



5 December 2024

Akash Nafizul  
Team Leader Assets  
Wollondilly Shire Council

**Amendment No. 2 to Subsidence Management Plan for Wollondilly Shire Council infrastructure due to shortening of LW S4A and inclusion of Bargo Cemetery**

Dear Richard,

Please be advised that a minor amendment can be made to the Management Plan, which is titled *MSEC1193-03 SIMEC Mining – Tahmoor South Longwalls S1A to S6A – Management Plan for potential impacts to Wollondilly Shire Council Infrastructure, Revision C*.

***Shortening of LW S4A***

Tahmoor Coal has shortened LW S4A by approximately 104 metres at the commencing end, as shown in Drawing No. MSEC1446-01. The effect of the change is to very slightly reduce the amount and extent of subsidence that will be experienced along Remembrance Drive and Charlies Point Road, as shown in Drawing No. MSEC1446-07.

The Management Plan documents the commencement of monitoring measures for LW S4A, most of which are defined based on a length of extraction. As LW S4A has been shortened at the commencing end, the commencing lengths of extraction for monitoring activities requires a change.

Based on the above, Tahmoor Coal has reviewed the risk control procedures in Table 4.1 of the Management Plan with respect to LW S4A. It can be seen that the proposed changes effectively bring forward the planned timing of surveys and inspections along Remembrance Drive. Table 4.1 has also been updated with respect to the contractor that is responsible for conducting visual inspections. Tahmoor Coal is currently conducting the inspections in-house and may appoint a contractor in future.

Please also see attached revised Drawing No. MSEC1193-03-01, Revision E, which shows the location of Council assets relative to the mine layout, and Drawing No. MSEC1193-01-01, Revision C, which shows the location of subsidence monitoring locations.

***The Bargo Cemetery***

The Bargo Cemetery is managed by Wollondilly Shire Council. It is located at the northern end of Great Southern Road directly above the south-eastern ends of the LWs S4A and S5A, as shown in Figure 1. As the Cemetery is located above the ends of the longwall panels, it is predicted to experience vertical subsidence between 20 mm and 50 mm due to the extraction of LW S4A, as shown in Drawing No. MSEC1446-07. The majority of predicted subsidence movements are expected to occur during the extraction of LW S5A. As shown in Drawing No. MSEC1446-08, the Cemetery is predicted to experience vertical subsidence between 80 mm and 1100 mm of vertical subsidence due to the extraction of LWs S1A to S6A. Non-conventional subsidence movements may also develop at the cemetery.

---

**SIMEC MINING**

Tahmoor Coal Pty Limited ABN 97 076 663 968  
PO Box 100, Tahmoor, NSW 2573, Australia

T: +61 (02) 46 400 100  
E: david.talbert@simecgfg.com  
simecgfg.com



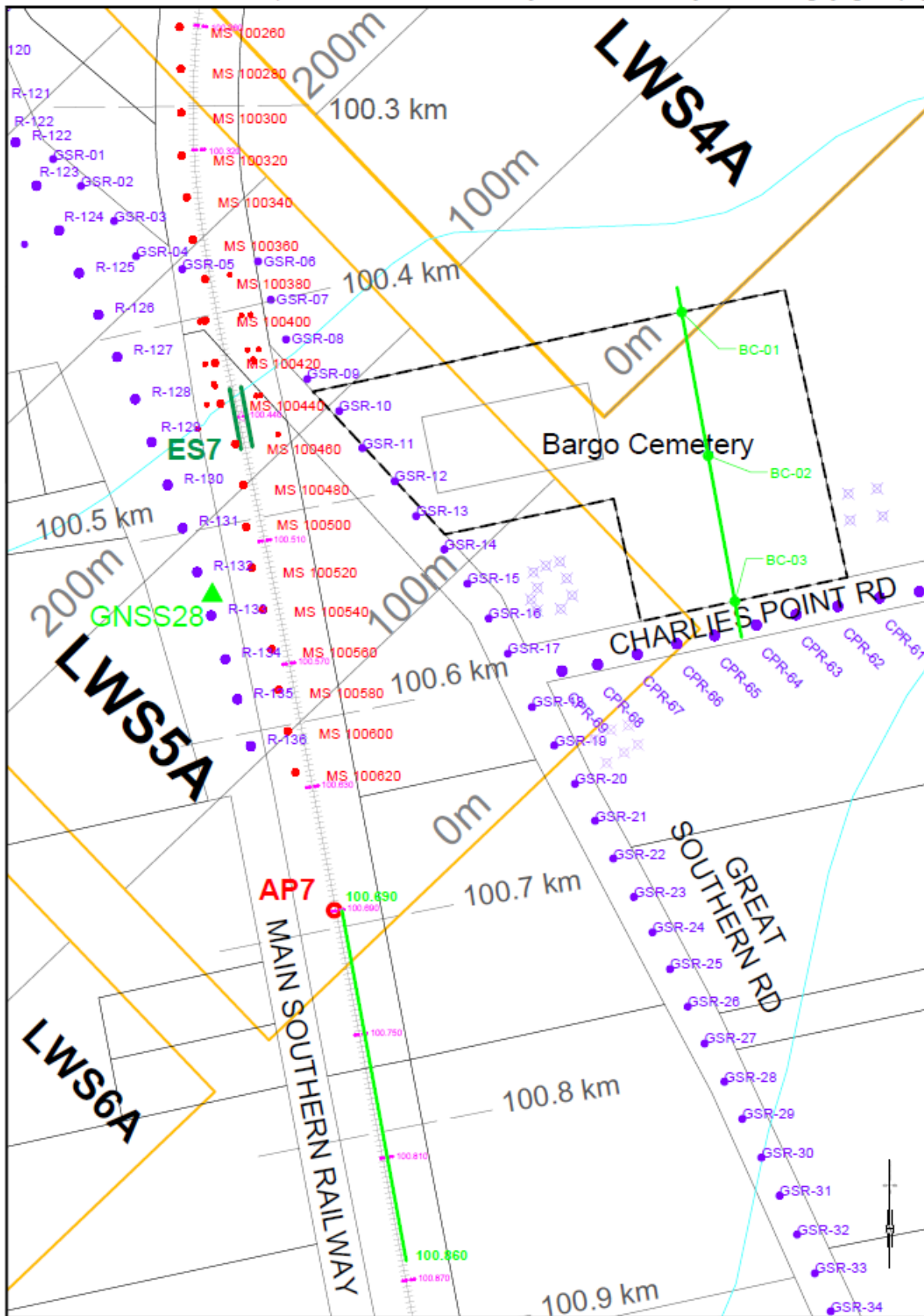


Figure 1 – Bargo Cemetery

The cemetery is listed as an item of Heritage Significance and was investigated by heritage consultant EMM, whose findings were included in Tahmoor Coal's Heritage Management Plan (Document No. TAH-HSEC-00364, Version 2, 2022).

Bargo Cemetery is a small cemetery that has been in continual use since 1935. The cemetery is surrounded by a plantation of mature trees on Great Southern Road's north end adjacent to Charlies Point Road. The grounds are grassed and well kept. Burial plots are separated into 'Roman Catholic' and 'Church of England' denominations while a memorial garden and Columbarium Wall are used to inter ashes. There are three unused lots at the cemetery. There are forty-four known burials in the Roman Catholic section and one hundred and fifty-three in the Church of England section, with some plots containing double and triple burials. A cemetery plan is included as Figure 2.

EMM personnel Pamela Chauvel and Anthony Dakhoul conducted baseline recording of Bargo Cemetery on the 15 and 16 of December 2021 using recording sheets and a single lens reflex (DSLR) camera. Sample photographs of the grave sites are shown in Plates 1 to 4.

Results from the baseline assessment revealed that the cemetery is in a relatively good condition, but some individual graves are dilapidated, suffering structural and aesthetic damage. The photographs and recording sheets will be used as a baseline record for monitoring during extraction of LW S1A – S6A.

Many of the burials consist of ground-level ledgers or ledgers on a base enclosed by squared or bevelled kerbs with posts at the corners. The tombstones are generally of low height. The most prominent tombstones are rectangular or capped with a segmental/basket arch or a simple wedged shaped plaque placed within the kerbs of the burial. Some of the burials are decorated ornately tiles while others consist of a simple Latin cross at the top to mark the grave.

Due to their small sizes, the sites are expected to accommodate normal conventional subsidence movements. Impacts may occur, however, if substantial non-conventional movements developed at the cemetery. This may result in cracking of the surrounds or displacement of tombstones relative to the graves. Non-conventional movements are localised in nature and should substantial non-conventional movements develop at the cemetery, it is extremely unlikely that they will affect every grave site. If minor impacts to the grave monuments were to occur, it is unlikely that once rectified, these will affect the heritage values of the site.

Tahmoor Coal and Wollondilly Shire Council have identified controls that will manage potential impacts on the Cemetery during and after the extraction of LWs S1A to S6A.

- Baseline recording and visual assessment by heritage consultant;
- Pre-mining visual inspection;
- Weekly visual inspections during periods of active subsidence;
- Ground surveys during periods of active subsidence as per the monitoring plan shown in Figure 1:
  - 2D survey along Charlies Point Road and Great Southern Road
  - Local 3D survey of survey marks around the Cemetery, including Pegs GSR-09 to GSR-17 and Pegs BC-01, BC-02 and BC-03. This survey will measure changes in subsidence and heights across the width and length of the Cemetery without placing pegs within the Cemetery itself.
  - Pegs BC-01 to BC-03 have also been located to provide subsidence data to assist with planning for managing potential impacts on the Main Southern Railway during the extraction of LW S5A. The final locations of Pegs BC-01 to BC-03 will be determined by the surveyor based on lines of sight.
- Visual inspection by a heritage consultant at the completion of LW S6A.
- In the event that impacts occur to the Cemetery, repair in accordance with recommendations from the heritage consultant and Wollondilly Shire Council.



SITE PLAN	
SCALE	NTS
AD/TC	
PRODUCT NO.	E2.1015
VERSION	1.0
DRAWING NO.	001

**PROJECT**  
TARMOR MINE - TARMOR SOUTH LONGWALLS 100A-100A  
BARGO CEMETERY

**TITLE**  
BARGO CEMETERY SITE PLAN &  
PLOT LOCATION PLAN

**CLIENT**  
SIMEC

**DATE**  
18/04/2022

**VERSION**  
I.C

**DESCRIPTION**  
FINAL

**EMM CONSULTANTS PTY LTD**  
Ground floor, 20 Chardon Street  
St Leonards NSW 2005  
St Leonards NSW 1590  
T 02 9493 9500  
F info@emmconsulting.com.au  
www.emmconsulting.com.au



Figure 2 – Bargo Cemetery Plan



*Photograph courtesy EMM*

**Plate 1** Grave ID R-C48. An open book low monument made of granite, gravel and concrete in good condition.



*Photograph courtesy EMM*

**Plate 2** Grave ID A-K7. A mound grave made up of crushed stone marked with a wooden Latin cross.



*Photograph courtesy EMM*

**Plate 3** Grave ID A-A6. Low monument, plain kerb grave with a commemorative plaque made of concrete and metal.



*Photograph courtesy EMM*

**Plate 4** Grave ID A-G17 & A-G18. Low monument plain kerb grave with a tablet headstone made of granite and white and brown ceramic tiles.



### **Longwall S7A**

On a separate matter, Tahmoor Coal has submitted a Modification to the development consent to extract LW S7A to the side of LW S6A. The proposed LW S7A will extract directly beneath a section of Yarran Road but result in very minor additional subsidence along Remembrance Drive. Whilst LW S7A has been included in Drawings Nos. MSEC1193-03-01 and MSEC1193-01-01, Tahmoor Coal cannot extract the longwall until the Department of Planning, Housing and Infrastructure approves the proposed modification to Tahmoor Coal's development consent. Tahmoor Coal proposes to seek approval from Council to amend the Management Plan to include LW S7A at a later time.

Tahmoor Coal welcomes any feedback from Wollondilly Shire Council regarding the planned changes relating to the shortening of LW S4A and the Bargo Cemetery. Please note that LW S4A is planned to commence in January 2025.

Yours Faithfully

*Ross Barber*

Ross Barber  
**Project Manager Subsidence**  
**SIMEC Mining**

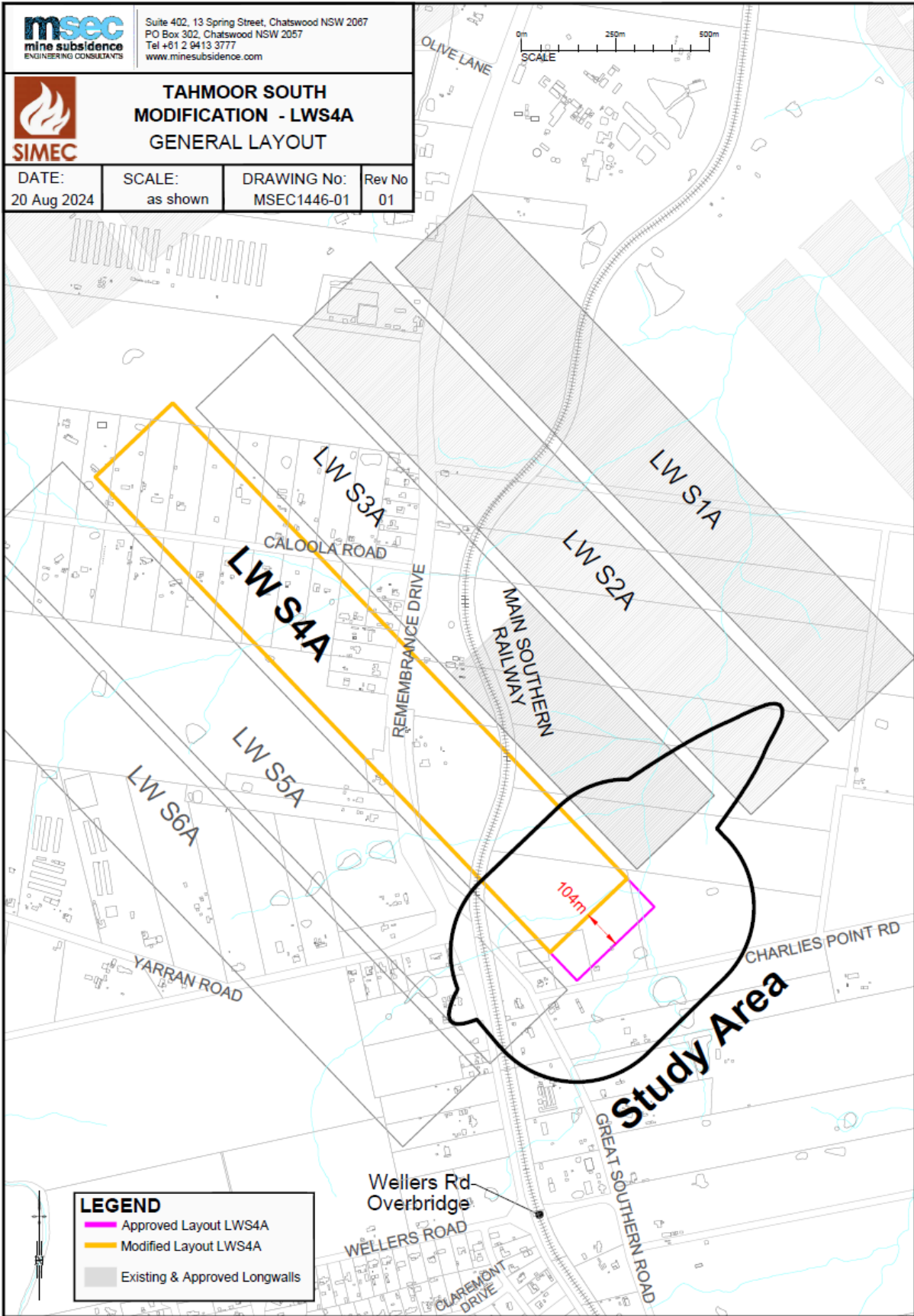
CC Ray Ramage, Principal Subsidence Engineer, Resource Regulator

Encl

Amended Table 4.1 – Risk Control Procedures (Amended for LW S4A)

Drawing No. MSEC1193-01-01, Revision C, 16 October 2024

Drawing No. MSEC1193-03-01, Revision E, 23 October 2024






Suite 402, 13 Spring Street, Chatswood NSW 2067  
 PO Box 302, Chatswood NSW 2057  
 Tel +61 2 9413 3777  
 www.minesubsidence.com



**TAHMOOR SOUTH  
 MODIFICATION - LWS4A  
 GENERAL LAYOUT**



DATE: 20 Aug 2024	SCALE: as shown	DRAWING No: MSEC1446-01	Rev No 01
----------------------	--------------------	----------------------------	--------------

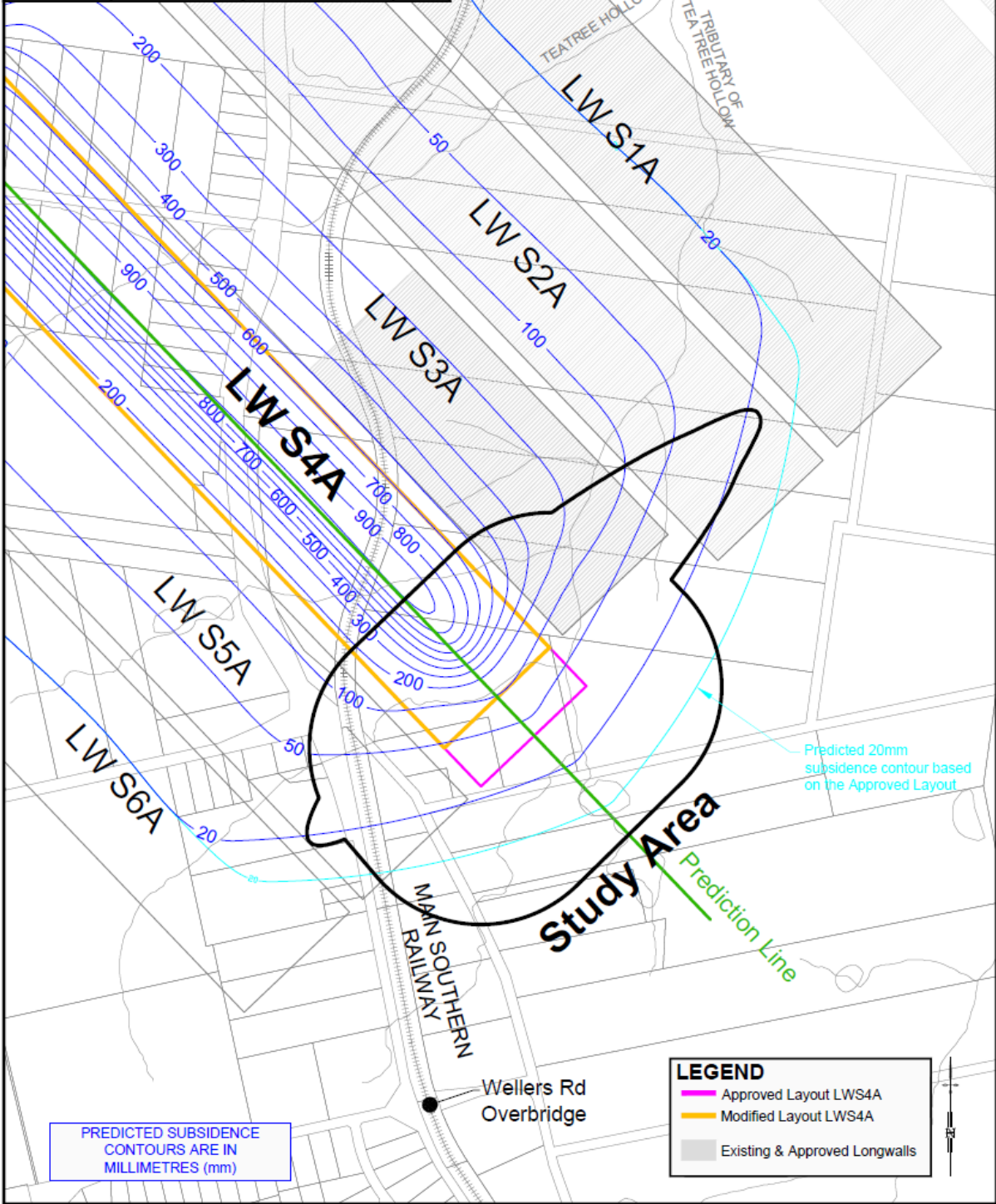
**LEGEND**

	Approved Layout LWS4A
	Modified Layout LWS4A
	Existing & Approved Longwalls

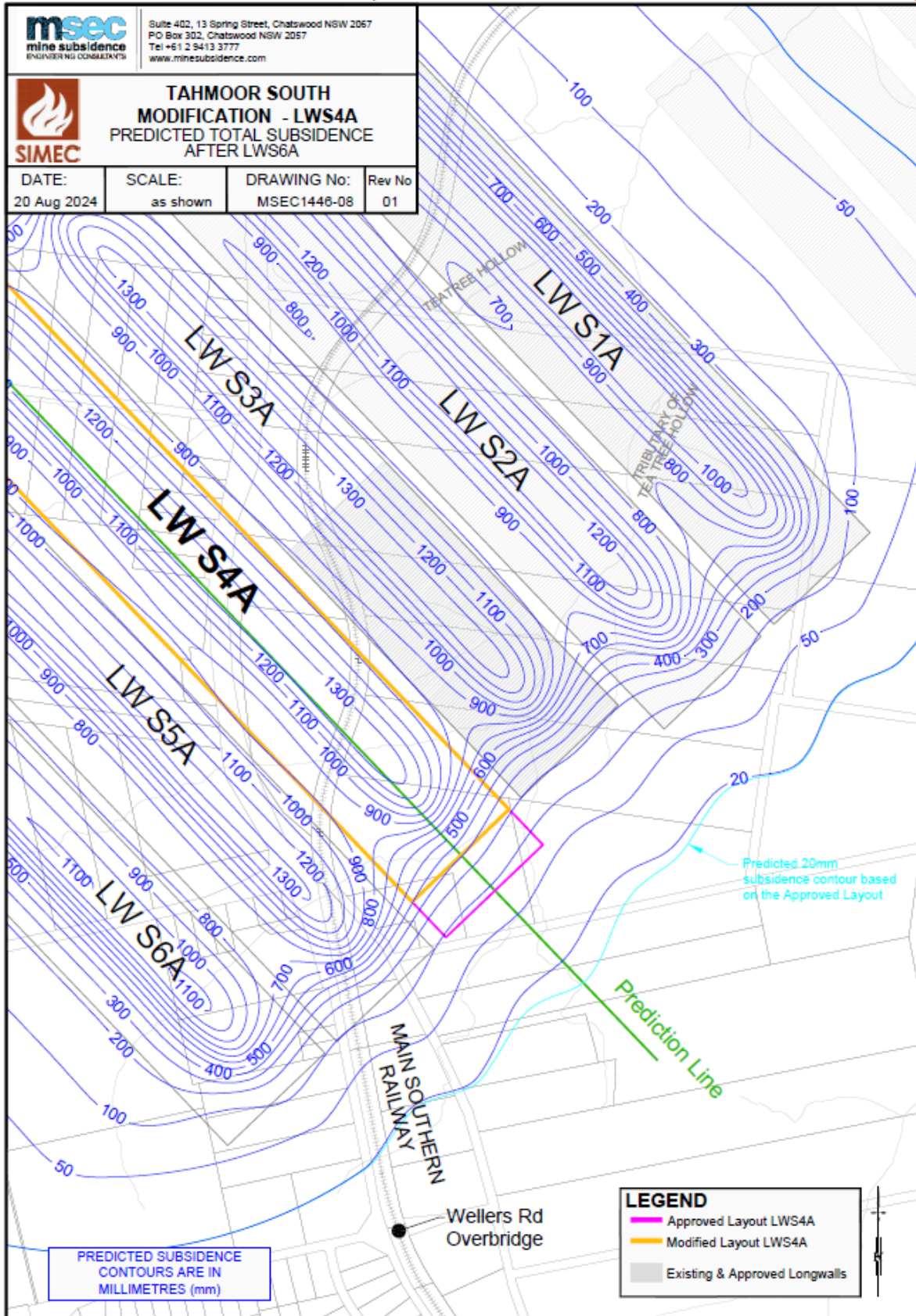
Drawing No. MSEC1446-01



		Suite 402, 13 Spring Street, Chatswood NSW 2067 PO Box 302, Chatswood NSW 2057 Tel +61 2 9413 3777 www.minesubsidence.com	
		<b>TAHMOOR SOUTH                  MODIFICATION - LWS4A                  PREDICTED INCREMENTAL                  SUBSIDENCE DUE TO LWS4A</b>	
DATE:	SCALE:	DRAWING No:	Rev No
20 Aug 2024	as shown	MSEC1446-07	01



Drawing No. MSEC1446-07



Drawing No. MSEC1446-08

Revised Table 4.1: Risk Control Procedures LW S1A-S6A (amended for LW S4A in blue)

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
Local roads	Cracking, heaving or stepping of the pavements or unsealed surfaces	Medium / Low	None	Conduct geotechnical assessment of Remembrance Driveway embankments and cutting	Complete	Douglas Partners
				Continuous GNSS monitoring as shown in Drawing No. MSEC1193-01-01	GNSS units installed Continuous readings, with data averaged over 24 hours and recorded once per day until end of LW S6A.	Tahmoor Coal (Unit Zero)
				2D survey line along Tahmoor Mine property boundary	Pegs installed. Baseline survey prior to commencement of LW S1A. Monthly survey during LW S1A between 200m and 1300m extraction, and continue if ongoing adverse movements are observed. End of LW S1A.	Tahmoor Coal (SMEC)
				Conduct 2D / Absolute 3D surveys along Main Southern Railway in accordance with Railway Management Plan	Monthly 3D / Weekly 2D surveys for pegs within active subsidence zone during LWs S1A to S6A	Tahmoor Coal (SRS)
				Conduct 2D survey along Charlies Point Road	Pegs installed from eastern end survey line to bend at No. 80 Charlies Point Road. Baseline survey prior to start of LW S1A. Extend line and baseline survey to intersection of Great Southern Road prior to start of LW S2A. Monthly survey during LWs S1A-S5A between 200m and 800m extraction, and continue if ongoing adverse movements are observed. End of LW S1A-S6A.	Tahmoor Coal (SMEC)
				Conduct 2D / Absolute 3D surveys along Remembrance Drive	Pegs installed from northern boundary of Tahmoor Mine site to Caloola Road. Baseline survey prior to 900m extraction of LW S1A. Extend line and baseline survey pegs within predicted limit of incremental subsidence of each active LW, prior to active LW face approaching within 600 metres of survey line. Monthly 3D / Weekly 2D surveys for pegs within active subsidence zone commencing as per below: LW S1A: start after 1300m extraction LW S2A: start after 900m extraction LW S3A: start after 500m extraction LW S4A: start after <del>300</del> 200m extraction LW S5A: start after 200m extraction LW S6A: start after 200m extraction Continue surveys until outside active subsidence zone or one month after end of LW and continue further if ongoing adverse movements are observed. End of LW S1A-S6A.	Tahmoor Coal (SMEC)
				Conduct 2D surveys along Caloola Road	Pegs installed. Baseline survey prior to 900m extraction of LW S1A.. Survey at end of LW S1A.. Weekly 2D surveys for pegs within active subsidence zone commencing as per below: LW S2A: start after 900m extraction LW S3A: start after 800m extraction LW S4A: start after <del>900</del> 800m extraction LW S5A: start after 900m extraction LW S6A: start after 900m extraction Continue surveys until outside active subsidence zone or one month after end of LW and continue further if ongoing adverse movements are observed. End of LW S2A-S6A.	Tahmoor Coal (SMEC)
				Conduct 2D surveys along Yarran Road	Install and baseline prior to start of LW S3A. Survey at end of LW S3A. Weekly 2D surveys for pegs within active subsidence zone commencing as per below: LW S4A: start after 200m extraction LW S5A: start after 200m extraction LW S6A: start after 200m extraction Continue if ongoing adverse movements are observed. End of LW S4A-S6A.	Tahmoor Coal (SMEC)

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
				Conduct 2D surveys along Great Southern Road	Install and baseline prior to start of LW S3A. Survey at end of LW S3A. Weekly 2D surveys for pegs within active subsidence zone commencing as per below: LW S4A: start after 200m extraction LW S5A: start after 200m extraction LW S6A: start after 200m extraction Continue if ongoing adverse movements are observed. End of LW S4A-S6A.	Tahmoor Coal (SMEC)
				Conduct Local 3D / Absolute 3D survey of Remembrance Drive Embankment over Teatree Hollow at Caloola Drive (RE4) as per Drawing No. MSEC1193-03-07.	Install and baseline survey prior to LW S2A. Monthly 3D / Weekly 2D surveys within active subsidence zone commencing as per below: LW S2A: start after 900m extraction LW S3A: start after 800m extraction LW S4A: start after 900800m extraction LW S5A: start after 900m extraction Continue if ongoing adverse movements are observed. End of LW S2A-S6A.	Tahmoor Coal (SMEC)
				Conduct Local 3D / Absolute 3D survey of Remembrance Drive Embankment over Tributary to Teatree Hollow north of Yarran Road (RE3) as per Drawing No. MSEC1193-03-08.	Install and baseline survey prior to LW S3A. 3D Survey at end of LW S3A. Monthly 3D / Weekly 2D surveys within active subsidence zone commencing as per below: LW S4A: start after 400300m extraction LW S5A: start after 400m extraction LW S6A: start after 400m extraction Continue if ongoing adverse movements are observed. End of LW S4A-S6A.	Tahmoor Coal (SMEC)
				Conduct Local 3D / Absolute 3D survey of Remembrance Drive Embankment over Tributary to Teatree Hollow south of Yarran Road (RE2) as per Drawing No. MSEC1193-03-09.	Install and baseline survey prior to LW S3A. 3D Survey at end of LW S3A. Monthly 3D / Weekly 2D surveys within active subsidence zone commencing as per below: LW S4A: start after 200m extraction LW S5A: start after 200m extraction LW S6A: start after 200m extraction Continue if ongoing adverse movements are observed. End of LW S4A-S6A.	Tahmoor Coal (SMEC)
				Conduct Local 3D / Absolute 3D survey of Remembrance Drive Embankment at intersection of Wellers Road (RE1) as per Drawing No. MSEC1193-03-10.	Install and baseline survey prior to LW S5A. 3D Survey at end of LW S5A. Monthly 3D after 200m extraction of LW S6A until 800m of extraction and continue if ongoing adverse movements are observed. End of LW S6A.	Tahmoor Coal (SMEC)
				Conduct Local 3D / Absolute 3D survey of Remembrance Drive Cutting (RC1) as per Drawing No. MSEC1193-03-11.	Install and baseline survey prior to LW S2A. 3D Survey at end of LW S2A. Monthly 3D / Weekly 2D surveys within active subsidence zone commencing as per below: LW S3A: start after 500m extraction LW S4A: start after 400m extraction LW S5A: start after 500400m extraction LW S6A: start after 500m extraction Continue if ongoing adverse movements are observed. End of LW S3A-S6A.	Tahmoor Coal (SMEC)
				Detailed visual inspections of local roads, culverts, embankments and cuttings	Weekly for areas within the active subsidence zone during LWs S1A to S6A and continue if ongoing adverse movements or impacts are observed until one month after the extraction of each LW.	Tahmoor Coal (BIS)
				Detailed visual inspections by geotechnical engineer along Remembrance Driveway embankments and cutting	Monthly during periods of active subsidence of LW S2A to S6A, and continue if ongoing adverse movements are observed.	Douglas Partners
				Prepare traffic management plan for installation and measurement of survey pegs to satisfaction of WSC	Prior to start of LW S1A	Tahmoor Coal
				Prepare traffic management plan to manage traffic along Remembrance Drive in the event that mining-induced damage requires repair	Prior to start of LW S1A	Tahmoor Coal
				Apply to Council and obtain an approved Road Occupancy Permit under Section 138 of the Roads Act prior to conducting works in the road reserve, including survey.	Complete	Tahmoor Coal

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
				Analyse and report results to IMG	Weekly during LW S1A-S6A after the length of the extraction exceeds 200 metres.	Tahmoor Coal
				IMG discuss results and consider whether any additional management measures are required	Weekly during LW S1A-S6A after the length of the extraction exceeds 200 metres.	Tahmoor Coal
Local roads	Cracking, heaving or stepping of the pavements or unsealed surfaces	Medium / Low	Impacts occur to pavement	Notify all stakeholders, including WSC, Tahmoor Coal, Subsidence Advisory NSW and Resources Regulator	Within one week	Tahmoor Coal / WSC
				IMG, Tahmoor Coal and WSC meet to decide whether any additional management measures are required, including: - increase in frequency of surveys and visual inspections - increase in monitoring reporting - repair pavement in accordance with Traffic Management Plans	As required (target within 48 hours)	Tahmoor Coal / WSC
				Repair road in consultation with WSC	As required	Tahmoor Coal
			A hazard has been identified that involves potential serious injury or illness to a person or persons on public property or, or WSC property and cannot be controlled	IMG, Tahmoor Coal and WSC meet to decide whether any additional management measures are required, including: - emergency evacuation of hazardous area - demarcation to prevent people entering hazardous area, including diversion of traffic via Traffic Management Plan	Immediately	Tahmoor Coal / WSC
			Notify SRG of trigger exceedence and any management decisions undertaken (incl Subsidence Advisory NSW, Resources Regulator)	Within 24 hours of decision	Tahmoor Coal	
Drainage culverts	Cracking or spalling	Low	None	Conduct baseline CCTV investigations of culverts within the Study Area	Prior to each culvert experiencing active subsidence	Tahmoor Coal
				Conduct Austroads Level 1 inspection of culverts within the Study Area	Prior to each culvert experiencing active subsidence	Tahmoor Coal
				Conduct survey of levels at inlet and outlet of culverts within the Study Area	Prior to each culvert experiencing active subsidence End of LW S6A	Tahmoor Coal (SMEC)
				Conduct ground surveys along streets, which cross over the culverts	Refer local roads section	Tahmoor Coal (SMEC)
				Conduct visual inspection for impacts	Refer local roads section	Tahmoor Coal (SMEC)
			Impacts occur	Notify all stakeholders, including WSC, Tahmoor Coal, Subsidence Advisory NSW and Resources Regulator	Within one week	Tahmoor Coal / WSC
				Repair culvert in consultation with WSC	As required	Tahmoor Coal
Causeway on Government Drive	Cracking or spalling of concrete pavement or culvert	Low	None	Conduct ground survey along causeway	Install and baseline survey by Nov 2022. Survey at end of LWs S1A, S2A and S3A Monthly surveys between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed. Survey at end of LW S4A-S6A.	Tahmoor Coal (SMEC)
				Visual inspection of causeway	Baseline inspection by Nov 2022 Inspect at end of LWs S1A, S2A and S3A Monthly inspections between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed. Inspect at end of LW S4A-S6A.	Tahmoor Coal (BIS)
			Impacts occur	Notify all stakeholders, including WSC, Tahmoor Coal, Subsidence Advisory NSW and Resources Regulator	Within one week	Tahmoor Coal / WSC
				Repair causeway in consultation with WSC	As required	Tahmoor Coal

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
Remembrance Drive embankments	Displacement / failure of embankment leading to loss of support of pavement	Low	None	Ensure culverts are clear and free flowing	Prior to influence of LWs S1A to S6A and during periods of active subsidence	Tahmoor Coal
				Conduct ground surveys along crest and toe of both sides of Remembrance Drive embankments	Refer local roads section	Tahmoor Coal (SMEC)
				Conduct visual inspection of embankments and culverts	Refer local roads section	Tahmoor Coal (SMEC)
			<b>Level 1</b> Change in distance across crest exceeds 25 mm Rate of change in distance across crest is greater than 10 mm in a week Visual signs of distress to embankment, such as tension crack along edge of embankment / access road Visual signs of distress to dam walls upstream of Remembrance Drive	Notify IMG	Within 24 hours	Tahmoor Coal
				Undertake additional geotechnical inspection and appraisal	Within 24 hours	Douglas Partners
				IMG meet and review latest monitoring information for the embankment, culvert and the pavement, inspections by geotechnical engineer and building inspector, and latest weather forecasts. IMG consider whether any additional management measures are required, which may include: - fill and seal cracks and/or regrade drainage line - increase monitoring frequency and reporting procedures - arrange additional monitoring locations to monitor potential displacement of embankment material - lower water level of dam(s) upstream of embankment (if relevant) - install variable message signs in preparation of potential traffic management measures	Within 24 hours	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within 24 hours if tension crack observed Otherwise within one week	Tahmoor Coal
			<b>Level 2</b> Tension crack observed along the embankment shoulder, or slide in the crest of the embankment	Notify IMG and WSC.	Immediately	Tahmoor Coal
				WSC inspection to consider and implement emergency traffic management measures, if required	Immediately	Tahmoor Coal / WSC
				Undertake additional geotechnical inspection and appraisal	As soon as reasonably practicable	Douglas Partners
				IMG meet and review latest monitoring information for the embankment, culvert and the pavement, inspections by geotechnical engineer and building inspector, and latest weather forecasts. IMG consider whether any additional management measures are required, which may include: - introduce temporary speed restriction or temporarily close affected shoulder and/or travel lane - place permanent or temporary fill / rock spall to the base of the embankment - increase monitoring frequency and reporting procedures - arrange additional monitoring locations to monitor potential displacement of embankment material	As soon as reasonably practicable	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO	Within 24 hours	Tahmoor Coal
			<b>Level 3</b> Tension crack observed across the pavement shoulder and travel lane(s), or slump or depression appears in the pavement	Notify IMG and WSC.	Immediately	Tahmoor Coal
				WSC inspection to consider and implement emergency traffic management measures, if required	Immediately	Tahmoor Coal / WSC
				Undertake additional geotechnical inspection and appraisal	As soon as reasonably practicable	Douglas Partners
				IMG meet and review latest monitoring information for the embankment, culvert and the pavement, inspections by geotechnical engineer and building inspector, and latest weather forecasts. IMG consider whether any additional management measures are required, which may include: - introduce temporary speed restriction or temporarily close affected shoulder and/or travel lane - place permanent or temporary fill / rock spall to the base of the embankment - resurface pavement to restore ride quality along travel lanes - provide additional forms of support under the pavement as may be appropriate or feasible - increase monitoring frequency and reporting procedures - arrange additional monitoring locations to monitor potential displacement of embankment material	As soon as reasonably practicable	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO	Within 24 hours	Tahmoor Coal

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
Remembrance Drive cutting	Blockage of drainage lines or deformation of pavement in the cutting	Low	None	Scale the cutting batter slopes to remove loose debris and rocks Clear the cutting drainage lines and maintain the drainage lines to ensure that they remain free of debris and vegetation during mining	Prior to LW S2A and as required	Tahmoor Coal
				Conduct ground surveys along crest and toe of both sides of Remembrance Drive cutting	Refer local roads section	Tahmoor Coal (SMEC)
				Conduct visual inspection of cutting	Refer local roads section	Tahmoor Coal (SMEC)
			Closure across cutting exceeds 20 mm	Notify IMG	Within one week	MSEC
				IMG meet and consider whether any additional management measures are required, which may include: - undertake geotechnical engineering inspection - increase monitoring frequency and reporting procedures	Within one week	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within one week	Tahmoor Coal
			Instability observed to cuttings	Notify IMG and WSC.	Immediately	Tahmoor Coal
				IMG meet and consider whether any additional management measures are required, which may include: - undertake geotechnical engineering inspection - increase monitoring frequency and reporting procedures - clear debris from drainage lines at base of cutting faces	Within 24 hours	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within one week	Tahmoor Coal
			Bridges	Loss of serviceability of Bridges	Low	None
Geological inspection and mapping at Bargo River Road Bridge	Complete	Newcastle Geotech				
Review of monitoring measures for Rockford Road Bridge and Arina Road Bridge and implement, if required	Prior to start of LW S1A (complete)	Bridge Technical Committee / Tahmoor Coal				
Review by Bridge Technical Committee and modify planned management and monitoring measures for Bargo River Bridge and Kader Street Bridge and review planned management measures for Rockford Road Bridge and Arina Road Bridge and implement, if required	Prior to 800 m of extraction of LW S1A	Bridge Technical Committee / Tahmoor Coal				
Brief WSC on planned management and monitoring measures for Bargo River Bridge and Kader Street Bridge and review planned management measures for Rockford Road Bridge and Arina Road Bridge	Prior to 800 m of extraction of LW S1A	Tahmoor Coal				
Conduct Local 3D survey of structure and ground marks on the Bargo River Road Bridge as per Drawing No. MSEC1193-03-03, with one mark on the Bridge to be surveyed in Absolute 3D	Install and baseline survey prior to LW S1A. Monthly surveys between 1000m and one month after end of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A-S3A.	Tahmoor Coal (SRS)				
Visual inspection of Bargo River Road Bridge	Baseline inspection prior to LW S1A. Monthly inspections between 1000m and one month after end of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A to S3A	Tahmoor Coal (BIS)				
Conduct Local 3D survey of structure and ground marks on the Rockford Road Bridge as per Drawing No. MSEC1193-03-04, with one mark on the Bridge to be surveyed in Absolute 3D	Install and baseline survey prior to LW S1A. Monthly surveys between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A-S3A.	Tahmoor Coal (SRS)				
Measure gaps between parapet kerbs and abutments of the Rockford Road Bridge	Install and baseline survey prior to LW S1A. Monthly surveys between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A-S3A.	Tahmoor Coal (SRS)				
Visual inspection of Rockford Road Bridge	Baseline inspection prior to LW S1A. Monthly inspections between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A to S3A	Tahmoor Coal (BIS)				
Conduct Local 3D survey of structure and ground marks on the Arina Road Bridge as per Drawing No. MSEC1193-03-05, with one mark on the Bridge to be surveyed in Absolute 3D	Install and baseline survey prior to LW S1A. Monthly surveys between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A-S3A.	Tahmoor Coal (SRS)				

INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
				Measure gaps between vehicle kerbs and abutments of the Arina Road Bridge	Install and baseline survey prior to LW S1A. Monthly surveys between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A-S3A.	Tahmoor Coal (SRS)
				Visual inspection of Arina Road Bridge	Baseline inspection prior to LW S1A. Monthly inspections between 200m and 1000m of extraction of LWs S1A to S3A and continue if ongoing adverse movements are observed. End of LW S1A to S3A	Tahmoor Coal (BIS)
				Conduct Local 3D survey of structure and ground marks on the Kader Street Bridge as per Drawing No. MSEC1193-03-12, with one mark on the Bridge to be surveyed in Absolute 3D	Install and baseline survey by Nov 2022. Survey at end of LWs S1A, S2A and S3A. Monthly surveys between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed. Survey at end of LW S4A-S6A.	Tahmoor Coal (SRS)
				Visual inspection of Kader Street Bridge	Baseline inspection by Nov 2022. Inspect at end of LWs S1A, S2A and S3A. Monthly inspections between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed. Inspect at end of LW S4A-S6A.	Tahmoor Coal (BIS)
			GNSS unit S11 subsides or moves horizontally more than 20 mm	Conduct additional survey of Bargo River Road Bridge	Within one week	Tahmoor Coal (SRS)
				Visual inspection of Bargo River Road Bridge	Within one week	Tahmoor Coal (BIS)
				Notify Bridge Technical Committee and WSC	Within one week	MSEC
			Closure between bridge abutments exceeds 5 mm	Bridge Technical Committee and WSC meet and consider whether any additional management measures are required, which may include: - undertake structural engineering inspection - increase monitoring frequency and reporting procedures - cut gaps between abutments and kerbs on Rockford Road Bridge or Arina Road Bridge - disconnect the bridge deck from one of the abutments on Bargo River Road Bridge and Kader Street Bridge - reset or replace bridge bearings	Within one week	Bridge Technical Committee
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within one week	Tahmoor Coal
				Notify Bridge Technical Committee and WSC	Within 24 hours	Tahmoor Coal
				WSC and Tahmoor Coal inspection to consider and implement emergency traffic management measures, if required	Immediately	Tahmoor Coal (JMA) / WSC
			Impacts observed to bridge	Bridge Technical Committee and WSC meet and consider whether any additional management measures are required, which may include: - undertake structural engineering inspection - increase monitoring frequency and reporting procedures - cut gaps between abutments and kerbs on Rockford Road Bridge or Arina Road Bridge - disconnect the bridge deck from one of the abutments on Bargo River Road Bridge and Kader Street Bridge - reset or replace bridge bearings - repair damage to bridge, pavement approaches, and/or footpath approaches in consultation with WSC - as a last resort, slow or stop the longwall and/or vehicle traffic in accordance with Traffic Management Plan	Within 24 hours	Bridge Technical Committee
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within 24 hours	Tahmoor Coal



INFRASTRUCTURE	HAZARD / IMPACT	RISK	TRIGGER	CONTROL PROCEDURE/S	FREQUENCY	BY WHOM?
Bargo Cemetery	Damage to Cemetery ground, including grave sites, tombstones, kerbs, memorial wall, gardens and lawns	Low	None	Baseline recording and visual assessment by heritage consultant	Complete	EMM
				Pre-mining visual inspection	Prior to start of LW S4A	Tahmoor Coal
				Conduct ground surveys along Charlies Point Road and Great Southern Road	Refer local roads section	Tahmoor Coal (SMEC)
				Conduct Local 3D survey of survey marks around the Cemetery, including Pegs GSR-09 to GSR-17 and Pegs BC01, BC02 and BC03 as per Figure 1 of Amendment 02.	Install and baseline survey Pegs BC01, BC02 and BC03 prior to start of LW S4A Weekly surveys between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed. Survey at end of LW S4A-S6A.	Tahmoor Coal (SMEC)
				Conduct visual inspection of Cemetery	Weekly surveys between 200m and 1000m of extraction of LWs S4A to S6A and continue if ongoing adverse movements are observed	Tahmoor Coal
			Impacts observed to Cemetery	Notify IMG and WSC.	Immediately	Tahmoor Coal
				IMG meet and consider whether any additional management measures are required, which may include: - undertake inspection by heritage consultant - increase monitoring frequency and reporting procedures - repair impacts in consultation with heritage consultant and WSC	As required	IMG
				Report trigger exceedance and actions taken to IMG, WSC, SA NSW & MSO in Status Report	Within one week	Tahmoor Coal