UG4 LONGWALLS 401 TO 408 BUILT FEATURES MANAGEMENT PLAN TELSTRA

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MCO_BFMP_TELSTRA	1	June 22	July 22	MCO	B. Wesley

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1.0 INTRODUCTION

The Moolarben Coal Complex (MCC) is an open cut and underground coal mining operation located approximately 40 kilometres north of Mudgee in the Western Coalfield of New South Wales (NSW) (**Figure 1**).

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Complex on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Yancoal Moolarben [YM] Pty Ltd and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited.

The UG4 Underground Mine (UG4) is a component of the approved Moolarben Coal Complex (**Figure 2**). First workings for UG4 North Mains commenced in October 2020 **Figure 3**). Secondary extraction in UG4 of the first Longwall LW401 is scheduled to commence in 2022 (**Table 2**).

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 and continue to be carried out in accordance with Project Approval (05_0117) (Moolarben Coal Project Stage 1) (as modified) and Project Approval (08_0135) (Moolarben Coal Project Stage 2) (as modified).

This UG4 Longwalls 401 to 408 Built Features Management Plan – Telstra (LW401-408 BFMP-TELSTRA) forms a part of the Extraction Plan for Longwalls 401 to 408 (herein referred to as Longwalls 401-408) of the approved UG4 Underground Mine.

1.1 PURPOSE AND SCOPE

Purpose: This LW401-408 BFMP-TELSTRA outlines the management of potential subsidence impacts of the proposed secondary workings described in the Extraction Plan on the Telstra telecommunication cables and tower.

Scope: This LW401-408 BFMP-TELSTRA covers the optical fibre, copper telecommunication cables and telecommunications tower, in the vicinity of the Study Area[1], which relates to the extent of subsidence effects resulting from the secondary extraction of Longwalls 401-408 (**Figure 4**).

[1] Longwalls 401-408 and the area of land within the furthest extent of the 26.5 degree (°) angle of draw and 20 millimetres (mm) predicted subsidence contour. The Telstra assets are not located with the Study Area, however may be subject to far field movements (**Section 4.3**).

Figure 1 Locality

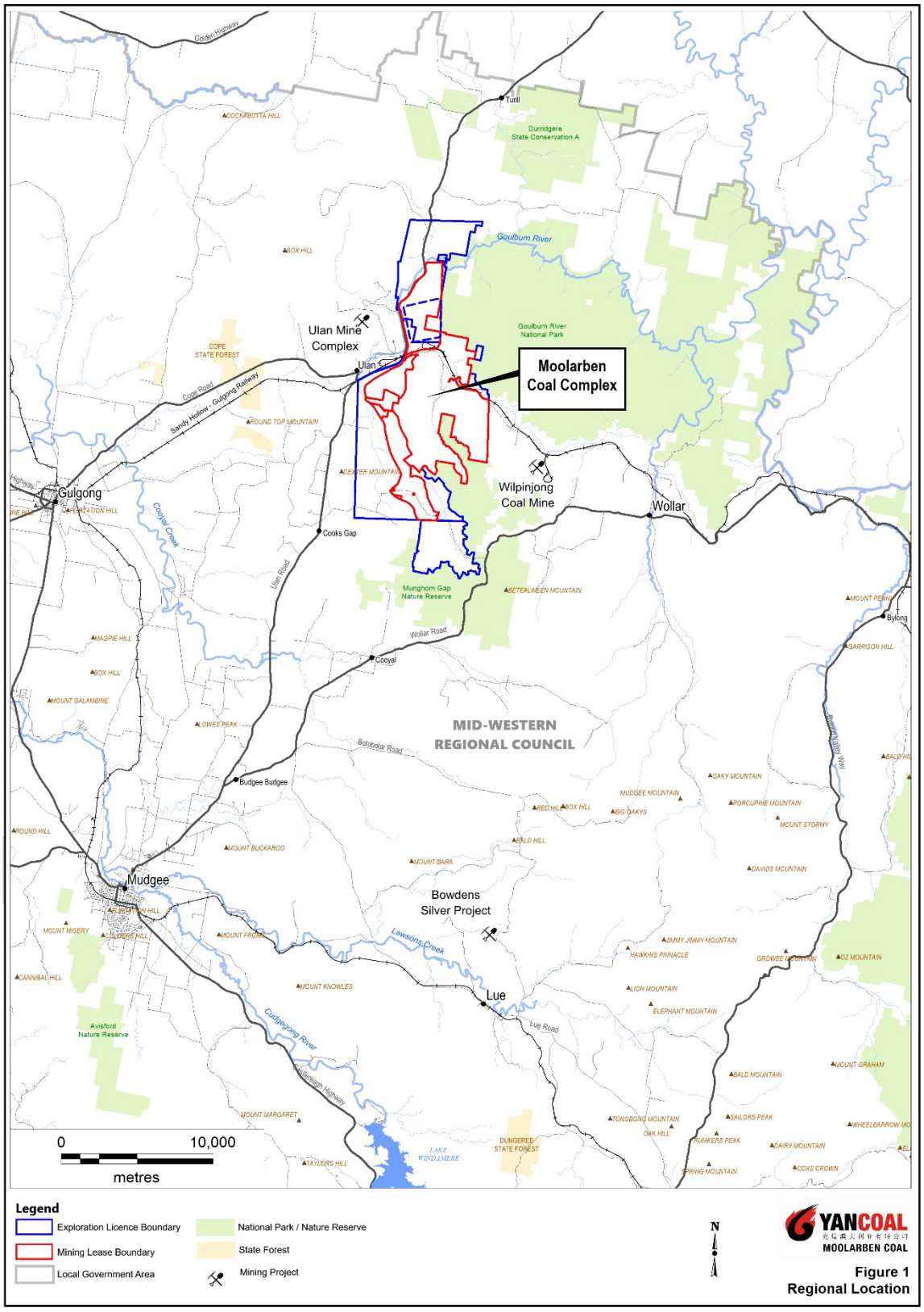

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Figure 2 Moolarben Coal Complex Layout

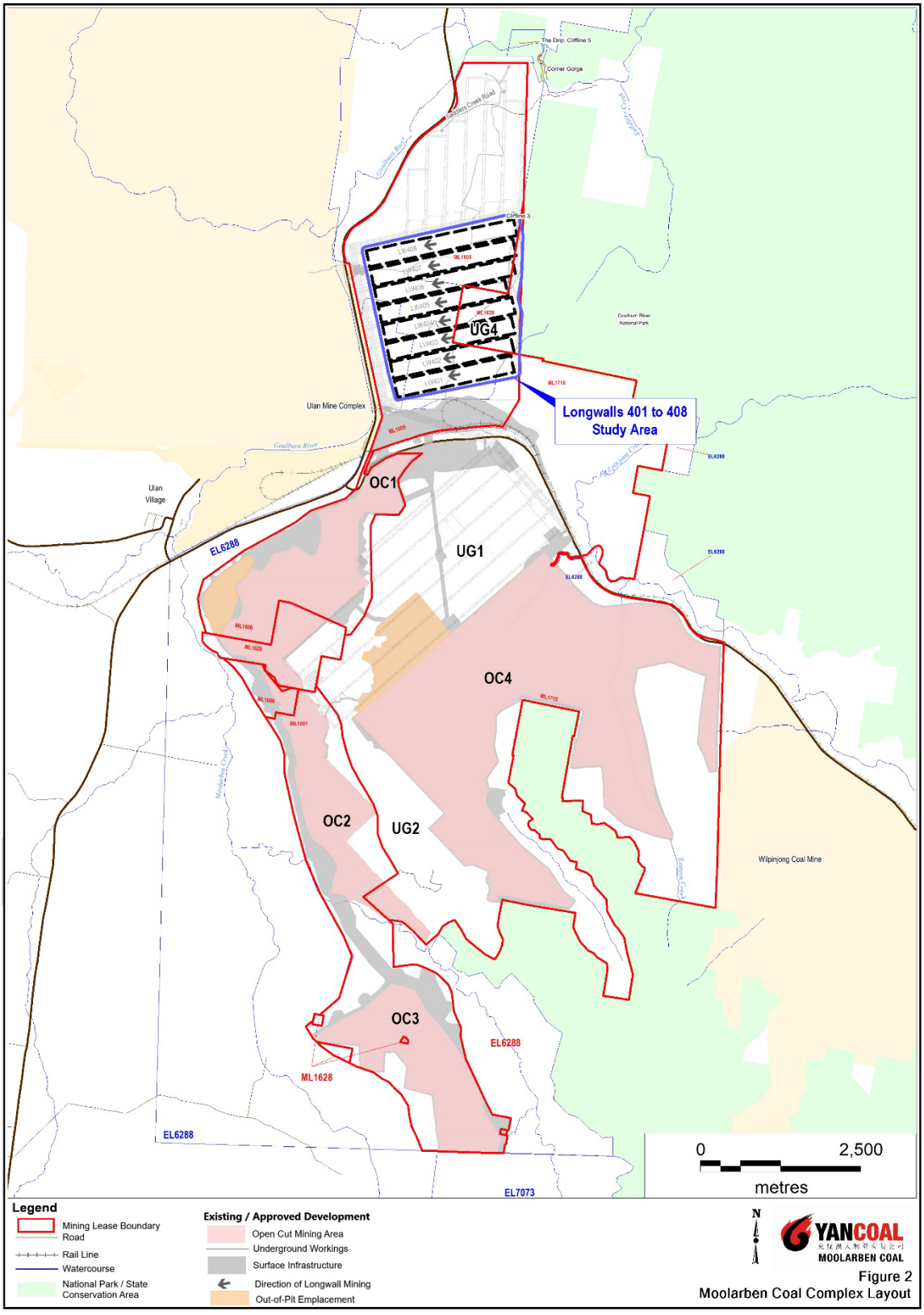


Figure 3 UG4 Longwall 401-408 Layout

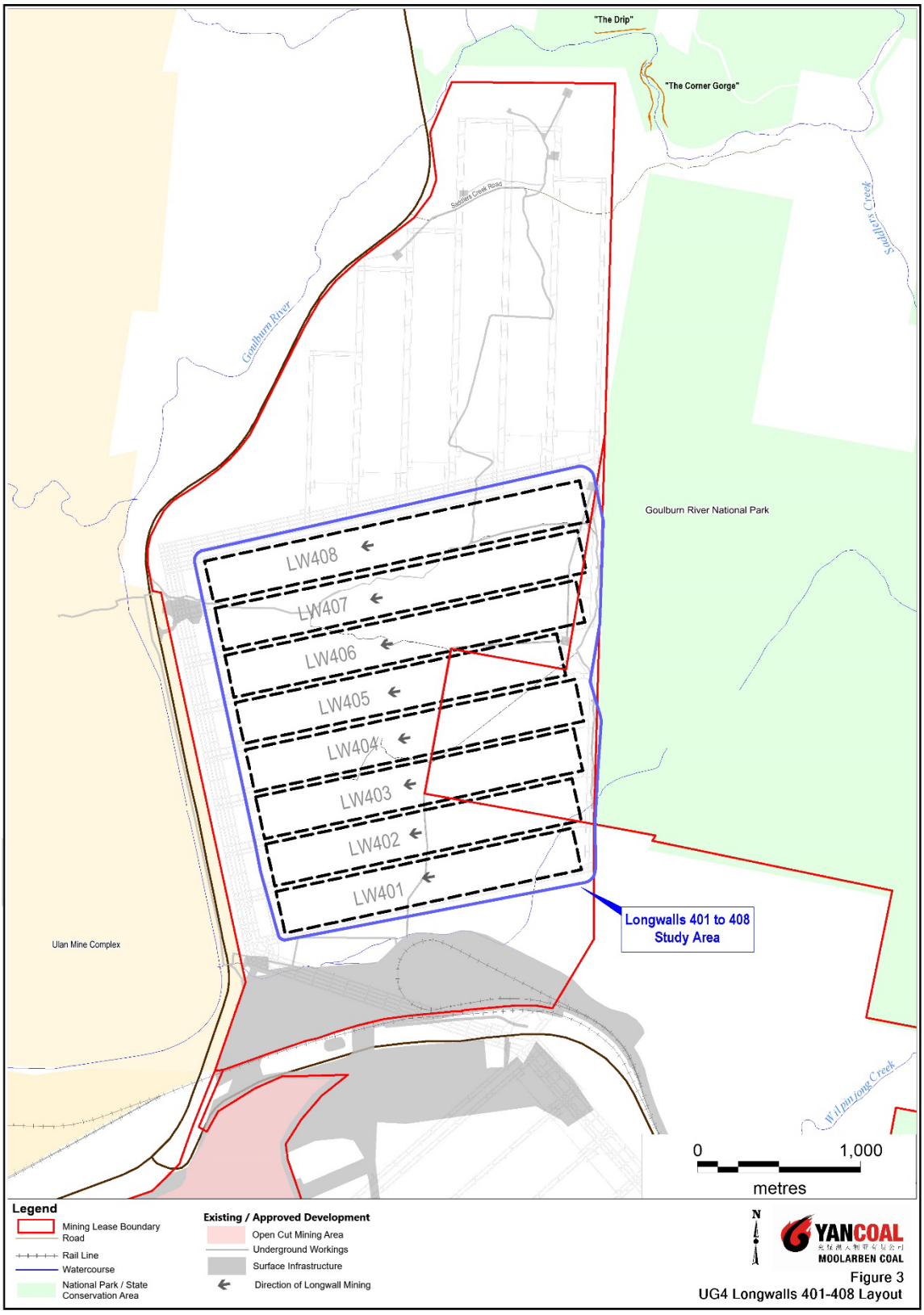
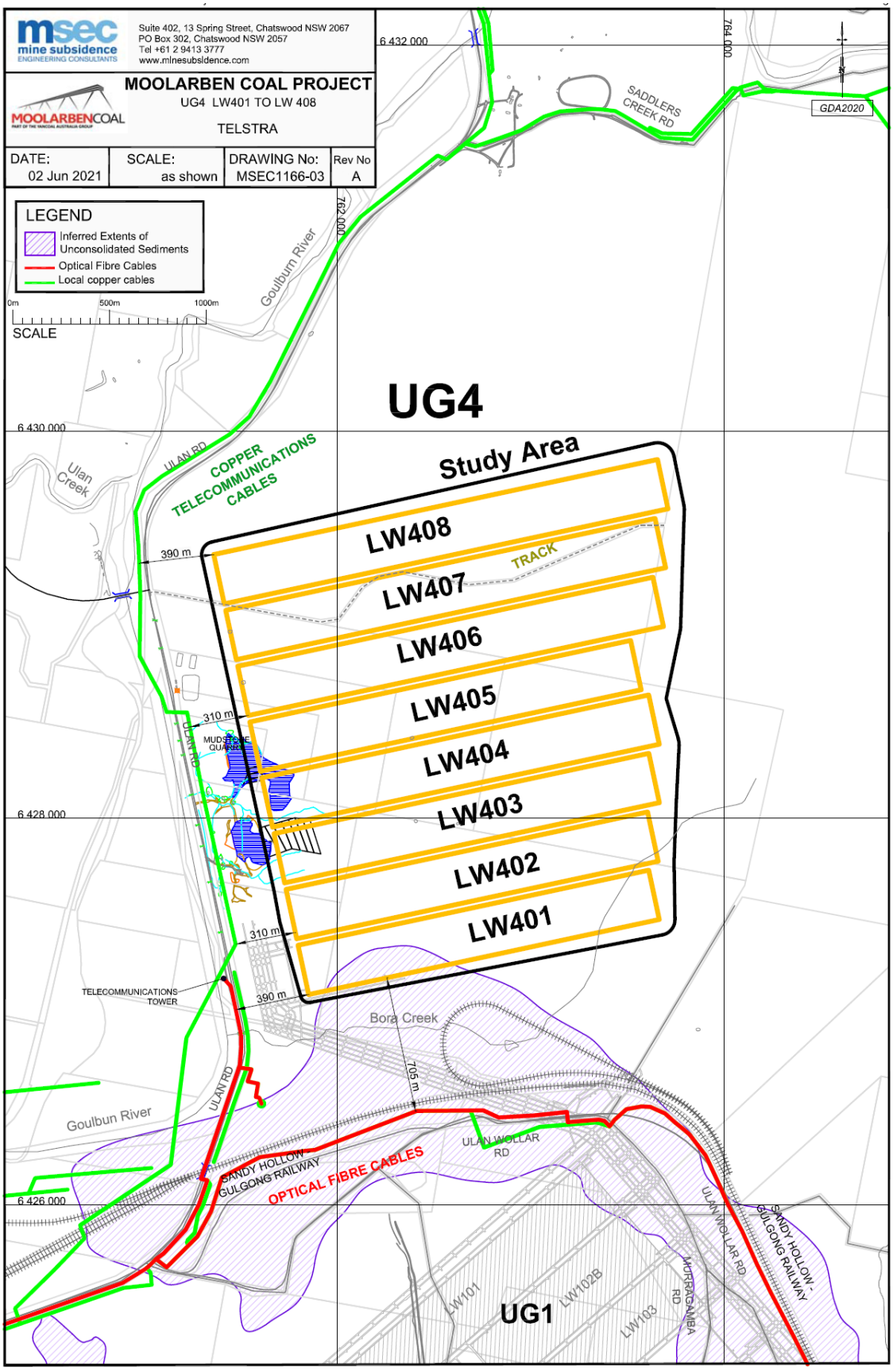


Figure 4 Telstra Assets



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1.2 SUITABLY QUALIFIED AND EXPERIENCED PERSONS

In accordance with Condition 77(a), Schedule 3 of Project Approval (05_0117), the suitably qualified and experienced persons that have prepared this LW401-408 BFMP-TELSTRA, namely representatives from Mine Subsidence Engineering Consultants (MSEC) and MCO, were endorsed by the Secretary of the Department of Planning and Environment (DPIE).

This LW401-408 BFMP-TELSTRA has been prepared in consultation with Telstra (Section 4.4).

A list of the key responsibilities of MCO personnel in relation to this LW401-408 BFMP-TELSTRA, and a list of key contacts, is provided in Section 11.

1.3 STRUCTURE OF THE LONGWALLS 401- 408 BFMP-TELSTRA

The remainder of the LW401-408 BFMP-TELSTRA is structured as follows:

Section 2: Describes the review and update of the LW401-408 BFMP-TELSTRA.

Section 3: Outlines the statutory requirements applicable to the LW401-408 BFMP-TELSTRA.

Section 4: Provides baseline data, extraction schedule, revised assessment of the potential subsidence impacts and environmental consequences for Longwalls 401- 408, as well as the outcomes of the risk assessment.

Section 5: Details the performance measures relevant to Telstra assets.

Section 6: Describes the monitoring program.

Section 7: Describes the management measures that will be implemented.

Section 8: Details the performance indicators that will be used to assess against the performance measures.

Section 9: Provides a contingency plan to manage any unpredicted impacts and their consequences.

Section 10: Describes the Trigger Action Response Plan (TARP) management tool.

Section 11: Describes the roles and responsibilities for MCO personnel and key contacts.

Section 12: Describes the program to collect sufficient baseline data for future Extraction Plans.

Section 13: Describes the Annual Review, audits, regular reporting and improvement of environmental performance.

Section 14: Outlines the management and reporting of incidents.

Section 15: Outlines the management and reporting of complaints.

Section 16: Outlines the management and reporting of non-compliances with statutory requirements.

Section 17: Lists the references cited in this LW401-408 BFMP-TELSTRA.

2.0 LONGWALLS 401 TO 408 BFMP-TELSTRA REVIEW AND UPDATE

In accordance with Condition 5, Schedule 5 of Project Approval (05_0117), this LW401-408 BFMP-TELSTRA will be reviewed as follows:

> *5. Within 3 months of the submission of:*
>
> *(a) the submission of annual review under condition 4 above;*
>
> *(b) the submission of an incident report under condition 7 below;*
>
> *(c) the submission of an audit under condition 9 below; or*
>
> *(d) any modification to the conditions of this approval (unless the conditions require otherwise),*
>
> *the Proponent shall review and, if necessary, revise the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval*

2.1 ACCESS TO INFORMATION

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117) MCO will make the approved LW401-408 BFMP-TELSTRA publicly available on the MCO website.

3.0 STATUTORY REQUIREMENTS

MCO's statutory obligations are contained in:

- the conditions of the NSW Project Approval (05_0117) (as modified);
- the conditions of Commonwealth Approvals (EPBC 2007/3297, EPBC 2013/6926 and EPBC 2008/4444) and 2007/7974;
- relevant licences and permits, including conditions attached to the Environment Protection Licence (EPL) No. 12932 and MLs (i.e. ML 1605, ML 1606, ML 1628, ML 1691 and ML 1715); and
- other relevant legislation.

Obligations relevant to this LW401-408 BFMP-TELSTRA are described below.

3.1 EP&A ACT PROJECT APPROVAL

Condition 77(g), Schedule 3 of Project Approval (05_0117) requires the preparation of a Built Features Management Plan (BFMP) as a component of Extraction Plan(s) for second workings. In addition, Conditions 75, 77(n), 77(p) and 78, Schedule 3 and Condition 3, Schedule 5 of Project Approval (05_0117) outline general management plan requirements that are applicable to the preparation of this LW401-408 BFMP-TELSTRA.

Table 1 indicates where each component of the conditions is addressed within this LW401-408 BFMP-TELSTRA.

Table 1 Management Plan Requirements

Project Approval (05_0117) Condition	LW401-408 BFMP-TELSTRA Section
Condition 75, Schedule 3	
Notes: *...* • *The Proponent will be required to define more detailed performance indicators for each of these performance measures in Built Features Management Plans or Public Safety Management Plan (see condition 74 below).* • *Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Secretary will be the final arbiter.* *...* • *Requirements under this condition may be met by measures undertaken in accordance with the Mine Subsidence Compensation Act 1961.* *...*	**Section 7** **Sections 6** **Section 9**
Condition 77(g), Schedule 3	
(g) include a Built Features Management Plan, which has been prepared in consultation with Resources Regulator and the owners of affected public infrastructure, to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings, and which: • *addresses in appropriate detail all items of key public infrastructure and other public infrastructure and all classes of other built features;* • *has been prepared following appropriate consultation with the owner/s of potentially affected feature/s;* • *recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate all predicted impacts on potentially affected built features in a timely manner; and* • *in the case of all key public infrastructure, and other public infrastructure except roads, trails and associated structures, reports external auditing for compliance with ISO 31000 (or alternative standard agreed with the infrastructure owner) and provides for annual auditing of compliance and effectiveness during extraction of longwalls which may impact the infrastructure;*	**Section 4.1** **Section 4.4** **Sections 7 & 9** **Section 13.1**
Condition 77(n), Schedule 3	
(n) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 18 and 19, or where any such exceedance appears likely;.	**Section 9**
Condition 77(p), Schedule 3	
(p) include a program to collect sufficient baseline data for future Extraction Plans.	**Section 12**
Condition 78, Schedule 3	
6. The Proponent shall ensure that the management plans required under conditions 77(g)-(l) above include: *(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval; and* *(b) a detailed description of the measures that would be implemented to remediate predicted impacts.*	**Section 4** **Section 7**

Table 1 (Continued): Management Plan Requirements

Project Approval (05_0117) Condition	LW401-408 BFMP-TELSTRA Section
Condition 3, Schedule 5	
3. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	**Section 4.1**
(b) a description of:	
• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	**Section 3**
• *the relevant limits or performance measures/criteria;*	**Section 5**
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;*	**Section 8**
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	**Sections 7 & 9**
(d) a program to monitor and report on the:	**Sections 6, 8 & 13**
• *impacts and environmental performance of the project;*	
• *effectiveness of any management measures (see c above);*	
(e) a contingency plan to manage any unpredicted impacts and their consequences;	**Section 9**
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	**Sections 6 & 13**
(g) a protocol for managing and reporting any:	
• *incidents;*	**Section 14**
• *complaints;*	**Section 15**
• *non-compliances with statutory requirements; and*	**Section 16**
• *exceedances of the impact assessment criteria and/or performance criteria; and*	**Section 9**
(h) a protocol for periodic review of the plan.	**Section 2**

3.2 OTHER LEGISLATION

The Acts which may be applicable to the conduct of the Moolarben Coal Complex includes, but are not limited to:

- *Crown Lands Act, 1989;*
- *Fisheries Management Act, 1994;*
- *Heritage Act, 1977;*
- *Coal Mine Subsidence Compensation Act 2017;*
- *Mining Act, 1992;*
- *National Parks and Wildlife Act, 1974;*
- *Biodiversity Conservation Act, 2016;*
- *Protection of the Environment Operations Act, 1997;*
- *Roads Act, 1993;*
- *Water Act, 1912;*
- *Water Management Act, 2000;*
- *Work Health and Safety Act, 2011;* and
- *Work Health and Safety (Mines and Petroleum Sites) Act, 2013.*

Relevant licences or approvals required under these Acts will be obtained as required.

4.0 TELECOMMUNICATION CABLES & TOWER

4.1 BASELINE DATA

Telstra infrastructure in the vicinity of the Study Area includes an optical fibre cable, a copper cable and a telecommunications tower.

Copper cables are located along Ulan road to the west of Longwall 401 to 408 and to the South along Ulan-Wollar Road. The nearest point of the copper cables along Ulan Road is approximately 310 m from the finishing ends of LW402 to 406 (**Figure 4**). The distance to the copper cables represents greater than 2.4 times the depth of cover from the longwalls (MSEC, 2021).

Optical fibre cables are located to the south west of the Longwall 401 to 408 along Ulan Road, and to the south along Ulan-Wollar Road. A telecommunications tower is located 410 m to the west of the finishing end of Longwall 401. The nearest point of the optical fibre cables is 390 m from Longwall 401 (**Figure 4**). The distance to the Telstra tower and optical fibre cables represent approximately 5 and 4.5 times the depth of cover respectively from Longwall 401 (MSEC, 2021).

At distances of 310 m or more to the copper cables along Ulan Road and 390 m or more to the optical fibre cables and tower, the cables and tower are not anticipated to experience measurable conventional mine subsidence ground movements (i.e. less than limits of survey accuracy) (MSEC, 2021); however, the cables may experience far-field horizontal movements which are discussed in **Section 4.3**.

4.2 LONGWALLS 401- 408 EXTRACTION SCHEDULE

Longwalls 401-408 and the area of land within Study Area are shown on **Figures 3** and **4**. Longwall extraction will occur from the east to the west. The longwall layout includes approximately 260 m panel widths (void) with 35 m width pillars (solid).

The provisional extraction schedule for Longwalls 401- 408 is provided in **Table 2**.

Table 2 Provisional Extraction Schedule

Longwall	Estimated Start Date	Estimated Duration (months)	Estimated Completion Date
LW401	June 2022	4	October 2022
LW402	November 2022	4	March 2023
LW403	April 2023	4	August 2023
LW404	August 2023	5	January 2024
LW405	February 2024	4	June 2024
LW406	July 2024	5	December 2024
LW407	January 2025	4	May 2025
LW408	June 2025	4	November 2025

4.3 REVISED SUBSIDENCE AND IMPACT PREDICTIONS

Revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings have been prepared by MSEC, incorporating any relevant information obtained since approval. Revised predictions have considered the results from the nearby UG1 longwall extraction.

The LW401-408 BFMP-TELSTRA for UG4 has incorporated the revised subsidence predictions and impacts as described in **Section 4.3.1** and **Attachment 1**.

4.3.1 UG4 Revised Subsidence Impacts & Predictions

A summary of the subsidence impacts and predictions (MSEC, 2021) is provided below:

- The Telstra cables and tower are not expected to experience measurable conventional vertical subsidence.
- With the location of the optical fibre cable and tower at 390 m or more from the longwalls, and the low likelihood of significant observed strains developing based on statistical analysis, the development of adverse impacts to the optical fibre cable and tower due to the extraction of Longwalls 401 to 408 is considered unlikely to occur.
- The telecommunications tower is located adjacent to a road cutting along Ulan Road and nearby steep slopes. Down slope movements can occur on slopes that are located over or near extracted longwalls. Such movements may result in an increased likelihood of horizontal movements at the road cuttings, predominantly on the eastern side of Ulan Road. The direction of these movements are also likely to oppose the direction of far-field horizontal movements. Increased horizontal movements would be expected to be minor and unlikely to result adverse impact to the tower.

It is expected that the optical fibre cable, copper cable and a telecommunications tower can be maintained in serviceable condition with the implementation of the appropriate monitoring and management strategies (**Sections 6** and **7**).

4.4 RISK ASSESSMENT

In accordance with the draft *Guidelines for the Preparation of Extraction Plans* (DPIE and DRE, 2015), potential risks and potential risk control measures and procedures have been considered for the Telstra infrastructure in the vicinity of Longwalls 401-408.

The investigation included :

- Confirmation of relevant Telstra assets.
- Review of the revised subsidence predictions and potential impacts on Telstra assets (including consideration of past experience for UG1 and in the Western Coalfield).
- Consideration and discussion of the proposed monitoring program, management measures and contingency measures.

The following potential risks were identified:

- Copper cable becomes unserviceable due to mining of Longwalls 401-408 and MCO are required to compensate Telstra for the necessary repairs.

- Optical fibre cable (main cable between Ulan and Wollar) becomes unserviceable due to mining of Longwalls 401- 408 and MCO are required to compensate Telstra for the necessary repairs; and
- Telecommunications tower becomes unserviceable due to mining of Longwalls 401- 408 and MCO are required to compensate Telstra for the necessary repairs.

A number of risk control measures and procedures were identified. The proposed risk control measures and procedures have been incorporated where relevant in this LW401-408 BFMP-TELSTRA and the program for implementation is summarised in **Table 3**.

MCO considers all risk control measures and procedures to be feasible to manage all identified risks.

Table 3 Program for Implementation of Proposed Risk Control Measures and Procedures

	Risk Control Measure / Procedure	LW401- 408 BFMP-TELSRTA Section	Proposed Timing
Baseline Data / Validation			
1	Request from Telstra confirmation that all services have been identified and documented in the LW401-408 BFMP-TELSTRA.	**Section 6.2**	Prior to Longwall 401
2	Installation of UG4 subsidence effect monitoring line and commencement of the subsidence monitoring program for Longwalls 401 - 408.	**Section 6**	Prior to Longwall 401
3	Establish the pre-mining condition of the telecommunication tower by baseline survey	**Section 6**	Prior to Longwall 401
Management / Monitoring / Response Measures			
5	Establish key contacts list in the LW401-408 BFMP-TELSTRA.	**Section 11.1**	Complete
6	Include a schedule of times/frequency of communication with Telstra for the status of mining of Longwalls 401-408 in the LW401-408 BFMP-TELSTRA.	**Section 7 and Table 6**	Complete
7	Include in the TARP triggers for conditions that may need to be actioned by MCO and/or Telstra.	**Section 10 and Attachment 2**	Complete

5.0 PERFORMANCE MEASURES

The performance measures specified in Table 15, Schedule 3 of Project Approval (05_0117) relevant to the Telstra telecommunication cables and tower, as a built feature, are listed in **Table 4**.

Table 4 Built Features Subsidence Impact Performance Measures

Feature	Subsidence Impact Performance Measure
Other infrastructure:	
Other built features* and improvements, including fences	Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.

Source: Table 15 in Schedule 3 of Project Approval (05_0117).

Notes: * Telstra's telecommunications cables and telecommunications tower

In accordance with Condition 75, Schedule 3 of Project Approval (05_0117), MCO must ensure that there is no exceedance of the performance measures listed in Table 15, Schedule 3 of Project Approval (05_0117), to the satisfaction of the Secretary of the DPIE.

Section 6 outlines the monitoring that will be undertaken to assess the impact of Longwalls 401- 408 against the performance measures in relation to the telecommunication cables. Management measures for the telecommunication cables and tower are outlined in **Section 7** and performance indicators for the performance measures are summarised in **Section 8**.

6.0 MONITORING

A monitoring program will be developed in order to monitor the impacts of the extraction of Longwalls 401-408 on the telecommunication cables and tower to identify potential loss of serviceability during or after mining. Key components of the monitoring program are summarised in **Table 5**.

As recommended by MSEC, baseline monitoring is recommended for comparison, should subsidence related ground movements be measured to the west of longwalls during extraction of Longwalls 401 to 408 (MSEC, 2021).

Table 5 Telecommunication Cables & Tower Monitoring Program Overview

Monitoring Component	Parameter	Timing/Frequency	Responsibility
Pre-mining			
Physical access inspection of the telecommunications tower	Survey and record baseline condition of telecommunication tower.	Prior to commencement of Longwall 401 extraction.	Underground Technical Manager / Telstra
UG4 subsidence monitoring lines as described in the UG4 Longwalls 401 to 408 Subsidence Monitoring Program (LW401- 408 SMP).	Installation of survey monitoring program and initial ground survey (including 'R Line'). Monitoring parameters include: • Easting; • Northing; • Vertical subsidence; • tilt; • tensile strain; and • compressive strain.	Prior to commencement of Longwall 401 extraction.	Underground Technical Manager / Registered Mine Surveyor
During and After Mining			
UG4 subsidence monitoring lines as described in the LW401-408 SMP.	Survey monitoring program for subsidence parameters measured along the 'R Line', including: • Easting; • Northing; • Vertical subsidence; • tilt; • tensile strain; and • compressive strain.	At the completion of Longwall 401 - 408 Provide a copy of the results of the subsidence parameters measured along the 'R Line' after each Longwall 401 to 408 to Telstra *(unless otherwise agree to by Telstra)*	Underground Technical Manager / Registered Mine Surveyor
Telecommunications tower	Survey and record condition of the telecommunication tower and compare to baseline condition.	At the completion of Longwall 401 Provide a copy of the results and condition of the tower after Longwall 401.	Underground Technical Manager / Registered Mine Surveyor

The frequency of monitoring will be reviewed either:

- In accordance with the Annual Review; or
- If monitoring determines there has been no impact to the copper cable and/or no exceedance of the performance measures listed in **Table 4**, MCO in consultation with Telstra will review the frequency of this monitoring component; or
- If triggered as a component of the Contingency Plan as outlined in **Section 9** of this LW401-408 BFMP-TELSTRA.

6.1 SUBSIDENCE PARAMETERS

Subsidence parameters measured by a survey line ('R Line') i.e. Easting, Northing, Vertical subsidence, tilt, tensile strain and compressive strain) associated with mining will be measured in accordance with the UG4 Longwalls 401 to 408 Subsidence Monitoring Program (LW401-408 SMP).

For the telecommunication cables, surveys will be conducted to measure subsidence movements in three dimensions using a total station survey instrument. Subsidence movements (i.e. subsidence, tilt, tensile strain and compressive strain) will be measured along subsidence lines that have been positioned across the general landscape.

Monitoring of subsidence parameters specific to the telecommunication cables will be measured by a survey line ('R Line'). This survey line will monitor the general movement about the longwalls and the data will allow evaluation of the likely ground movements about the cable line (by comparison between measured and predicted movements). Unless otherwise agreed with Telstra, inspection sheets detailing the outcome of the subsidence impact inspections will be provided, following confirmation of any observed ground movements >20mm.

For the telecommunications tower, surveys will be conducted to measure subsidence movements in three dimensions using a total station survey instrument. Subsidence movements will be measured on the telecommunications tower to complete a baseline survey for post mining comparative assessments.

6.2 SUBSIDENCE IMPACTS

Telstra will provide confirmation that all services have been identified and documented in the LW401-408 BFMP-TELSTRA prior to secondary extraction of Longwall 401 commencing.

Prior to the commencement of Longwall 401 extraction, a baseline survey of the telecommunications tower will be conducted by MCO. Additional survey of the tower will be undertaken at the completion of Longwall 401. The during and post mining surveys of the tower will be compared to the pre-mining baseline survey.

If subsidence related ground movements result in a detectable change from the pre-mining baseline condition and/or greater than predictions described in **Section 4.3**, Telstra will be immediately notified as outlined in **Table 6**.

Inspections of the cables will be conducted by Telstra as required, in accordance with Telstra's routine inspection program or if triggered by a signal loss or transmission fault detected by the RFMS (**Table 5**).

Information will be recorded in the LW401-408 BFMP-TELSTRA Subsidence Impact Register (**Attachment 3**) and reported in accordance with Project Approval (05_0117) (**Section 13**).

MCO and Telstra will compare the results of the subsidence impact monitoring against the built features performance measure and indicators (**Sections 5 and 8**). In the event the observed subsidence impacts from the Moolarben Coal Complex exceed the performance measure or indicators, MCO and Telstra will assess the consequences of the exceedance in accordance with the Contingency Plan described in **Section 9**.

7.0 MANAGEMENT MEASURES

A number of potential management measures in relation to the telecommunication cables and tower are considered to be applicable (including stabilisation methods if required) and potential contingency measures are summarised in **Section 9.1**.

Follow-up inspections will be conducted to assess the effectiveness of the management measures implemented and the requirement for any additional management measures. A summary of management measures (if required) will be reported in the Annual Review. Key management actions and timing is summarised in **Table 6**.

Table 6 Telecommunication Infrastructure Key Management Actions

Management Measure	Timing/Frequency	Responsibility
Pre-mining		
Notification to Telstra prior to commencement of secondary extraction.	Prior to secondary extraction of Longwall 401.	Underground Technical Manager
Establish baseline condition of telecommunication tower.	Prior to secondary extraction of Longwall 401.	Telstra / Underground Technical Manager
During Mining		
Notification to Telstra during longwall mining of Longwalls 401-408.	If/when ground surveys identifies an exceedance of the predicted subsidence monitoring parameters measured along the 'R Line'	Underground Technical Manager
During Mining		
Comparative assessment against baseline condition of telecommunication tower.	Longwall 401 is completed	Telstra / Underground Technical Manager
Undertake subsidence impact inspection (Telecommunications Tower)	If/when ground surveys identifies an exceedance of the predicted subsidence monitoring parameters measured along the 'R Line' If/when subsidence related ground movements result in a detectable impact to the tower (compared to baseline).	Telstra/ Underground Technical Manager
Provision of **inspection sheets** detailing the outcome of the subsidence impact monitoring program to Telstra.	Following exceedance of the predicted subsidence monitoring parameters and/or subsidence related impact inspections (unless otherwise agreed by Telstra)	Underground Technical Manager

Table 6 (Continued): Telecommunication Infrastructure Key Management Actions

Management Measure	Timing/Frequency	Responsibility
During Mining		
Notification to Telstra if management measures are considered to be required.	During Longwalls 401 to 408 extraction.	Underground Technical Manager
Implement TARP (**Attachment 2**).	During Longwalls 401 to 408 extraction.	Underground Technical Manager
Post-mining		
Notification to Telstra to inform longwall mining of Longwalls 401-408 is completed	Following completion of active mining after Longwall 408 (within 3 months)	Underground Technical Manager

Notes: If monitoring determines there has been no impact to the copper cable and/or no exceedance of the performance measures listed in **Table 4**, MCO in consultation with Telstra will review the frequency of this management measure.

8.0 ASSESSMENT OF PERFORMANCE INDICATORS AND MEASURES

In accordance with Condition 77(d), Schedule 3 of Project Approval (05_0117), performance indicators have been developed for the performance measures listed in **Table 4** (**Section 5**).

The performance indicators proposed to ensure that the performance measures for the optical fibre, copper cables and tower are achieved in relation to subsidence induced far field movements, include:

- negligible transmission loss from mine subsidence impacts;
- negligible impacts on structural integrity of the cable lines from mine subsidence; and
- negligible impacts on structural integrity of the communications tower from mine subsidence.

Monitoring conducted to inform the assessment of secondary extraction of Longwalls 401- 408 against the performance indicators for the performance measures relevant to Telstra's communication cables and tower as a built feature is outlined in **Section 6**.

Assessment of monitoring results against the performance indicators and performance measure would include comparison against the baseline visual inspection to confirm any changes were not present prior to the commencement of mining at UG4, and review of 'R Line' monitoring data to confirm if ground movements in excess of survey accuracy have occurred.

If a performance measure is considered to have been exceeded, the Contingency Plan outlined in **Section 9** of this LW401-408 BFMP-TELSTRA will be implemented.

9.0 CONTINGENCY PLAN

In the event the performance measures relevant to the telecommunication cables and tower as built features, summarised in **Table 4**, are considered to have been exceeded or are likely to be exceeded, MCO will implement the following Contingency Plan:

- The observation will be reported to the Underground Technical Manager and the Environmental and Community Manager within 24 hours.
- The observation will be recorded in the Subsidence Impact Register (**Attachment 3**).
- The likely exceedance will be reported in an Incident Report (refer to the Extraction Plan).
- MCO will provide the Incident Report to relevant stakeholders (i.e. DPIE, DPIE-RR and Telstra).
- MCO will conduct an investigation to identify and evaluate contributing factors to the exceedance, including re-survey of the relevant subsidence monitoring lines, analysis of predicted versus observed subsidence parameters and a review of the subsidence monitoring program with updates to the program where appropriate.
- An appropriate course of action will be developed in consultation with relevant stakeholders and government agencies including proposed contingency measures (**Section 9.1**), and a program to review the effectiveness of the contingency measures.
- The course of action will be approved by, and implemented to the satisfaction of, Telstra and DPIE-RR.
- This LW401-408 BFMP-TELSTRA and the performance indicators will be reviewed to adequately manage future potential impacts within the limits of Project Approval (05_0117).

MCO will comply with the *Coal Mine Subsidence Compensation Act, 2017* (formerly NSW *Mine Subsidence Compensation Act, 1961);* in the event that property damages occur as a result of mining Longwalls 401- 408.

9.1 CONTINGENCY MEASURES

Contingency measures will be developed in consideration of the specific circumstances of the feature (e.g. the location, nature and extent of the impact, and the assessment of environmental consequences).

Potential contingency measures that could be considered in the event either of the performance measures for the telecommunication cables is exceeded are summarised in **Table 7**.

Table 7 Potential Contingency Measures

Environmental Consequence	Potential Contingency Measures	
	Measure	Description
Impact on:		
Optical Fibre Cable	Stabilisation	Automatic monitoring detects degradation in signal. Trench fill material is removed from the identified degradation zone, allows fibre to flex, and relieve compression forces.
	Emergency	Certain bandwidth is redeployed to other cores within this cable (where available) and/or to other Telstra interconnectors.
	Rebuilding	Fibre heat treatment to soften compression point and return affected cores to operation.
Copper Cable	Emergency	Failure in copper telecommunication cables to be rectified by repairs. If extended duration outage, then a temporary mobile phone connection could be provided by Telstra to commercial or residential users affected.
Tower	Stabilisation	Installation of supports.
	Rebuilding	Construction of new pole or emergency structure

10.0 TRIGGER ACTION RESPONSE PLAN – MANAGEMENT TOOL

The framework for the various components of this LW401-408 BFMP-TELSTRA are summarised in the TARP shown in **Attachment 2**. The TARP illustrates how the various predicted subsidence impacts, monitoring components, performance measures, and responsibilities are structured to achieve compliance with the relevant statutory requirements, and the framework for management and contingency actions.

The TARP comprises:

- baseline conditions;
- predicted subsidence impacts;
- trigger levels from monitoring to assess performance; and
- triggers that flag implementation of contingency measures.

The TARP system provides a simple and transparent snapshot of the monitoring of environmental performance and the implementation of management and/or contingency measures.

11.0 ROLES AND RESPONSIBILITIES

Key responsibilities of MCO personnel in relation to this LW401-408 BFMP-TELSTRA are summarised in **Table 8**. Responsibilities may be delegated as required.

Table 8 Responsibility Summary

Responsibility	Task
General Manager	• Ensure resources are available to MCO personnel to facilitate the completion of responsibilities under this LW401-408 BFMP-TELSTRA.
Underground Technical Manager	• Ensure the LW401- 408 SMP is implemented. • Ensure monitoring required under this LW401-408 BFMP-TELSTRA is carried out within specified timeframes, adequately checked and processed and prepared to the required standard. • Undertake relevant monitoring and implementation of management measures summarised in **Tables 5** and **6** respectively.
Environmental and Community Manager	• Liaise with relevant stakeholders regarding subsidence impact management and related environmental consequences.
Registered Mine Surveyor	• Undertake all subsidence monitoring to the required standard within the specified timeframes and ensure data are adequately checked, processed and recorded.

11.1 KEY CONTACTS

The details of key contacts and phone numbers in relation to this LW401-408 BFMP-TELSTRA are summarised in **Table 9**.

Table 9 Key Personnel Contacts

Organisation	Position	Contact Name	Phone Number
MCO	Underground Technical Manager	Mr Liam Mildon	02 6376 1614
	Environmental and Community Manager	Mr Trent Cini	02 6376 1436
	Moolarben Coal Hotline		1800 556 484
Telstra	Network Integrity/Central Field Consultant	Mr Stephen Lynch	0418 618 737
	Underground Technical Manager	Mr Colin Dove	0428 970 826
	Damages	-	132 203

12.0 FUTURE EXTRACTION PLANS

In accordance with Condition 77(p), Schedule 3 of Project Approval (05_0117), MCO will collect baseline data for future Extraction Plans. In addition to the baseline data collection, consideration of the environmental performance and management measures, in accordance with the review(s) conducted as part of this LW401-408 BFMP-TELSTRA, will inform the appropriate type and frequency of monitoring of the assets relevant to the next Extraction Plan.

13.0 ANNUAL REVIEW, REGULAR REPORTING AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

In accordance with Condition 4, Schedule 5 of Project Approval (05_0117), MCO will conduct an Annual Review of the environmental performance of the Project by the end of March each year, or as otherwise agreed by the Secretary of the DPIE. The Annual Review will:

- describe the works carried out in the previous calendar year, and the development proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records of the Project over the previous calendar year, including a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the EA;
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the Project;
- identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the Project.

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), the Annual Review will be made available on the MCO website. As described in **Section 2**, this LW401-408 BFMP-TELSTRA will be reviewed within three months of the submission of an Annual Review, and revised where appropriate. In accordance with Condition 8, Schedule 5 of Project Approval (05_0117), MCO will also provide regular reporting on the environmental performance of the Project on the MCO website.

13.1 AUDITS

In accordance with Condition 9, Schedule 5 of Project Approval (05_0117), an independent environmental audit was conducted by the end of December 2015 and again in 2018, and will be undertaken every three years thereafter. A copy of the independent environmental audit will be provided to the Secretary of the DPIE and made available on the MCO website.

The independent environmental audit will be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary of the DPIE.

The independent environmental audit will assess the environmental performance of the Project and assess whether it is complying with the requirements of Project Approval (05_0117), and any other relevant approvals, and recommend measures or actions to improve the environmental performance of the Project.

14.0 INCIDENTS

An incident is defined in Project Approval (05_0117) as a set of circumstances that:

- causes or threatens to cause material harm to the environment; and/or
- breaches or exceeds the limits or performance measures/criteria in Project Approval (05_0117).

In the event that an incident which causes, or threatens to cause, material harm to the environment occurs, the incident will be managed in accordance with the Pollution Incident Response Management Plan.

The reporting of incidents will be conducted in accordance with Condition 7, Schedule 5 of Project Approval (05_0117).

MCO will notify the Secretary of DPIE and any other relevant agencies immediately after MCO becomes aware of the incident which causes or threatens to cause material harm to the environment. For any other incidence associated with the project, MCO will notify the Secretary and any other relevant agencies as soon as practicable after becoming aware of the incident. Within seven days of the date of the incident, MCO will provide the Secretary of DPIE and any relevant agencies with a detailed report on the incident. The report will:

- describe the date, time and nature of the exceedance/incident;
- identify the cause (or likely cause) of the exceedance/incident;
- describe what action has been taken to date; and
- describe the proposed measures to address the exceedance/incident.

15.0 COMPLAINTS

MCO maintains a Community Complaints Line (**Phone Number: 1800 556 484**) that is dedicated to the receipt of community complaints. The Community Complaints Line is publicly advertised and operates 24 hours per day, seven days a week, to receive any complaints from neighbouring residents or other stakeholders.

MCO has developed a Community Complaints Procedure which details the process to be followed when receiving, responding to and recording community complaints. The Community Complaints Procedure is supported by a Complaints Database.

The Community Complaints Procedure is a component of the MCO Environmental Management Strategy which requires the recording of relevant information including:

- the nature of complaint;
- method of the complaint;
- relevant monitoring results and meteorological data at the time of the complaint;
- site investigation outcomes;
- any necessary site activity and activity changes;
- any necessary actions assigned; and
- communication of the investigation outcome(s) to the complainant.

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117)), the complaints register will be updated monthly and made available on the MCO website.

16.0 NON-COMPLIANCES WITH STATUTORY REQUIREMENTS

A protocol for the managing and reporting of non-compliances with statutory requirements has been developed as a component of MCO's Environmental Management Strategy and is described below.

Compliance with all approvals, plans and procedures will be the responsibility of all personnel (staff and contractors) employed on or in association with the Moolarben Coal Complex.

The Environmental and Community Manager (or delegate) will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in **Section 14**, MCO will notify the Secretary of the DPIE, and any other relevant agencies, of any incident associated with MCO.

A review of MCO's compliance with all conditions of Project Approval (05_0117), mining leases and all other approvals and licenses will be undertaken prior to (and included within) each Annual Review. The Annual Review will be made publicly available on the MCO website.

As described in **Section 13.1**, an independent environmental audit was conducted by the end of December 2015 and undertaken every three years thereafter. A copy of the audit report will be submitted to the Secretary of the DPIE and made publicly available on the MCO website.

17.0 REFERENCES

AXYS Consulting Pty Ltd (2017) *Potential Impact of Longwall 101 to 103 on Telstra Infrastructure – Risk Assessment Report*.

Department of Planning and Environment and NSW Trade & Investment – Division of Resources and Energy (2015) *Guidelines for the Preparation of Extraction Plans Required under Conditions of Development Consents, Project Approvals and Mining Lease Conditions for Underground Coal Mining*. Version 5. Draft.

Mine Subsidence Engineering Consultants (2015) *Moolarben Coal Complex: Revised Predictions of Subsidence Parameters and Revised Assessments of Subsidence Impacts Resulting from the Proposed UG1 Mine Layout Optimisation Modification*.

Mine Subsidence Engineering Consultants (2017a) *Moolarben Coal Complex: Moolarben Project Stage 2 – Longwalls 101 to 103 – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan.* Report number MSEC867.

Mine Subsidence Engineering Consultants (2017b) *Moolarben Coal Operations: Longwalls 101 to 103 – Subsidence Predictions and Impact Assessments for the Telstra Infrastructure*.

Mine Subsidence Engineering Consultants (2020) Moolarben Project Stage 2- *Longwalls 104 to 105 Subsidence Predictions and Impacts Assessments for the Natural and Built Features In Support of the Extraction Plan*

Mine Subsidence Engineering Consultants (2021) *Moolarben Coal Operations – Longwalls 401 to 408 Subsidence predictions and impact assessments for the Telstra Infrastructure*

ATTACHMENT 1

MOOLARBEN COAL OPERATIONS – LONGWALLS 401 TO 408 SUBSIDENCE PREDICTIONS AND IMPACT ASSESSMENT FOR THE TELSTRA INFRASTRUCTURE

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2nd June 2021

Liam Mildon
Underground Technical Services Manager
Moolarben Coal Operations Pty Ltd
Locked Bag 2003
Mudgee NSW 2850

Ref: MSEC1166-03

Dear Liam,

RE: Moolarben Coal Operations – Longwalls 401 to 408
Subsidence predictions and impact assessments for the Telstra Infrastructure

Moolarben Coal Operations Pty Limited (MCO) operates the Moolarben Coal Complex (MCC), which is located approximately 40 kilometres north east of Mudgee in New South Wales (NSW). MCO has been granted approval to develop Stages 1 and 2 of the Moolarben Coal Project (MCP) under the *Environmental Planning and Assessment Act 1979*. Approval for Stage 1 of the MCP (05_0117) was granted by the Minister for Planning on 6 September 2007. The Stage 1 approval is based on a Preferred Mine Plan General Layout (*Approved Layout*) for Underground Area 4 (UG4).

MCO is currently preparing an Extraction Plan for the extraction of Longwalls 401 to 408 within UG4 as shown in Drawing No. MSEC1166-01. The layout of Longwalls 401 to 408 that incorporates minor shortening of the lengths of the Approved Layout is referred to as the *Extraction Plan Layout* in this report.

This letter report summarises the predicted subsidence movements and the assessed subsidence impacts for the Telstra infrastructure resulting from the extraction of Longwalls 401 to 408. In doing so, this letter considers potential subsidence induced mechanisms of impact and concludes with a summary of the impact assessment.

The locations of the Telstra infrastructure are shown in the attached Drawing No. MSEC1166-03.

The telecommunications infrastructure in the vicinity of Longwalls 401 to 408 comprises Telstra owned optical fibre and copper cables that follow the general alignments of the roads, and a telecommunications tower.

Copper cables are located along Ulan road to the west of Longwall 401 to 408 and to the South along Ulan-Wollar Road. The nearest point of the copper cables along Ulan Road is approximately 310 m from the finishing ends of LW402 to 406. The distance to the copper cables represents greater than 2.4 times the depth of cover from the longwalls.

Optical fibre cables are located to the south west of the Longwall 401 to 408 along Ulan Road, and to the south along Ulan-Wollar Road. A telecommunications tower is located 410 m to the west of the finishing end of Longwall 401. The nearest point of the optical fibre cables is 390 m from Longwall 401. The distance to the Telstra tower and optical fibre cables represent approximately 5 and 4.5 times the depth of cover respectively from Longwall 401.

Conventional Subsidence Parameters

At distances of 310 m or more to the copper cables along Ulan Road and 390 m or more to the optical fibre cables and tower, the cables and tower are not anticipated to experience measurable conventional mine subsidence ground movements (i.e. less than limits of survey accuracy); however, the cables may experience far-field horizontal movements which are discussed below.

Far-Field Movements

The measured horizontal movements at survey marks which are located beyond the longwall goaf edges and over solid unmined coal areas are often greater than the observed vertical movements at those marks. These movements are often referred to as *far-field horizontal movements*.

Far-field horizontal movements tend to be bodily movements towards the extracted goaf area and are accompanied by very low levels of strain. These movements generally do not result in impacts on natural or built features, except where they are experienced by large structures which are very sensitive to differential horizontal movements.

In some cases, higher levels of far-field horizontal movements have been observed where steep slopes or surface incisions exist nearby, as these features influence both the magnitude and the direction of ground movement patterns. Similarly, increased horizontal movements are often observed around sudden changes in geology or where blocks of coal are left between longwalls or near other previously extracted series of longwalls. In these cases, the levels of observed vertical subsidence and horizontal movement can be slightly higher than normally predicted, but these increased movements are generally accompanied by very low levels of tilt and strain. None of the aforementioned features is present in the vicinity of the Telstra infrastructure adjacent to Longwalls 401 to 408.

An empirical database of observed incremental far-field horizontal movements has been compiled using available monitoring data from the NSW and Queensland Coalfields, but this database predominately comprises measurements from the Southern Coalfield. The far-field horizontal movements are generally observed to be orientated towards the extracted longwall. At low levels of far-field horizontal movements, however, there is a higher scatter in the orientation of the observed movements.

This database includes available observed far-field horizontal movements that have been measured at Ulan Coal Mine, Moolarben Mine and observed data from other regions where the depths of cover are also relatively shallow compared to the Southern Coalfield of NSW. The observed far-field horizontal movements in the database represent large variations in depth of cover from less than 50 m to greater than 600 m. In order to utilise the observed far-field horizontal data at the Moolarben Coal Complex where depth of cover is relatively shallow, the data has been plotted, as shown in Figure 1, against the distances from the nearest edge of the incremental panel divided by the depth of cover. This plot excludes those cases where higher movements occurred because of multi-seam mining and valley closure effects as these are not applicable to extraction of Longwalls 401 to 408.

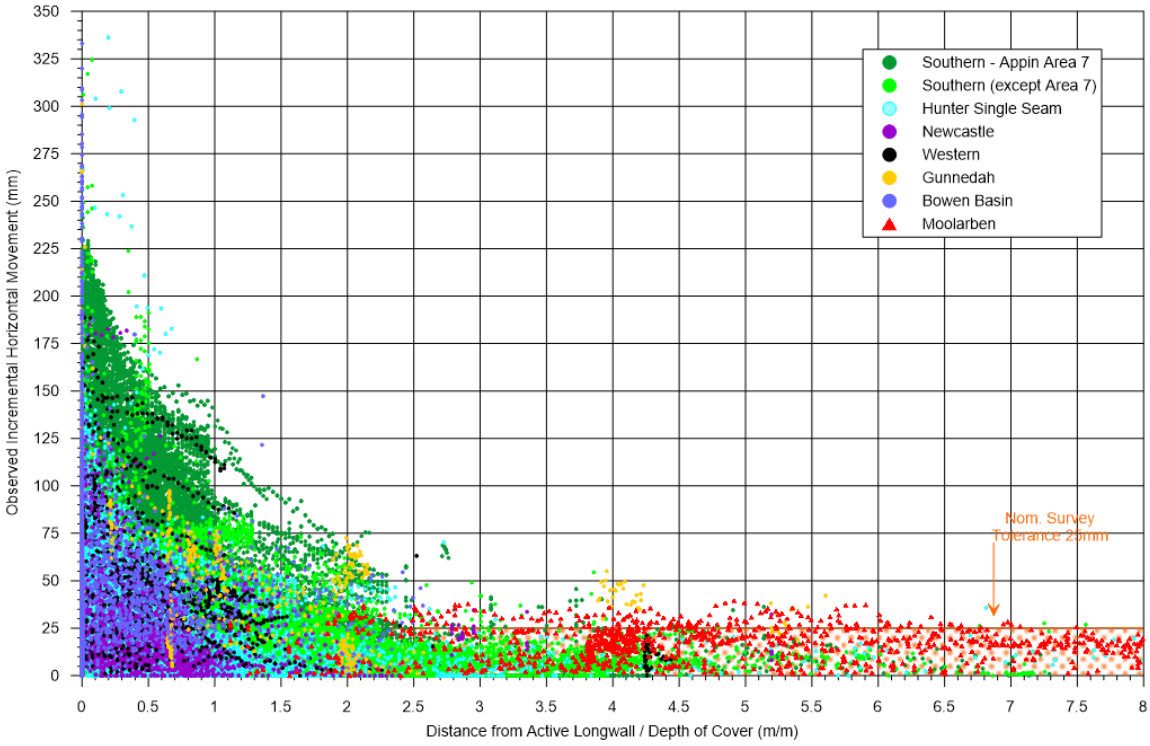

Figure 1 Observed incremental far-field horizontal movements (mm) from many regions in NSW versus the distance to the nearest edge of the mined panel divided by the depth of cover (m/m)

As successive longwalls within a series of longwall panels are mined, the magnitudes of the incremental far-field horizontal movements decrease. This is possibly due to the fact that once the in situ stresses in the strata within the collapsed zones above the first few extracted longwalls has been redistributed, the potential for further movement is reduced. The total far-field horizontal movement is not, therefore, the sum of the incremental far-field horizontal movements for the individual longwalls.

Figure 1 shows the upper limit of previously observed absolute far-field horizontal movements for sites located greater than 2.4 times the depth of cover from longwalls (i.e.copper cables), is less than 70 mm. The upper limit of previously observed absolute far-field horizontal movements for sites located greater than 4.5 and 5 times the depth of cover from longwalls (i.e. optical fibre cables and telecommunications tower), is less than 40 mm.

Potential for Non-Conventional Movements

It is believed that most non-conventional ground movements are the result of the reaction of near surface strata to increased horizontal compressive stresses due to mining operations. Some of the geological conditions that are believed to influence these irregular subsidence movements are the blocky nature of near surface sedimentary strata layers and the possible presence of unknown faults, dykes or other geological structures, cross bedded strata, thin and brittle near surface strata layers and pre-existing natural joints. The presence of these geological features near the surface can result in a localised bump in an otherwise smooth subsidence profile and these bumps are usually accompanied by locally increased tilts and strains.

Even though it may be possible to attribute a reason behind most observed non-conventional ground movements, there remain some observed irregular ground movements that still cannot be explained with the available geological information. The term “anomaly” is therefore reserved for those non-conventional ground movement cases that were not expected to occur and cannot be explained by any of the above possible causes.

It is not possible to predict the locations and magnitudes of non-conventional anomalous movements. In some cases, approximate predictions for the non-conventional ground movements can be made where the underlying geological or topographic conditions are known in advance.

The likelihood of non-conventional anomalous movements reduces with increasing distance away from the longwall panels.

The range of potential strains associated with non-conventional movements has been assessed using monitoring data from previously extracted panels in the NSW Coalfields, for single-seam conditions, where the width-to-depth ratios and extraction heights were similar to those of Longwalls 401 to 408. The 95 % confidence levels for the maximum total strains that the individual survey bays *above solid coal* (between 200 m and 600 m from extracted goaf) experienced at any time during mining are 1.6 mm/m tensile and 1.5 mm/m compressive. The 99 % confidence levels for the maximum total strains that the individual survey bays above solid coal experienced at any time during mining are 2.9 mm/m tensile and 3.0 mm/m compressive. The 75 % confidence levels for the maximum total strains that the individual survey bays above solid coal experienced at any time during mining are 0.5 mm/m both tensile and compressive, which is the typical limit of accuracy of strain measurement by conventional survey methods. It is noted that these results comprise a component of survey tolerance and have also been affected by disturbed survey marks and survey errors.

Impact Assessments for the Telecommunication Cables

The maximum predicted total subsidence parameters for the telecommunications infrastructure based on the Extraction Plan Layout are the same as or less than those for the Approved Layout for Longwalls 401 to 408. The potential impacts for the telecommunications infrastructure, based on the Extraction Plan Layout, therefore, are the same as or lower than those assessed based on the Approved Layout.

Copper telecommunications cables have been mined beneath extensively in NSW and are known to tolerate significant subsidence related movements without impact. The copper cables located outside the Study Area boundary are not expected to be subjected to measurable conventional vertical subsidence, tilt, curvature or strain. However, the cables may experience far-field horizontal movements of up to 70 mm. Based on the low magnitude of mine subsidence movements outside the Study Area boundary the development of adverse impacts to the copper cables due to extraction of Longwalls 401 to 408 is considered to be unlikely to occur.

With the location of the optical fibre cable and tower at 390 m or more from the longwalls, and the low likelihood of significant observed strains developing based on statistical analysis, the development of adverse impacts to the optical fibre cable and tower due to the extraction of Longwalls 401 to 408 is considered unlikely to occur.

The telecommunications tower is located adjacent to a road cutting along Ulan Road and nearby steep slopes. Down slope movements can occur on slopes that are located over or near extracted longwalls. Such movements may result in an increased likelihood of horizontal movements at the road cuttings, predominantly on the eastern side of Ulan Road. The direction of these movements are also likely to oppose the direction of far-field horizontal movements. Increased horizontal movements would be expected to be minor and unlikely to result adverse impact to the tower.

Recommendations

It is recommended that similar monitoring and management strategies developed for UG1 are adopted for UG4, in consultation with Telstra, to manage the telecommunications infrastructure for potential irregular ground movements. These strategies could include visual inspections, communications protocols and trigger action response plans. Baseline monitoring is recommended for comparison, should subsidence related ground movements be measured to the west of Longwalls 401 to 408. It is expected that the telecommunications infrastructure can be maintained in a safe and serviceable condition with the implementation of the appropriate monitoring and management strategies.

Summary

The copper cables, and telecommunications tower and optical fibre cables are located 310 m and 390 m or more from Longwalls 401 to 408 and are not expected to experience measurable conventional vertical subsidence movements resulting from the extraction of these longwalls. Predicted maximum far-field horizontal movement is 70 mm at the location of the copper cables and 40 mm at the location of the telecommunications tower and optical fibre cables.

There is a low probability that significant strains could develop at the location of the cables and tower due to non-conventional movements, and as a result, the development of adverse impacts to the cables and tower due to the extraction of Longwalls 401 to 408 is considered to be unlikely to occur.

Baseline monitoring is recommended for the telecommunications infrastructure for comparison, should subsidence related ground movements be measured to the west of Longwalls 401 to 408.

It is expected that potential impacts on the Telstra infrastructure can be managed with the implementation of suitable monitoring and management strategies.

Yours sincerely

Peter DeBono

Attachments:
Drawing No. MSEC1166-03 – Longwalls 401 to 408 – Telstra Infrastructure

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MOOLARBEN COAL PROJECT

UG4 LW401 TO LW 408

TELSTRA

DATE:	SCALE:	DRAWING No:	Rev No
02 Jun 2021	as shown	MSEC1166-03	A

LEGEND
- Inferred Extents of Unconsolidated Sediments
- Optical Fibre Cables
- Local copper cables

0m 500m 1000m
SCALE

6 432 000
764 000
762 000
6 430 000
6 428 000
6 426 000
GDA2020

SADDLERS CREEK RD
Goulburn River
ULAN RD
Ulan Creek
COPPER TELECOMMUNICATIONS CABLES
UG4
Study Area
LW408
LW407
LW406
LW405
LW404
LW403
LW402
LW401
TRACK
390 m
310 m
MUDSTONE QUARRY
TELECOMMUNICATIONS TOWER
Bora Creek
705 m
OPTICAL FIBRE CABLES
SANDY HOLLOW - GULGONG RAILWAY
ULAN WOLLAR RD
MURRAGAMBA RD
UG1
LW101
LW102B
LW103

ATTACHMENT 2

UG4 LONGWALLS 401 TO 408 BUILT FEATURES MANAGEMENT PLAN – TELSTRA
TRIGGER ACTION RESPONSE PLAN

Condition	Normal		Level 1	Level 2
	Baseline Conditions	**Predicted Impacts**	**Implement Management Measures**	**Restoration/Contingency Phase**
Trigger	Telecommunication cables and tower are serviceable and repairable or as otherwise identified by pre-mining inspection.	Small far field subsidence effects on telecommunication cables and tower.	Monitoring identifies impacts that are greater than predicted, but the performance measure has not been exceeded and is not likely to be exceeded.	If either of the Performance Measures relevant to the telecommunication cables are exceeded, or are likely to be exceeded (i.e. loss of serviceability).
Action	Establish baseline data, including: • Pre-extraction subsidence survey as per the UG4 Longwalls 401 to 408 Subsidence Monitoring Program. • Establish baseline condition of the telecommunications tower.	Conduct monitoring as described in **Section 6**, including: • MCO to conduct ground survey of the subsidence effects monitoring 'R Line' and, following confirmation of any observed movements, provide Telstra with the inspection sheets (unless otherwise agreed with Telstra). Monitoring parameters include: – Easting; – Northing; – Vertical subsidence; – tilt; – tensile strain; and – compressive strain. • MCO to conduct baseline survey of the telecommunications tower for post mining comparative assessments	Telstra will be notified in the event management measures are considered to be required. Management measures (e.g. stabilisation methods) implemented (with regard to the specific circumstances of the subsidence impact [e.g. the nature and extent of the impact]). Follow-up inspections will be conducted to assess the effectiveness of the management measures implemented and the requirement for any additional management measures.	Contingency Plan implemented (with regard to the specific circumstances of the subsidence impact). In summary: • The observation will be reported to the Underground Technical Manager and the Environmental and Community Manager within 24 hours. • The observation will be recorded in the Subsidence Impact Register. • The exceedance or likely exceedance will be reported in an incident report. • An investigation will be conducted to identify and evaluate contributing factors to the exceedance. • An appropriate course of action will be developed in consultation with Telstra, relevant stakeholders and government agencies. • The course of action will be approved by, and implemented to the satisfaction of, relevant stakeholders and government agencies. • The Built Features Management Plan – Telstra and the performance indicators will be reviewed to adequately manage future potential impacts. Potential contingency measures are described in Table 7.
Frequency	• Ground survey of the subsidence effects monitoring 'R Line': – Prior to the commencement of Longwall 401. • Baseline condition of tower – Prior to the commencement of Longwall 401	• Ground survey of the subsidence effects monitoring 'R Line': – Prior to secondary extraction of Longwall 401. – At the completion of each Longwall 401-408 • Subsidence impact inspection: – If/when ground movement exceeds the predicted subsidence monitoring parameters for UG4 during monitoring of the 'R Line'. – At any time in case of fault or emergency and where requested by Tesltra. • Baseline condition of tower – Prior to the commencement of Longwall 401 – At the completion of each Longwall 401	To be implemented as required (i.e. if monitoring identifies impacts that are greater than predicted, but the performance measure has not been exceeded and is not likely to be exceeded).	To be implemented following identification of an exceedance of the performance measure, or if the performance measure is likely to be exceeded (i.e. unsafe or loss of serviceability).
Position of Decision Making	• Underground Technical Manager. • Telstra – Network Integrity/Central Field Consultant.	• Underground Technical Manager. • Telstra – Network Integrity/Central Field Consultant.	• Underground Technical Manager. • Telstra – Network Integrity/Central Field Consultant.	• Underground Technical Manager. • Telstra – Network Integrity/Central Field Consultant.

ATTACHMENT 3

UG4 LONGWALLS 401 TO 408 BUILT FEATURES MANAGEMENT PLAN – TELSTRA
SUBSIDENCE IMPACT REGISTER TEMPLATE

UG4 Longwalls 401 to 408 Built Features Management Plan – Telstra
Subsidence Impact Register Template

Impact Register Number	Built Feature	Impact Description	Does Impact Exceed the Built Feature Performance Measure/Indicators? (Yes/No)	Management Measures Implemented	Were Management Measures Effective? (Yes/No)