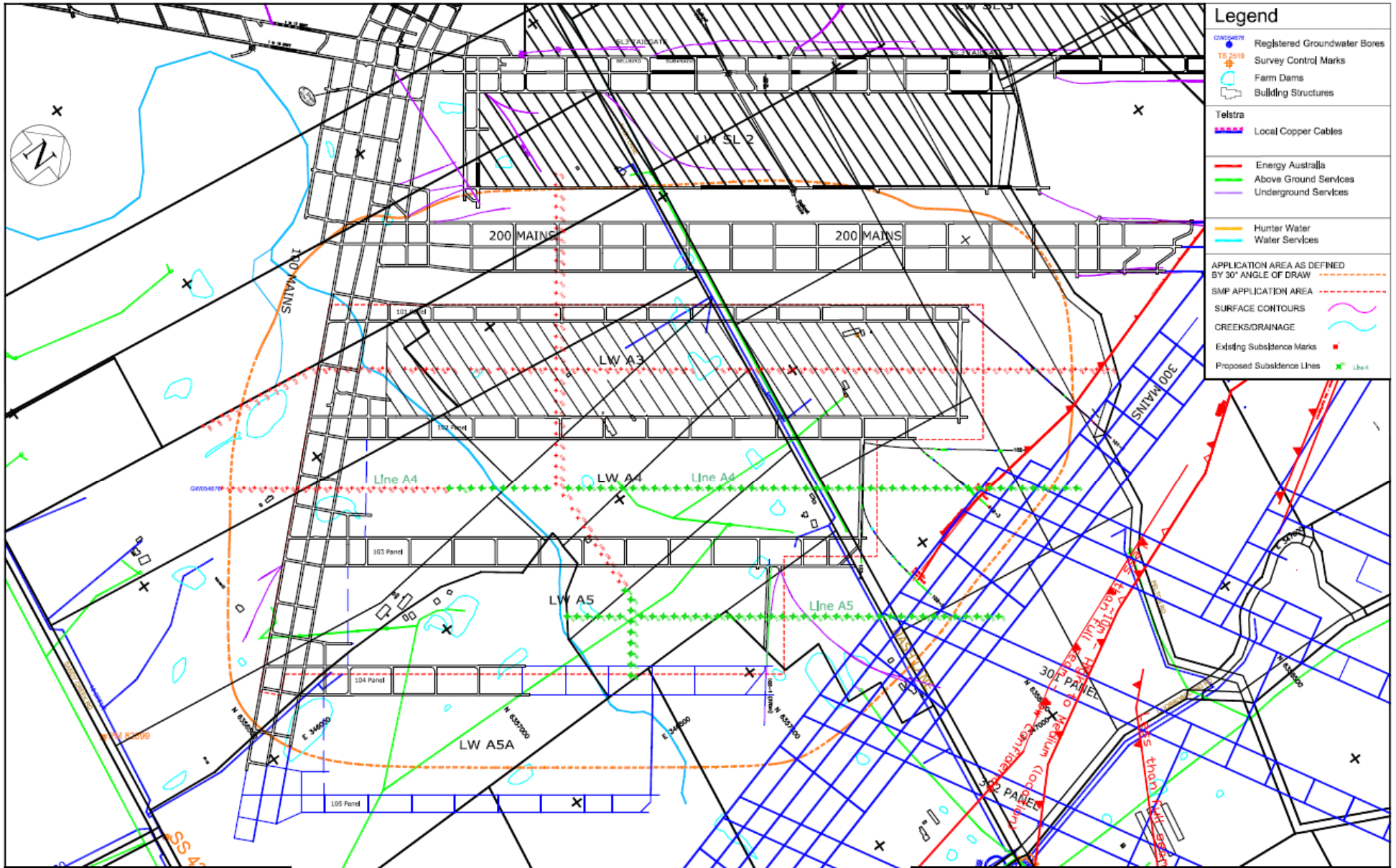
The “Active” subsidence zone is defined as (0.5 x Depth Cover) in advance of the Longwall Face & (1.0 x Depth Cover) behind the Longwall face.

The 4 dwellings listed for Subsidence Monitoring are:

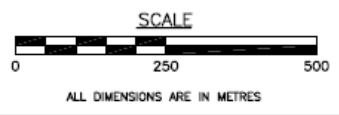
- Lot 96 DP 755254 Owner: B Murray
- Lot 100 DP 255530 Owner: Miss A. Morphett
- Lot 102 DP 255530 Owner: Mr J Reid.
- Lot 104 DP 255530 Owner: Mr S. J. & Mrs C.L. Duff

(Note the Reid and Duff properties are to be acquired by Austar Coal Mine)

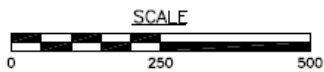
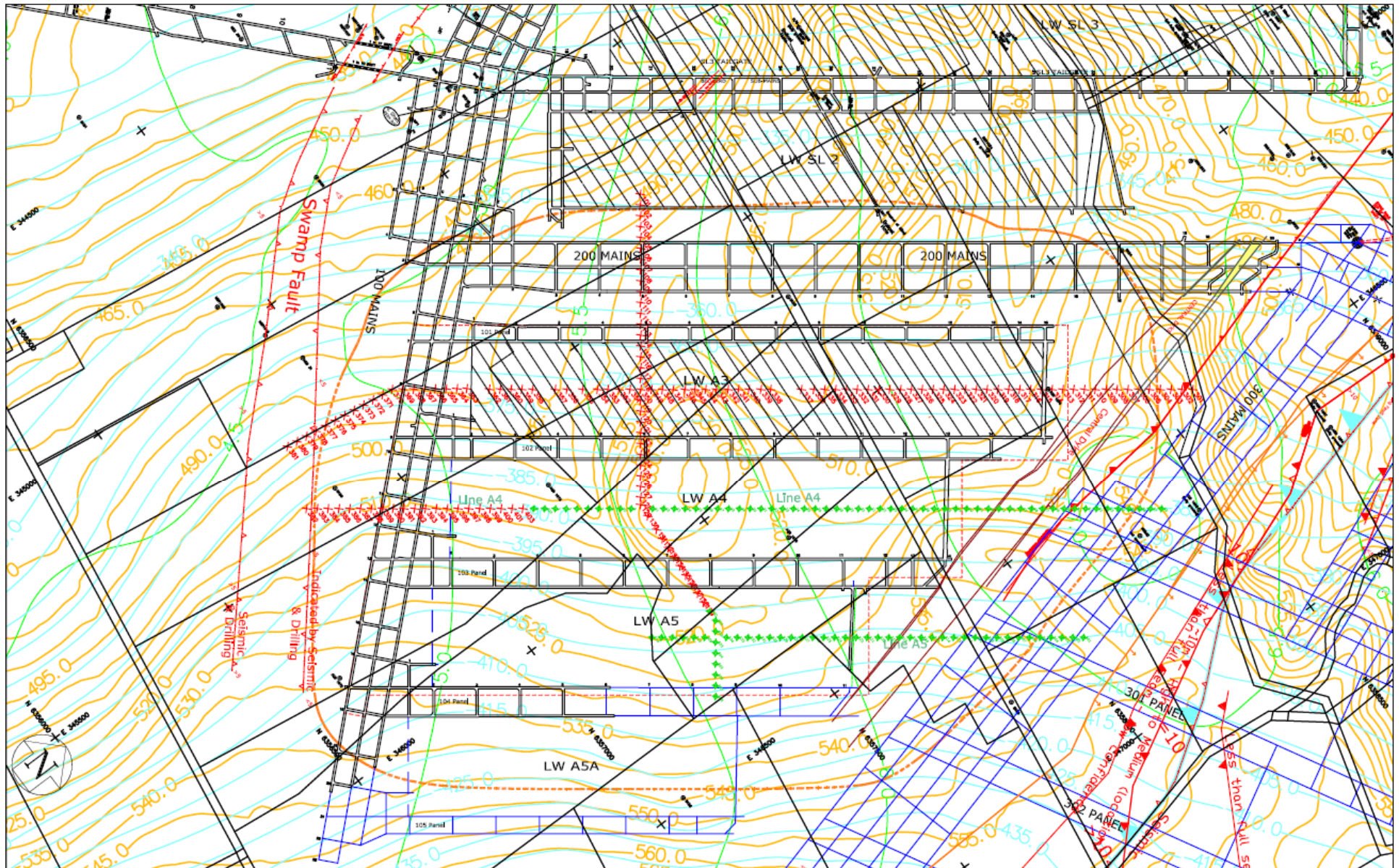
Subsidence Line	Location	Purpose	Survey Marks	Mark Spacing	Monitoring Frequency
Line A3	Longitudinal line located as centrally over A3 Longwall as the surface improvements will allow.	Measure the development of the A3 subsidence then capture the combined subsidence effect of the adjacent longwall blocks.	Feno marks with 600mm spike if no rock.	25 metres	Monthly for the first 300m retreat of Longwalls A3 & A4. Reduction to Quarterly for the remainder of Stage 2 longwall extraction. Additional monitoring as requested by PSE
Line A4	Longitudinal line located as centrally over A4 Longwall as the surface improvements will allow.	Measure the development of the A4 subsidence then capture the combined subsidence effect of the adjacent longwall blocks.	Feno marks with 600mm spike if no rock.	25 metres	Monthly for the first 300m retreat of Longwalls A4 & A5. Reduction to quarterly for 12 months after completion of Stage 2 extraction or till subsidence is complete. Additional monitoring as requested by PSE
Line A5	Longitudinal line located as centrally over A5 Longwall as the surface improvements will allow.	Measure the development of the A5 subsidence & capture the combined subsidence effect of the adjacent longwall blocks.	Feno marks with 600mm spike if no rock.	25 metres	Monthly for the first 300m retreat of Longwall A5 & for a further 3 months. Reduction to quarterly for 12 months after completion of Stage 2 extraction or till subsidence is complete. Additional monitoring as requested by PSE
Cross Line 1	With due regard to minimum disturbance to Land Owners. A Cross line for longwalls A3 and A4	To capture the subsidence profile across the combined Area 2 extraction including Max Subsidence.	Feno marks with 600mm spike if no rock.	25 metres	Pre mining and when LW is at -200m, -100m, 0m, +100m, +200m, +300m from the cross line (-ve = inbye of, +ve = outbye of) Following the completion of extraction, Quarterly monitoring is to continue for 12 months or until Subsidence is complete.



Legend	
	Registered Groundwater Bores
	Survey Control Marks
	Farm Dams
	Building Structures
Telstra	
	Local Copper Cables
	Energy Australia
	Above Ground Services
	Underground Services
	Hunter Water
	Water Services
APPLICATION AREA AS DEFINED BY 30° ANGLE OF DRAW	
SMP APPLICATION AREA	
SURFACE CONTOURS	
CREEKS/DRAINAGE	
	Existing Subsidence Marks
	Proposed Subsidence Lines



DESIGN	D. JOLLIFFE	AUSTAR MINE		YANCOAL AUSTRALIA PTY LTD
DATE	8/7/2010	TITLE	LONGWALLS A3 to A5 SUBSIDENCE PLAN SURFACE FEATURES	
CHECKED		SCALE	1:14000	DRAWING No. SUB1003A
APPROVED		REV		AUSTAR COALMINE



ALL DIMENSIONS ARE IN METRES

LEGEND

- 138 APPLICATION AREA
- OVERBURDEN THICKNESS ISOPACHS
- SEAM THICKNESS ISOPACHS
- EXPECTED STRUCTURES
- SEAM FLOOR CONTOURS
- LW's A3, A4 and A5 PROPOSED WORKINGS

- 450
- 3.5
- 9710

- BOREHOLE
- EXISTING WORKINGS

- Existing Subsidence Marks
- Proposed Subsidence Lines

DRAWN	D. JOLLIFFE
DATE	9/07/2010
CHECKED	
APPROVED	

AUSTAR COAL MINE

YANCOAL AUSTRALIA
PTY LTD

TITLE	LONGWALLS A3 to A5 SMP APPLICATION GEOLOGICAL & SEAM DATA	
SCALE	1:14000	DRAWING No. SUB 1003B



AUSTAR COALMINE